Mt Messenger Bypass

Assessment of Effects on the Environment

December 2017

NZ TRANSPORT AGENCY WAKA KOTAHI

Mt Messenger Bypass

New Zealand Government

Quality Assurance Statement			
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Schedule 4 requirements

Schedule 4 of the RMA sets out the information required in an application for a resource consent. All relevant matters required to be included have been addressed in the assessments and descriptions in this AEE. The following table provides a summary of the information required in Schedule 4 and a quick reference to its location in this report.

Schedule 4 Item	Location within report
A description of the activity	Sections 4 and 5
A description of the site at which the activity is to occur	Section 8
The full name and address of each owner or occupier of the site	Appendix B
A description of any other activities that are part of the proposal to which the application relates	Section 4 and 5
A description of any other resource consents required for the proposal to which the application relates	Section 2
An assessment of the activity against the matters set out in Part 2	Section 11
An assessment of the activity against any relevant provisions of a document referred to in section 104(1)(b). This must include: a) Any relevant objectives, policies, or rules in a document b) Any relevant requirements, conditions, or permissions in any rules in a document c) Any other relevant requirements in a document (for example, in a national environmental standard or other regulations)	Section 11
An assessment of the activity's effects on the environment that includes the following information:	Section 9
If it is likely that the activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity.	Section 6
An assessment of the actual or potential effect on the environment of the activity.	Section 9
If the activity includes the use of hazardous substances and installations, an assessment of any risks to the environment that are likely to arise from such use.	Section 5.21
If the activity includes the discharge of any contaminant, a description of— The nature of the discharge and the sensitivity of the receiving environment to adverse effects; and Any possible alternative methods of discharge, including discharge into any other receiving environment.	Sections 4,5 and 9
A description of the mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect.	Section 10

Schedule 4 Item	Location within report
Identification of the persons affected by the activity, any consultation undertaken, and any response to the views of any person consulted.	Sections 7, 9 and 11
If the scale and significance of the activity's effects are such that monitoring is required, a description of how and by whom the effects will be monitored if the activity is approved.	Volume 3: Technical reports and Volume 5: Management plans
If the activity will, or is likely to, have adverse effects that are more than minor on the exercise of a protected customary right, a description of possible alternative locations or methods for the exercise of the activity (unless written approval for the activity is given by the protected customary rights group).	Sections 6, 7, 9
An assessment of the activity's effects on the environment that addresses the following matters:	Section 9
Any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects.	Sections 9.3, 9.4, 9.5, 9.6, 9.7
Any physical effect on the locality, including any landscape and visual effects.	Section 9.9
Any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity.	Section 9.8
Any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations.	Sections 9.5, 9.6, 9.7, 9.9, 9.10
Any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants.	Sections 9.11, 9.14, 9.15
Any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations.	Section 5.21
For applications involving permitted activities	
If any permitted activity is part of the proposal to which the application relates, a description of the permitted activity that demonstrates that it complies with the requirements, conditions, and permissions for the permitted activity (so that a resource consent is not required for that activity under section 87A(1)).	Section 2.5

Glossary

Abbreviations used in this report

Abbreviation	Definition
AEE	Assessment of Effects on the Environment
ARI	Annual Recurrence Interval
ARRP	The Government's Accelerated Regional Roading Package
AWA	Additional Works Area
Austroads	The association of Australian and New Zealand road transport and traffic authorities.
CEMP	Construction Environmental Management Plan
Ch./Chainage	A distance measured along a straight line. For this Project, Chainage is measured in metres and starts from the northern extent of the Project.
CIA	Cultural Impact Assessment
CIS	Container Impoundment System
CLMP	Contaminated Land Management Plan
CNVMP	Construction Noise and Vibration Management Plan
CoPTTM	The Transport Agency's Code of Practice for Temporary Traffic Management
CPTED	Crime Prevention Through Environmental Design
CTMP	Construction Traffic Management Plan
CWMP	Construction Water Management Plan
dB	Decibel
DMP	Dust Management Plan
DOC	Department of Conservation
ELMP	Ecology and Landscape Management Plan
FIDOL	Frequency, intensity, duration, offensiveness/character and location. Factors used to qualitatively assess whether dust is likely to have an objectionable or offensive effect
GDP	Gross Domestic Product
GPS	Government Policy Statement
ha	Hectares
HAIL	Ministry for the Environment's Hazardous Activities and Industries List
HNZPT	Heritage New Zealand Pouhere Taonga
HPMV	High Productivity Motor Vehicles: vehicles exceeding a mass of 44,000kg and/or the maximum length dimensions allowed for standard vehicles
IAP2	International Association of Public Participation
km	Kilometre
km/h	Kilometres per hour
LEDF	Landscape and Environment Design Framework (Technical Report 8b)

Abbreviation	Definition
LTMA	Land Transport Management Act 2013
LTP	Land Transport Programme
m	Metres
MCA	Multi Criteria Analysis
MCI	Macroinvertebrate Community Index
MfE	Ministry for the Environment
MOTSAM	Manual of Traffic Signs and Markings
MSE	Mechanically Stabilised Earth
NES	National Environmental Standard
NESAQ	Resource Management (National Environmental Standard for Air Quality) Regulations 2004
NES Soil	National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health
NLTP	National Land Transport Programme
NPS	National Policy Statement
NZAA	New Zealand Archaeological Association
NZCPS	New Zealand Coastal Policy Statement 2010
NoR	Notice of Requirement
OD	Over Dimension
ONF	Outstanding Natural Feature
ONRC	The Transport Agency's One Network Road Classification
OPW	Outline Plan of Works
PSI	Preliminary Site Investigation
PWA	Public Works Act 1981
RMA	Resource Management Act 1991
RPS	Regional Policy Statement
RTA	Road Transport Association
RTP	Regional Transport Plan
SAP	Site Access Points
SCWMP	Specific Construction Water Management Plan
SEA	Significant Ecological Area
SH3	State Highway 3
SH3WP	State Highway 3 Working Party
SOI	The Transport Agency's Statement of Intent 2017–2021
TSS	Total Suspended Solids
UPS	Uninterrupted Power Supply
vpd	Vehicles per day

Defined terms used in this report

Term	Definition
Air Quality Plan	Regional Air Quality Plan for Taranaki
Archaeological site	Defined in Section 6 of the Heritage New Zealand Pouhere Taonga Act 2014 as *"Means, subject to section 42(3),—* (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).*"
Conditions	Conditions placed on a resource consent (pursuant to Section 108 of the RMA) or conditions of a designation (pursuant to subsection 171(2)(c) of the RMA)
Contaminant	Defined in Section 2 of the RMA as: *"any substance (including gases, odorous compounds, liquids, solids, and microorganisms) or energy (excluding noise) or heat, that either by itself or in combination with the same, similar, or other substances, energy, or heat –* *(a) when discharged into water, changes or is likely to change the physical, chemical, or biological condition of water; or* *(b) when discharged onto or into land or into air, changes or is likely to change the physical, chemical, or biological condition of the land or air onto or into which it is discharged."*
Design life	The period during which the performance of a pavement, e.g. riding quality, is expected to remain acceptable.
Design speed	A speed fixed for the design of minimum geometric features of a road.
District Council	New Plymouth District Council
District Plan	Operative New Plymouth District Plan
Drawing set	Volume 2: Drawing Set
Earthworks	Means the disturbance of land surfaces by blading, contouring, ripping, moving, removing, placing or replacing soil, earth, or by excavation, or by cutting or filling operations.
Effect	Defined in Section 3 of the RMA as: *"(a) Any positive or adverse effect;* *(b) Any temporary or permanent effect;* *(c) Any past, present, or future effect;* *(d) Any cumulative effect which arises over time or in combination with other effects –*

Term	Definition
	Regardless of the scale, intensity, duration, or frequency of the effect and also including – *(e) Any potential effect of high probability; and* *(f) Any potential effect of low probability, which has a high potential impact."*
Environment	Defined in Section 2 of the RMA and includes: *"(a) Ecosystems and their constituent parts, including people and communities;* *(b) All natural and physical resources;* *(c) Amenity values; and* *(d) The social, economic, aesthetic and cultural conditions which affect the matters stated in paragraphs (a) to (c) of this definition or which are affected by those matters."*
Freshwater NPS	National Policy Statement for Freshwater Management 2011
Fresh Water Plan	Regional Fresh Water Plan for Taranaki
Heritage Act	Heritage New Zealand Pouhere Taonga Act 2014
Project	The Mt Messenger Bypass Project.
Regional Council	Taranaki Regional Council
Regional plans	The Fresh Water Plan, Soil Plan and Air Plan
Soil Plan	Regional Soil Plan for Taranaki
State Highway	Means a road, whether or not constructed or vested in the Crown, that is declared to be a State Highway under Section 11 of the National Roads Act 1953, Section 60 of the Government Roading Powers Act 1989 (formerly known as the Transit New Zealand Act 1989), or under Section 103 of the LTMA.
State Highway Plan	The State Highway Plan 2016/2017
Transport Agency	The NZ Transport Agency
Treaty Settlement Act	Ngāti Tama Claims Settlement Act 2003
Water body	Defined in Section 2 of the RMA as: "*fresh water in a river, lake, stream, pond, wetland, or aquifer, or any part thereof, that is not located within the coastal marine area."*
Water Takes Regulations	Resource Management (Measuring and Reporting Water Takes) Regulations 2010

Executive Summary

The NZ Transport Agency (Transport Agency) has lodged a Notice of Requirement (NoR) and applications for resource consent for the Mt Messenger Bypass (the Project). The Project involves the construction and ongoing operation of a new section of SH3, generally between Uruti and Ahititi to the north of New Plymouth. This new section of SH3 will bypass the existing approximately 7.4km steep, narrow and winding section of highway at Mt Messenger.

SH3 has the key purpose of connecting the Taranaki region through to the Waikato region, and then on to key economic and transportation hubs at Hamilton, Tauranga and Auckland. Although most of the 240km length of SH3 between New Plymouth and Hamilton traverses open country, with average travel speeds between 75 and 85km/h, the Mt Messenger section of SH3 is of a markedly lower standard. The operational characteristics of the existing Mt Messenger section of SH3 include:

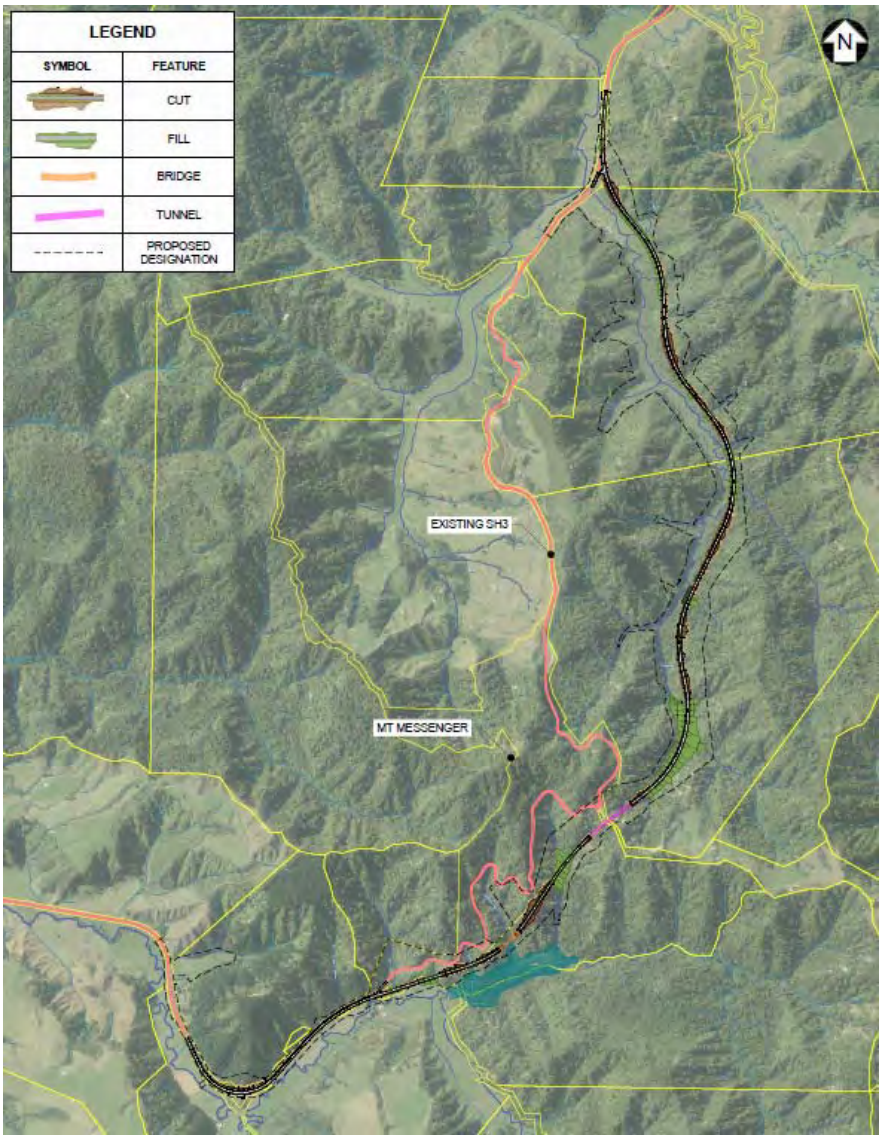
- steep grades, a tortuous alignment and restricted forward visibility;
- significant lengths with no or only limited shoulders;
- a narrow tunnel at the summit; and
- a vulnerability to interruption of service by breakdowns, crashes, landslips and rockfalls. When service is interrupted, alternative route options are limited, and require significantly longer travel times (especially for freight).

These constraints translate to problems with safety, route resilience (road closures with no suitable alternatives), poor road geometry and low speeds. These factors combined mean the road is no longer fit for purpose.

The Project will establish a new section of SH3 that will remedy the existing operational problems at Mt Messenger. The Project includes the following key aspects:

- A two lane road alignment (one traffic lane in each direction) with tie-ins to the existing SH3 corridor at the north and south of the alignment;
- A tunnel (approximately 240m in length) through the ridgeline near the existing Mt Messenger rest area, with an associated tunnel control building and emergency water-supply tanks;
- A 120m long bridge over a wetland on a tributary of the Mimi River;
- Ten rock cuttings up to a depth of about 60m and along a combined distance of approximately 2.6km (including the tunnel portals);
- Thirteen earth embankments up to about 40m in height (but typically less than 5m high), along a combined distance of approximately 2.5km;
- Retaining walls and mechanically stabilised earth (MSE) embankments;
- Stormwater treatment and attenuation facilities (including stormwater retention ponds, swales and road drainage network); and
- Comprehensive environmental mitigation and biodiversity offset measures.

The Project is shown in the Figure below.



Effects of the Project

The Project will provide:

- A modern, high-standard highway, with significantly improved geometry, forward visibility, and sight distances. This will be reflected in an increase in safety rating from 2 Star to 3 Star. The end result will be reduced driver frustration and a significantly safer road compared to the existing situation.
- Improved resilience of the Mt Messenger section of SH3, and therefore the robustness of the broader regional transport network linking Taranaki to the north. This improvement will result from enhanced resilience to natural hazards, along with enhanced safety conditions resulting in fewer crashes and an improved ability to recover from incidents.
- Significant improvements in the reliability of journey time to road users of SH3. Journey reliability is important for all road users, and particularly for those members

of the community that need to have confidence in the network so that their choice of transport maximises their productivity. The reliability of the transport network is an important factor underpinning economic performance.

- Journey time savings for all vehicles (of 4 to 5 minutes on average), and for trucks in particular (saving 6 minutes 40 seconds on average).

These positive effects will in turn contribute to positive local and regional economic growth and productivity effects. The Project will also deliver significant positive social and community effects to Taranaki's way of life, growth and development, and wellbeing.

Ngāti Tama are mana whenua for this area and also own a significant proportion of the land through which the Project will be constructed. There have been detailed discussions between the Transport Agency and Ngāti Tama in developing the Project, including during the assessment of alternative route options for the Project and during the development of the Project designs described in this AEE. The Transport Agency acknowledges that the land, known to Ngāti Tama as Parininihi, has high cultural values and was returned to the Iwi as part of its Treaty Settlement. The process of identifying methods for mitigating the cultural effects of the Project will be iterative, and involve ongoing consultation and collaboration between Ngāti Tama and the Transport Agency on land acquisition, design development, mitigation, construction and operation.

The Project sits within a wider area of forested indigenous native vegetation running from the coastal margins inland to the lowland mountains. The Parininihi land to the west of SH3 has been described as the 'best example of primary coastal hardwood-podocarp forest on the west coast of the North Island'. The ecological health and integrity of this area has improved significantly with the pest management work undertaken by Ngāti Tama. Kōkako have recently been released into this area.

Unlike the Parininihi land to the west of SH3, the area which the Project traverses has not had consistent pest control and as a result, the ecological condition of this area is diminished. The quality of the habitat varies along the alignment. Within the Mangapepeke Stream catchment, vegetation communities have been affected by long-term stock grazing, fire and logging, with the result being a transition to large open and grazed rushlands and poor quality pastureland further down the valley.

Despite this, the habitats which the Project traverses are of high ecological value. In particular, the Mimi swamp forest is of ecological value. This sequence within the northern tributary of the Mimi River represents a full range of swamp forest, scrub and non-forest wetland communities that would once have been more common throughout this area.

Avoidance of ecological effects, as far as practicable for a lineal road, has been inherent in the design process. The route selection process has avoided the high ecological values of the Parininihi land to the west of SH3. Along the Project alignment all vegetation types and significant trees have been mapped and delineated to identify the affected vegetation types and their values. Where it has been possible the Project alignment has been designed to avoid significant trees.

Construction of the Project will result in the removal of a corridor of vegetation and will affect the associated habitats and flora and fauna. In total, vegetation loss due comprises:

- 19.5ha of primary indigenous forest;

- 13.8ha of secondary indigenous forest; and
- 11.1ha of rushland and sedgeland vegetation, which is a mixture of indigenous and exotic vegetation in the rough pastureland in the valley floors.

This vegetation removal includes 15 large emergent old podocarp trees. Construction also involves diverting and altering watercourses along the Project footprint, and will result in the permanent loss of some 3.47km of stream length.

The Transport Agency has worked proactively to address the ecological effects of the Project. A core element of the Project design is a comprehensive mitigation and biodiversity offset package. This package is focused on achieving a net gain in biodiversity within 10 – 15 years of the completion of construction. The package comprises:

- Intensive, multi-species pest management over an area of 560ha, with the focus being on controlling rats, possums, mustelids, feral cats, feral pigs and goats to very low densities, and fencing to exclude livestock. This management will continue in perpetuity (or until such time as pest management in its current form is no longer necessary to sustain the levels of biodiversity created).
- Restoration planting of 6ha of swamp forest.
- Planting of 200 seedlings of the same species for every significant tree that has to be felled.
- Riparian planting and livestock exclusion of approximately 8.9km of existing stream. Planted riparian margins of at least 10m each side of the channel will be created.
- Restoration planting of all secondary scrub areas along the footprint plus temporary construction areas such as access tracks and storage areas that retain conditions suitable for planting, being approximately 9ha in total.

The package will achieve significantly positive biodiversity outcomes that will continue on into the future.

While the Regionally Significant Landscape of Parininihi land to the west of SH3 has been avoided through route selection, the construction of the Project will nevertheless introduce a highway into what is currently a remote and generally undeveloped landscape setting. The vegetation clearance, earthworks, fill disposal areas and crossing, filling and diversions of streams required for the Project will all have effects on landscape and natural character.

However, the design of the Project seeks to minimise and mitigate these effects. The overall design concept for the Project is an alignment that is integrated with the landscape and delivers an outstanding scenic highway. A range of measures that mitigate landscape, natural character and visual effects of the Project have been introduced through this design process. A Landscape and Environment Design Framework (LEDF) is being implemented, which addresses how landscape outcomes are incorporated into the design process, and includes collaboration with Ngāti Tama.

During construction there will also be a range of temporary adverse effects, including effects on the traffic environment, effects associated with construction noise and dust, possible contaminated land effects, local effects on neighbouring land owners and the local community, and effects associated with land disturbance.

Managing the effects of the Project

The Project's potential adverse effects on the environment have been addressed through a detailed route selection and design process, a comprehensive set of proposed designation and resource consent conditions, and a suite of management plans. Many of the management plans have already been prepared are included with the application documents.

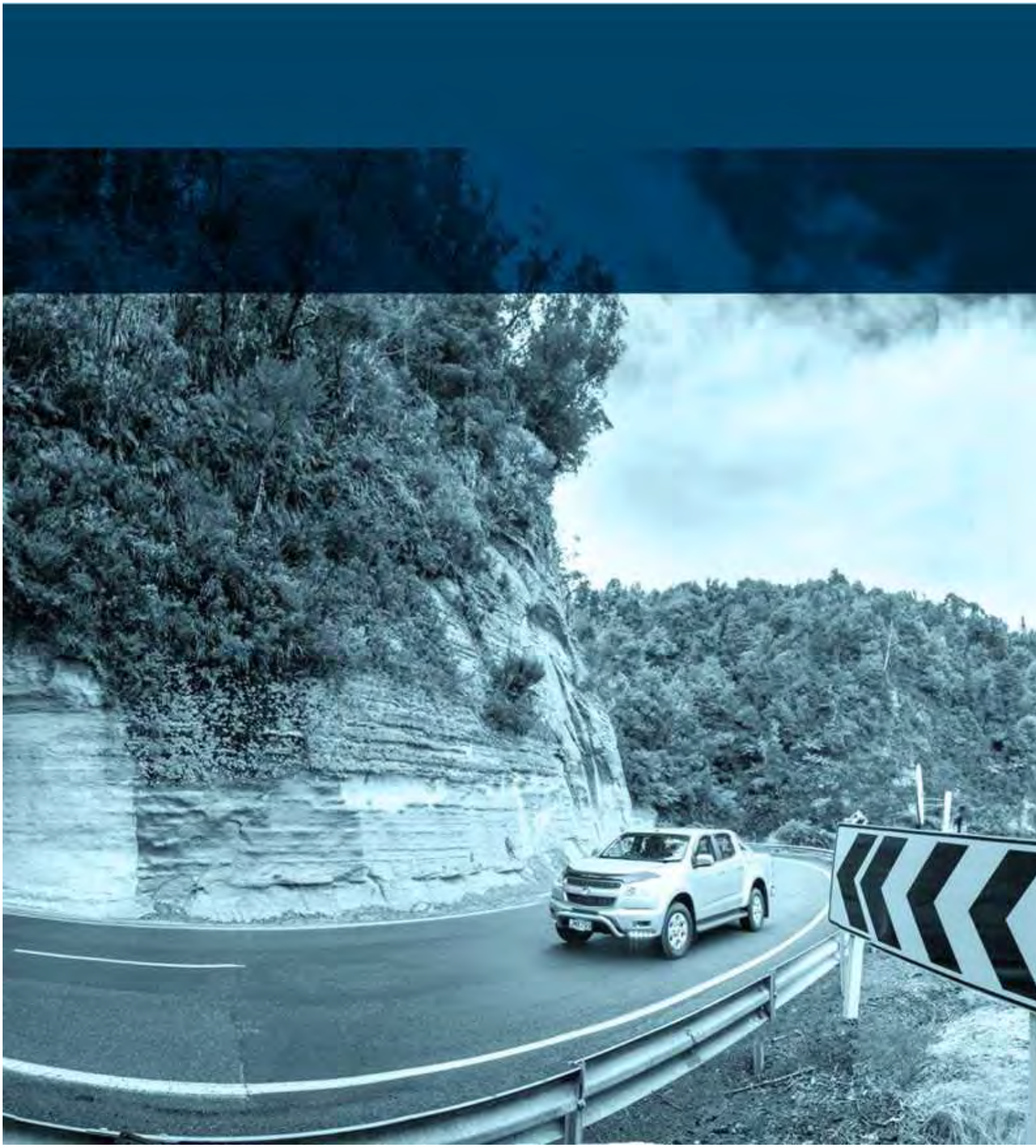
A range of potential adverse effects have been avoided through the route selection and Project design process. In particular, the significant adverse effects that construction of a highway through the western Parininihi land would have caused were avoided through route selection, while effects on the high-value Mimi valley swamp forest have largely been avoided through the use of a bridge to span the wetland area.

In summary, key measures developed to avoid, remedy, mitigate or offset effects of the Project are:

- A comprehensive mitigation and biodiversity offset package;
- An overarching construction environmental management plan (CEMP) to address both designation and resource consent matters related to construction of the Project;
- A series of specific management plans that detail the measures that will be in place to avoid, remedy, mitigate or offset environmental effects, including construction water management, ecology and landscape management, pest control, contaminated land management, construction traffic management dust, and construction noise management;
- Site or activity specific components of the CEMP and management plans to manage particular effects during construction (e.g. detailed Specific Construction Water Management plans);
- An accidental discovery protocol to address the management of any unexpected discovery of archaeological sites; and

Protocols, outlined as part of the CEMP, to communicate with the local community and stakeholders for the duration of construction of the Project on construction

Section 1 - Introduction



1 Introduction

The NZ Transport Agency (Transport Agency) has lodged a Notice of Requirement (NoR) and applications for resource consent for the Mt Messenger Bypass (the Project). This Assessment of Effects on the Environment (AEE) has been prepared to support the NoR and resource consent applications.

1.1 The New Zealand Transport Agency

The Transport Agency is a Crown entity established on 1 August 2008 under the Land Transport Management Act 2003 (LTMA) and is responsible for providing an integrated approach to planning, funding and delivering transport in New Zealand.

The objective of the Transport Agency, as set out in s94 of the LTMA, is to "undertake its functions in a way that contributes to an effective, efficient, and safe land transport system in the public interest".

The Transport Agency's Statement of Intent 2017-2021 (SOI) identifies its core value as delivering Great Journeys that are easy, safe and connected, through an integrated land transport system that helps people get the most out of life and supports business. The SOI identifies key focus areas, which include connecting and developing New Zealand's regions, and keeping people safe.

1.2 State Highway 3

State Highway 3 (SH3) north from New Plymouth serves as the principal transport route joining the Taranaki region through to the Waikato and on to Hamilton, Tauranga and Auckland. Taranaki's only arterial route connecting directly to and from the north, SH3 is of particular strategic importance to the economic well-being and future of Taranaki.

Most of the 240km length of SH3 between New Plymouth and Hamilton traverses open country with average travel speeds between 75 and 85km/h. However, the route through the Awakino Gorge and over Mt Messenger is to a markedly different standard, characterised by a tortuous alignment, narrow widths, steep grades, limited overtaking and restricted visibility.

The need to improve this section of SH3 was recognised through the Government's Accelerated Regional Roading Package (ARRP),[1] announced in January 2016. The ARRP identified the following three projects as part of a programme of works aimed at addressing safety, resilience and network performance issues of the Mt Messenger and Awakino Gorge corridor of SH3:

- Awakino Tunnel Bypass;
- Corridor Safety Improvements; and
- Mt Messenger Bypass.

[1] http://www.transport.govt.nz/land/accelerated-regional-roading-package/

1.3 The Mt Messenger Bypass

On 31 August 2017 the Minister of Transport announced that the Transport Agency would be progressing the Project. The Project will be funded through the ARRP and the National Land Transport Fund.

The Project involves the construction and ongoing operation of a new section of SH3, generally between Uruti and Ahititi to the north of New Plymouth. This new section of SH3 will bypass the existing approximately 7.4km steep, narrow and winding section of highway at Mt Messenger.

The Project comprises a two lane highway, approximately 6km in length (including the tie-ins to the existing SH3 alignment), located to the east of the existing SH3 alignment (refer Figure 1.1).

The Project will include the following key aspects:

- A two lane road alignment (one traffic lane in each direction) with tie-ins to the existing SH3 corridor at the north and south of the alignment;
- A tunnel (approximately 240m in length) through the ridgeline near the existing Mt Messenger rest area, with an associated tunnel control building and emergency water-supply tanks;
- A 120m long bridge over a wetland on a tributary of the Mimi River;
- Ten rock cuttings up to a depth of about 60m and along a combined distance of approximately 2.6km (including the tunnel portals);
- Thirteen earth embankments up to about 40m in height (but typically less than 5m high), along a combined distance of approximately 2.5km;
- Retaining walls and mechanically stabilised earth (MSE) embankments;
- Stormwater treatment and attenuation facilities (including stormwater retention ponds, swales and road drainage network); and
- Comprehensive environmental mitigation and biodiversity offset measures.

The Project is being undertaken to enhance the safety, resilience and journey time reliability of travel on SH3 and contribute to enhanced local and regional economic growth and productivity for people and freight.

The Project will remove a corridor of native vegetation to the east of the existing SH3 alignment. To address effects on habitats and flora and fauna, the Project includes a package of mitigation and biodiversity offsets. The biodiversity offsets include pest management over a substantial area (560ha) of native forest, along with restoration planting.

Ngāti Tama are mana whenua for this area and also own a significant proportion of the land through which the Project will be constructed. There have been detailed discussions between the Transport Agency and Ngāti Tama in developing the Project, including during the assessment of alternative route options for the Project and during the development of the Project designs described in this AEE.

1.4 Purpose and structure of the AEE

The purpose of the AEE is to describe the Project, the alternatives considered, the consultation undertaken and the potential effects arising from the construction and operation of the Project. The AEE also assesses the Project against the relevant statutory documents.

The AEE is part of the overall suite of application documents, which has been prepared in accordance with the relevant provisions of the RMA (in particular Schedule 4) and provides information in support of the NoR and resource consent applications. The scope of the NoR and resource consents sought are set out in detail in Section 2 of the AEE.

The AEE comprises five parts as listed below:

Mt Messenger Bypass – Assessment of Effects on the Environment			
RMA Application Forms	**Notice of Requirement**	**NoR forms, including designation plans, property schedule, conditions**	
	Resource Consent applications	**Resource consent application forms**	
Volume 1	**Assessment of Effects on the Environment**		
	Appendix A – D	Appendix A: Objectives and policies assessment; Appendix B: Schedule of properties; Appendix C: Planning maps; Appendix D: Draft designation and resource consent conditions	
Volume 2	**Drawing Set**		
Volume 3	**Technical Reports**		
	Technical Report 1	Strategic Transport Assessment	
	Technical Report 2	Traffic and Transport Assessment	
	Technical Report 3	Resilience Assessment	
	Technical Report 4	Economics Assessment	
	Technical Report 5	Social Impact Assessment	
	Technical Report 6	Recreation Assessment	
	Technical Report 7	Assessments of Ecological Effects	
		Technical Report 7a	Vegetation
		Technical Report 7b	Freshwater Ecology
		Technical Report 7c	Invertebrates
		Technical Report 7d	Herpetofauna
		Technical Report 7e	Avifauna
		Technical Report 7f	Bats
		Technical Report 7g	Marine Ecology
		Technical Report 7h	Ecological Mitigation and Offset
	Technical Report 8a	Landscape, Natural Character and Visual Assessment	

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	Technical Report 8b	Landscape and Environment Design Framework
	Technical Report 9	Historic Heritage Assessment
	Technical Report 10	Environmental Noise & Vibration Assessment
	Technical Report 11	Air Quality Assessment
	Technical Report 12	Contaminated Land Assessment
	Technical Report 13	Construction Water Assessment Report
	Technical Report 14	Geotechnical Appraisal
Volume 4	**Consideration of alternatives** – Options assessment reports	
Volume 5	**Draft Management Plans:** Construction Environmental Management Plan Dust Management Plan Contaminated Land Management Plan Accidental Discovery Protocol Construction Traffic Management Plan Construction Water Management Plan and Specific Construction Water Management Plans Construction Noise Management Plan Ecology and Landscape Management Plan	

The Project is described in the following sections of the AEE and is shown on the Drawings in Volume 2: Drawing Set. (referred to hereafter as "**the drawing set**").

1.4.1 Structure of AEE

The structure of this AEE report is as follows:

- **Sections 1 and 2** provide an **Introduction** to the Project and describe the **NoR** and **Resource Consent Applications**.
- **Section 3** describes the **Project Background**, including an overview of SH3 and its strategic importance to Taranaki, the problems at the Mt Messenger section, the development of the Project, and an overview of Ngāti Tama and their cultural values and the natural environment values of the Mt Messenger area.
- **Section 4** provides the **Project Description** and details the design and characteristics of the Project.
- **Section 5** describes the **Construction** methodology.
- **Section 6** summarises the **Alternatives Assessment** process.
- **Section 7** summarises the **Consultation and Engagement** completed by the Transport Agency to date and the outcomes from this engagement.
- **Section 8** describes the **Existing Environment** of the Project area.
- **Section 9** provides a detailed **Assessment of Effects of the Project on the Environment.**

- **Section 10** describes the **Management of Effects**, including how effects have been avoided, remedied, mitigated or offset, the proposed draft consent conditions and proposed management plans.
- **Section 11** describes the **Statutory Context and Assessment** of the relevant statutory documents.

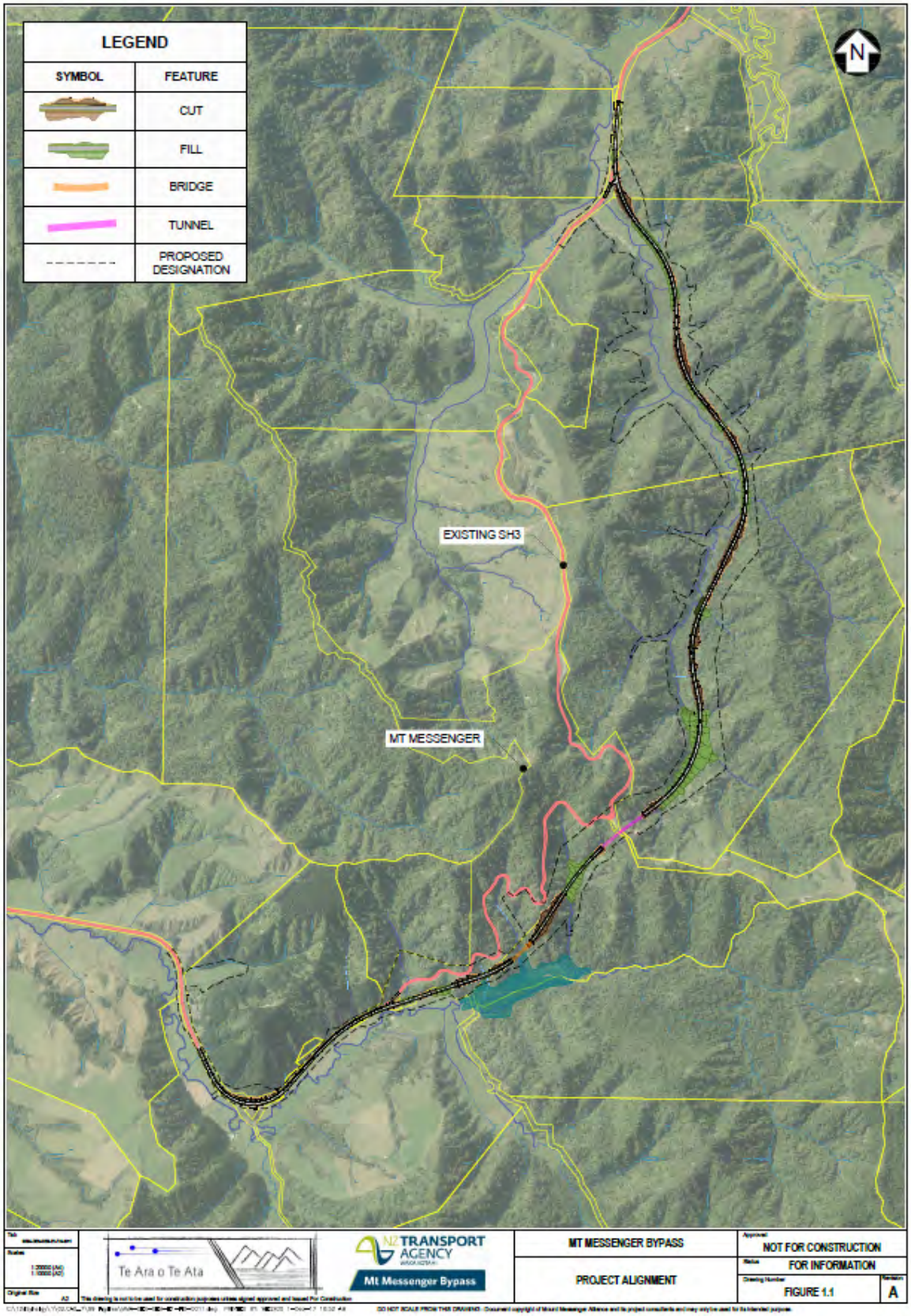
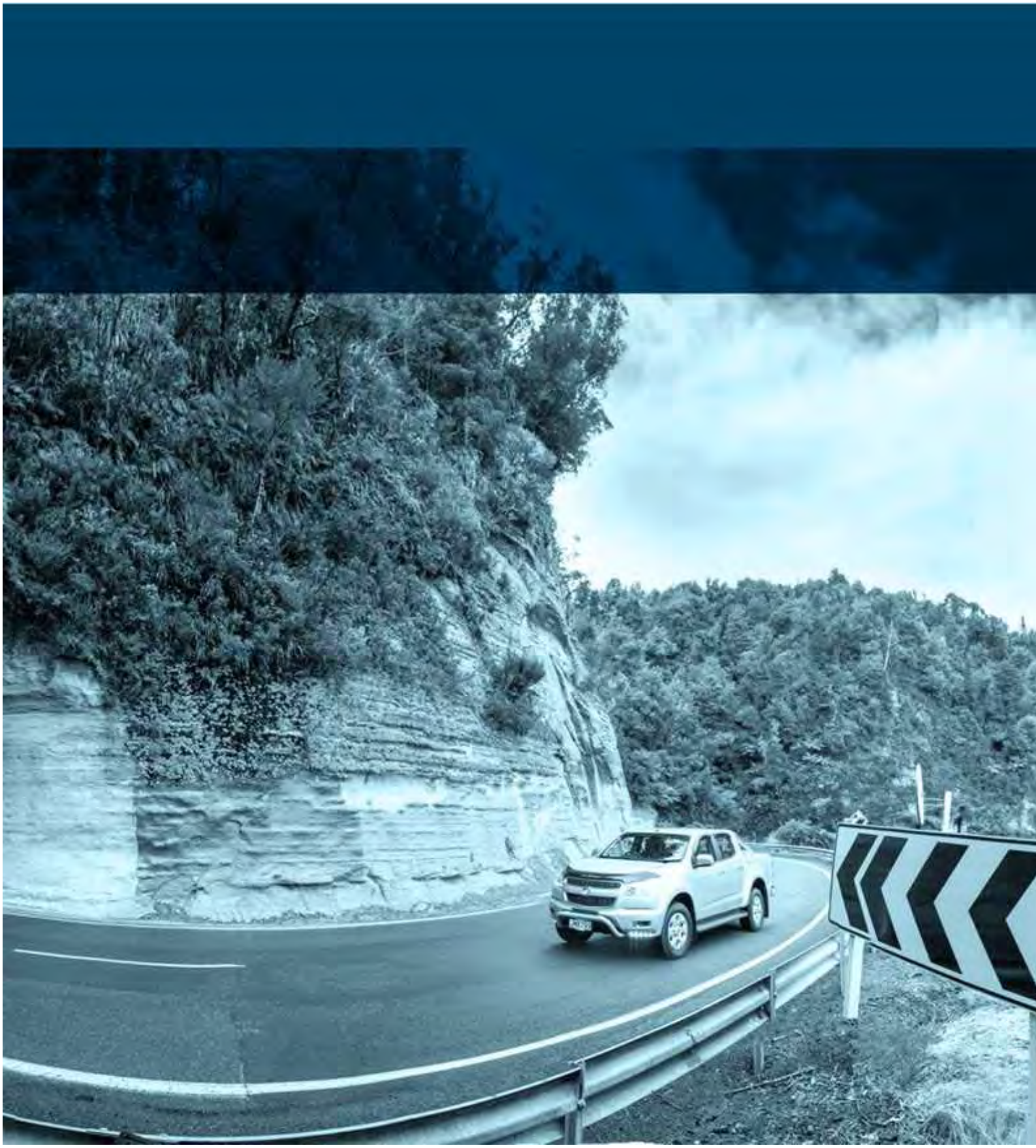


Figure 1.1 – Project alignment

Section 2 – Notice of Requirement and Consents



2 Notice of Requirement and Resource Consents

2.1 Overview

The Transport Agency proposes to designate land for the Project in accordance with s168 of the Resource Management Act 1991 (RMA).

The Project also requires a number of resource consents, which the Transport Agency is seeking under the relevant sections of the RMA.

The scope of the NoR and resource consents sought for the Project are outlined in the following sections. The NoR and resource consent application forms are provided at the front of the application documentation.

2.1.1 Public notification

Due to the nature and extent of the Project, the Transport Agency requests that the NoR and applications for resource consent for the Project be publicly notified.[2]

2.2 Notice of Requirement

The Transport Agency is a requiring authority under s67(3) of the RMA for:

- the construction and operation (including the maintenance, improvement, enhancement, expansion, realignment and alteration) of any State highway or motorway;[3] and
- the construction or operating of cycleways and shared paths.[4]

Pursuant to its requiring authority status, the Transport Agency has lodged a NoR with New Plymouth District Council (District Council) to alter the existing SH3 designation within the Operative New Plymouth District Plan (District Plan) in accordance with s181of the RMA. The alteration is to add land to the existing SH3 designation, being the land required for the construction, operation and maintenance of the Project, including key associated mitigation and offsetting activities.

The extent of the proposed designation is shown on drawings included in the drawing set (refer drawings MMA-DES-PRP-C0-DRG-1000 to 1004). These drawings are referenced in the NoR. The AEE assesses the effects of the works to be authorised by the NoR.

A schedule of properties directly affected by the NoR, and which are proposed to be added to the designation, is included on the plans showing the extent of the proposed designation (refer drawing MMA-DES-PRP-C0-DRG-1000) and also included as Appendix B of the AEE. This schedule of properties is referenced in the NoR. Under the altered (extended)

[2] For the resource consents, sections 95A(2)(a) and 95A(3)(a) of the RMA together mean that the applications must be publicly notified if the applicant requests public notification. For the NoR, the equivalent provisions are sections 169(1) and 149ZCB(2)(b).

[3] Resource Management (Approval of Transit New Zealand as Requiring Authority) Notice 1994.

[4] Resource Management (Approval of NZ Transport Agency as a Requiring Authority) Notice 2015.

designation, works will also be carried out on land within the existing SH3 designation. This land together amounts to the Project footprint.

In summary, the proposed designation directly affects the following land:

Table 2.1 - Summary of land directly affected by the proposed designation

Owner type	NoR	Area
Private	16 properties	77.18ha
Road	SH3 (existing designation)	20.93ha

2.2.1 Draft NoR conditions

Draft NoR conditions have been proposed in Appendix D. These will apply primarily during the construction of the Project, and will fall away once the Project is operational. The key exception is in respect of the ongoing mitigation and offset programmes.

2.2.2 Designation to be reviewed after construction

On completion of construction, the Transport Agency will review the extent of the designation, including parts of the current SH3 designation no longer required by the Transport Agency. Areas of the designation not required for permanent works, operations, maintenance, or for mitigation and offsetting activities will be removed where it is reasonable to do so. This is a relatively simple process under s182 of the RMA.

2.2.3 Waiver of outline plan of works

Once the alteration to the designation is confirmed, the Transport Agency will carry out a range of works within the designation. Section 176A of the RMA creates a general requirement for requiring authorities to submit outline plans of works (OPWs) prior to carrying out work within a designation. However, s176A(2)(c) provides that a requiring authority need not submit an OPW if the territorial authority waives the requirement to do so.

As part of this application, the Transport Agency requests that the District Council waive the requirement for an OPW to be provided. Extensive information about the Project is being provided in this application, including the information normally required to be provided in the OPW under s176A(3), being:

a the height, shape, and bulk of the Project;

b the location on the site of the Project;

c the likely finished contour of the Project site;

d the vehicular access, circulation, and the provision for parking;

e the landscaping proposed; and

f the other matters proposed to avoid, remedy, or mitigate the adverse effects of the Project on the environment.

The Transport Agency is also providing a draft Construction and Environmental Management Plan (CEMP) with the application, which itself appends a suite of management plans (refer Volume 5 of this AEE). These will be finalised prior to construction (and updated any time as required thereafter) and will include further detail relating to the above matters.

2.3 Applications for resource consents

The Transport Agency is seeking resource consents from the Taranaki Regional Council (Regional Council) and the District Council for the construction, operation and maintenance of the Project, including the associated mitigation and offsetting activities. The relevant statutory documents under which resource consents are being sought are: the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES Soil); the Regional Fresh Water Plan for Taranaki (the Fresh Water Plan); the Regional Soil Plan for Taranaki (Soil Plan); the Regional Air Quality Plan for Taranaki (Air Quality Plan).

A list of the consents sought and the relevant plan rules is set out in Table 2.2 below. Overall, the activity status of the applications is discretionary.

For the avoidance of doubt, the Transport Agency is seeking resource consents under the rules below and any other rules which may apply to the Project, even if not specifically noted.

Table 2.2 – Resource consent requirements

Council Form	Activity type	Activity	RMA Ref	Rule / Reg.	Activity status D=Discretionary C=Controlled	Geographic Extent	Comment
Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES)							
9	Earthworks under the NES	Disturbance of contaminated soils	S9	Reg 11	D	Construction areas within proposed designation	
Regional Fresh Water Plan for Taranaki (Operative 2001)							
300	Take and use of surface water	Take and use of water for construction-related purposes	S14	Rule 16	D	Take from Mangapepeke Stream/tributary to Tongaporutu River, at location across SH3 at northern end of Project site; and from Mimi River at location near to the tie-in point to SH3. Takes are for dust suppression use.	Total combined daily take volumes are likely to range from 300m3/day to 450m3/day. No more than 10% of mean annual low flow
210	Damming of water from a stream or rivers	Temporary weir to dam stream and establish a small headpond for taking water.	S14	Rule 20	D	2 small temporary weirs to enable surface water takes at the locations described above, 1 in the Mangapepeke Stream and 1 in Mimi River	The weirs will be in the order of 1m in height.

Council Form	Activity type	Activity	RMA Ref	Rule / Reg.	Activity status D=Discretionary C=Controlled	Geographic Extent	Comment
210	Diversion of streams and rivers	Temporary and permanent diversion of watercourses within Project footprint	S14	Rule 20	D	Diversions within Project footprint, as indicated on drawings in Volume 2: Drawing Set	Sought for all stream diversions
320	Use of stream bed	Placement of temporary weir	S13	Rule 64	D	2 small temporary weirs to enable surface water takes at the locations described above, 1 in the Mimi River and 1 in Mangapepeke Streams	The weirs will be in the order of 1m in height.
201	Use of stream bed	Removal, demolition and decommissioning of culverts in stream beds established for construction access	S13	Rule 56	C	Temporary construction access tracks	Sought for removal of culverts at construction access tracks as track is removed on completion of work during site reinstatement.
201	Use of stream bed	Construction, placement and use of culverts in stream beds	S13	Rule 64	D	All culverts (and any other structures within streambeds) within Project footprint as indicated on drawings	Sought for all culverts, both temporary associated with construction access tracks and permanent culverts associated with road corridor.

Council Form	Activity type	Activity	RMA Ref	Rule / Reg.	Activity status D=Discretionary C=Controlled	Geographic Extent	Comment
						in Voume 2: drawing set	
201	Structures	Construction, placement and use of bridge over stream bed	S13	Rule 64	D	Bridge over Mimi swamp forest on southern approach	Sought for the construction and operation of the bridge associated with the southern side of the works.
500	Use of stream bed	Planting and/or removal of vegetation	S13	Rule 68	D	Restoration planting of diverted streams in Project footprint as indicated on drawings in the drawing set	Potential planting of streambed could occur associated with restoration of diverted streambeds
220	Disturbance of beds of streams and rivers	Realignment / modification of streams	S13	Rule 76	D	Diverted streams in Project footprint as indicated on drawings in the drawing set	All works associated with the realignment, modification or reinstatement of stream channels.
112	Discharge of contaminants to land and water	Discharges of stormwater and sediment deriving from soil disturbance activities during construction	S15	Rule 27	C	All construction areas within proposed designation	The Project will not comply with the area/volume limits set out in Rules 25 and 26. A site erosion and sediment control management plan (Construction Water Management Plan) is attached to the AEE in Volume 5.

Council Form	Activity type	Activity	RMA Ref	Rule / Reg.	Activity status D=Discretionary C=Controlled	Geographic Extent	Comment
500	Groundwater take and diversion [5]	Groundwater take and diversion	S14		D	Cut excavations along Project alignment and from Tunnel	Take and diversion of groundwater associated with seepage from cut excavations and from tunnel excavation. Total daily groundwater volumes are expected to be small.
	Regional Soil Plan for Taranaki (Operative 2001)						
230	Vegetation removal	Clearance of vegetation associated with construction activities	S9	Rule 2	C	Construction areas within proposed designation	The Project is expected to exceed the vegetation clearance limits in Rule 1. A site erosion and sediment control management plan (Construction Water Management Plan) is attached to the AEE in Volume 5.
	Regional Air Quality Plan for Taranaki 2001						
120	Discharges of dust	Dust associated with earthworks	S15	Rule 44	C	Construction areas within proposed designation	The Project earthworks exceed the threshold in Rule 43. A dust management plan is attached to the AEE in Volume 5.

[5] There is no regional rule that addresses the proposed take and diversion of groundwater that will occur as a consequence of the cut excavations along the Project alignment and construction of the tunnel. These activities require consent under Part 3 of the RMA, meaning that s87B(1)(a) of the RMA applies: it provides that where there is no relevant rule in the regional plan or any proposed regional plan, the application for consent for that activity must be treated as an application for consent for a discretionary activity

2.3.1 Land subject to resource consent applications

A schedule of properties to which these resource consents relate is included in Appendix B. Land within the existing SH3 designation where works are to be carried out as part of the Project is also subject to applications for resource consent.

2.3.2 Consent duration

The Transport Agency is seeking resource consents for a duration of 35 years from the date of commencement, in respect of all consents required for the long term operation of the Project. The expiry date for each consent will be detailed in the proposed consent conditions. This duration of consent reflects the level of investment being made by the Transport Agency in the Project works.

2.3.3 Draft resource conditions

Draft resource consent conditions have been proposed in Appendix D.

2.4 Lapse

Construction works are expected to commence in 2018 and be completed in 2021. However, the Project is large and complex and flexibility is required. As a precaution, an extended lapse period of ten years is sought:

- For the alteration to the designation, from the date the alteration of the designation is given effect to in the District Plan (refer RMA s184);
- For the resource consents, from the date of granting of the resource consents (refer RMA s125).

2.5 Permitted activities

The Project involves a small number of activities which are specified as permitted under the relevant statutory plans, as set out in Table 2.3 below.

Table 2.3 - Permitted Activities

Rule	Activity (as set out in relevant Plan)	Activity proposed / conditions	Summary of compliance
Freshwater Plan			
Rule 21	Discharge of water into surface water (excluding the wetlands listed in Appendix II).	Clean water diversions	Activities such as clean water diversions will lead to discharges of water into surface water across the Project area. The wetlands listed in Appendix II of the Plan do not include the Mimi swamp forest or any other areas within where discharges from the Project could occur.
Rule 23	Discharge of stormwater into or onto land or into water (excluding those wetlands listed in Appendix II) that is not provided for by Rules 25-27.	Discharge of stormwater into or onto land associated with operation of road once completed.	The operational discharge of stormwater will meet the permitted activity conditions. Stormwater will be treated in treatment wetlands. Discharge will be managed to ensure no significant erosion, scour or deposition will occur.
Rule 25	Discharges of stormwater and sediment deriving from soil disturbance activities of 1ha or less; • Into surface water (excluding those wetlands listed in Appendix II) and/or • Onto or into land in circumstances where	• The discharge shall not derive from an area of soil disturbance greater than 1ha; • The discharge shall not derive from a volume of soil disturbance greater than 3000m^3; • Soil stabilisation shall be undertaken as soon as practicable after the completion of the works; • Discharge to surface water shall contain less than 100gm^3 suspended solids;	Smaller areas of earthworks, including as part of preparatory works (refer Section 5.5.4), may be carried out in the early stages of the Project. Where these activities meet the conditions of Rule 25 of the Fresh Water Plan, they can be undertaken as a permitted activity.

Rule	Activity (as set out in relevant Plan)	Activity proposed / conditions	Summary of compliance
	sediment from soil disturbance may enter water	• Discharge to surface water shall not give rise to any or all of the following effects in the receiving water after reasonable mixing: (a) the production of any conspicuous oil or grease films, scums, or foams, or floatable or suspended materials; (b) any conspicuous change in the colour or visual clarity; (c) any emission of objectionable odour; (d) the rendering of fresh water unsuitable for consumption by farm animals; (e) any significant adverse effects on aquatic life.	
Rule 26	Discharges of stormwater and sediment deriving from soil disturbance activities of between 1 and 8ha; • Into surface water (excluding those wetlands listed in Appendix II) and/or • Onto or into land in circumstances where sediment from the soil	• The discharge shall not derive from an area of soil disturbance greater than 8ha; • The discharge shall not derive from a volume of soil disturbance greater than 24,000m^3; • The discharge shall not derive from soil disturbance which takes place between 1 May and 31 October; • The discharge shall not derive from soil disturbance which takes place within a defined urban catchment;	Smaller areas of earthworks, including as part of preparatory works (refer Section 5.5.4), may be carried out in the early stages of the Project. Where these activities meet the conditions of Rule 25 of the Fresh Water Plan, they can be undertaken as a permitted activity.

Rule	Activity (as set out in relevant Plan)	Activity proposed / conditions	Summary of compliance
	disturbance may enter water	• Soil stabilisation shall be undertaken as soon as practicable after the completion of the works; • Discharge to surface water shall contain less than 100gm^3 suspended solids; • Discharge to surface water shall not give rise to any or all of the following effects in the receiving water after reasonable mixing: (a) the production of any conspicuous oil or grease films, scums, or foams, or floatable or suspended materials; (b) any conspicuous change in the colour or visual clarity; (c) any emission of objectionable odour; (d) the rendering of fresh water unsuitable for consumption by farm animals; (e) any significant adverse effects on aquatic life.	

2.6 Additional considerations including under other legislation

In addition to the matters requiring consideration under the RMA, there are further statutory considerations that are relevant to the Project, as summarised in Table 2.4.

Table 2.4 – Other approvals required

Legislation	Relevance
Public Works Act 1981	Acquisition of land required for the Project.
Heritage New Zealand Pouhere Taonga Act 2014	Archaeological Authority under Section 44(a) (see further discussion in Section 10 of this AEE, in respect of the effects of the Project on archaeological values).
Wildlife Act 1953	Wildlife Act Authority associated with protected species
Freshwater Fisheries Regulations 1983	Application associated with the provision of fish passage in waterways affected by the Project.
Ngāti Tama Claims Settlement Act 2003	Conservation Act 1987 / Reserves Act 1977 covenant and New Zealand Walkways Act 2003 right of way easement over Ngāti Tama Treaty Settlement land need to be addressed.

Where other approvals are required they will be sought either in parallel to these RMA applications or at a time that will permit construction to commence in accordance with the Project's construction programme.

2.6.1 Ngāti Tama Treaty Settlement Land

Part of the land subject to the proposed designation is land vested in Ngāti Tama[6] through the Ngāti Tama Claims Settlement Act 2003 (Treaty Settlement Act).

The Ngāti Tama historical Treaty of Waitangi settlement was negotiated between the Crown and Ngāti Tama, and was completed in 2003 with the passing of the Treaty Settlement Act. Treaty settlement land is generally held, as in this case, by the iwi 'post-settlement governance entity' as general land, not as Māori land under Te Ture Whenua Māori Act 1993. The Ngāti Tama land was vested as 'cultural redress land' under the Treaty Settlement Act. Cultural redress land is generally vested back in the name of the iwi because it is land that the iwi have a particularly strong cultural and historical association with.

As part of the settlement, Ngāti Tama's title to the land was made subject to two registered interests; a conservation covenant and a right of way easement.

The conservation covenant is expressed to be pursuant to s27 of the Conservation Act 1987, and s77 of the Reserves Act 1977. The Covenant was entered into between Ngāti Tama and the Crown, acting through the Minister of Conservation, and provides (among

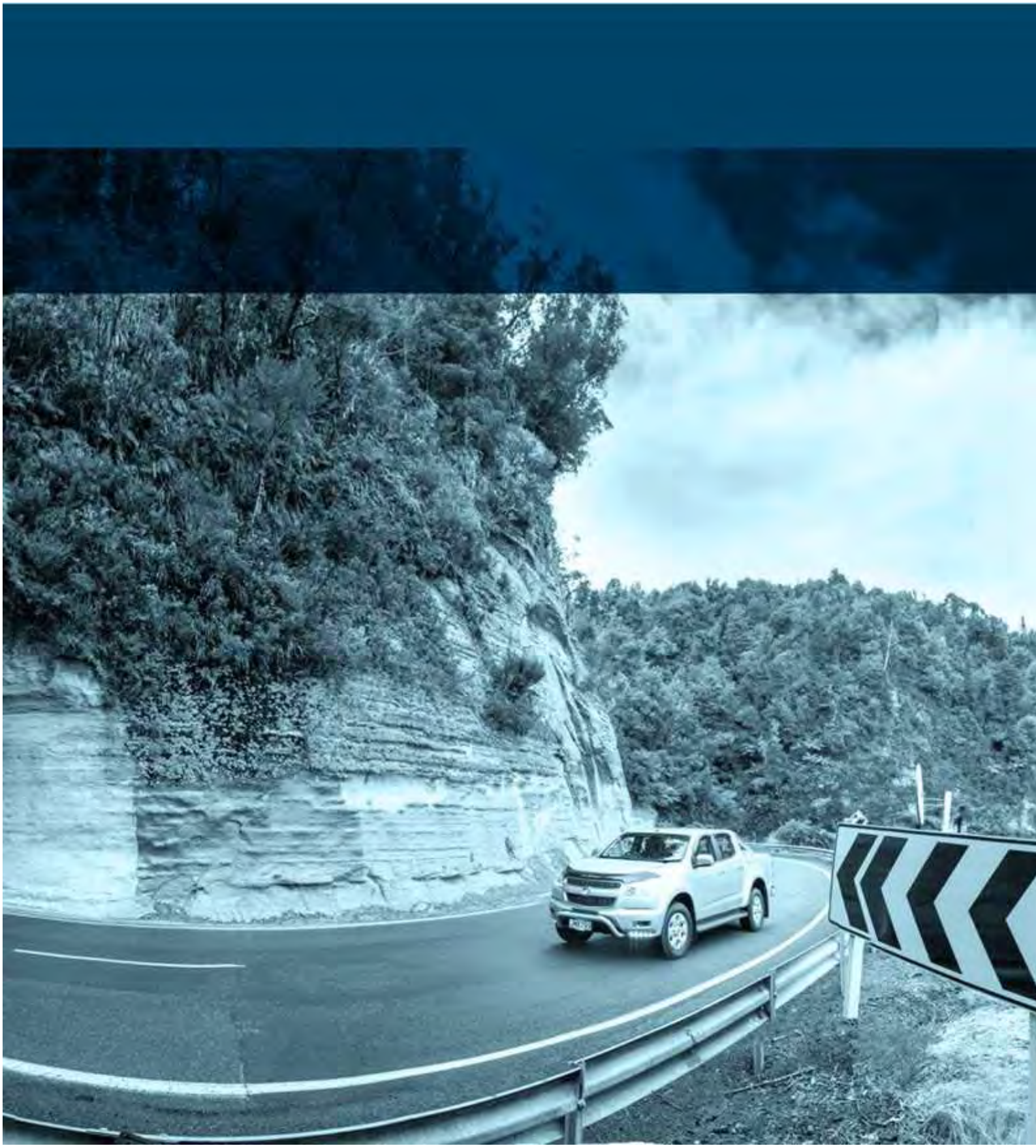
[6] The registered owner is Ngāti Tama Custodian Trustee Ltd

other things) for the continued preservation and protection of the conservation values associated with the land. Prior to its vesting in Ngāti Tama, the land had scenic reserve and conservation area status.

The right of way easement is expressed to be pursuant to the New Zealand Walkways Act 1990. The right of way easement was entered into between Ngāti Tama and the Crown, acting through the Minister of Conservation, granting public access over the area. The controlling authority for the walkway is the Minister for Conservation, and the easement is vested in the Walking Access Commission.

Before the Project is constructed, the Transport Agency will need to acquire the necessary property rights over the relevant portion of the Ngāti Tama land, including to have the conservation covenant and right of way easement uplifted (or otherwise to ensure those instruments do not hinder the construction of the Project). Discussions to that end between the Transport Agency, Ngāti Tama and the Department of Conservation (DOC) are ongoing. Those discussions may continue until after resource consents are in place and the NoR for the Project is confirmed.

Section 3 – Background to the Project



3 Background to the Project

3.1 Introduction

This section outlines why the Project is being undertaken by the Transport Agency. The following sections provide background on:

- The importance of SH3 to the communities and economy of Taranaki, and the issues and problems with SH3 at Mt Messenger that the Project will address;
- The history of developing the Project; and
- The benefits that the Project will provide.

This section also highlights the cultural significance of the area to Ngāti Tama and points to the natural environment values of the land through which the Project passes.

3.2 State Highway 3

Figure 3.1 shows the wider road network serving Taranaki. In this regional context, SH3 at Mt Messenger is remote, being some 57km north of New Plymouth and 184km south of Hamilton. The nearest towns are Te Kuiti to the north and Waitara to the south, 150km apart.

Where most of the 240km length of SH3 between New Plymouth and Hamilton traverses open country with average travel speeds between 75 and 85km/h, the local section of SH3 over Mt Messenger, however, is a markedly different standard of road, being characterised by a tortuous alignment, narrow widths, steep grades, and restricted forward visibility. At the summit of the Mt Messenger section, SH3 traffic passes through a short narrow tunnel.

Photo 3.1 – SH3 at Mt Messenger viewed from the southern approach

Photo 3.2 – Mt Messenger tunnel from the southern approach

The operational characteristics of the Mt Messenger section of the SH3 are summarised as follows:

- The present traffic volume using this section of SH3 across Mt Messenger is some 2300 vehicles per day;
- Of this total, about 20% is heavy commercial vehicles carrying the products and services that are key to Taranaki's economy;
- The highway has steep grades, a tortuous alignment, and restricted forward visibility;
- There are significant lengths with no or only limited shoulders that allow little room for error, breakdowns or passing;
- The narrow Mt Messenger tunnel physically limits the maximum size of loads able to be carried, and makes two-way use difficult;
- The route is vulnerable to interruption and closure by landslips and rockfalls; and
- With only very limited alternatives, the route has poor resilience, needing to be closed or severely restricted during events including breakdowns, landslips or crashes.

Fundamentally, the Mt Messenger section of SH3 is no longer fit for purpose. It is of an inadequate standard in relation to its strategic importance and function.

Figure 3.1 – Regional Land Transport Network

3.2.1 Strategic importance

SH3 to and from the north serves the key strategic purpose of connecting the Taranaki region through to the Waikato region and on to key economic and transportation hubs at

Hamilton, Tauranga and Auckland. The route connects Taranaki's oil and gas, agricultural, forestry and engineering sectors to markets in the north, and provides vital tourism linkages and access to health, cultural and other services. This connectivity is essential for the people and communities of Taranaki to provide for their social, economic, and cultural well-being.

SH3 through Taranaki is classified as a Regional Road in the Transport Agency's One Network Road Classification (ONRC) (Figure 3.2), being a road that makes a major contribution to the social and economic wellbeing of a region and connects to regionally significant places, industries, ports or airports. Regional Roads are also major connectors between regions.

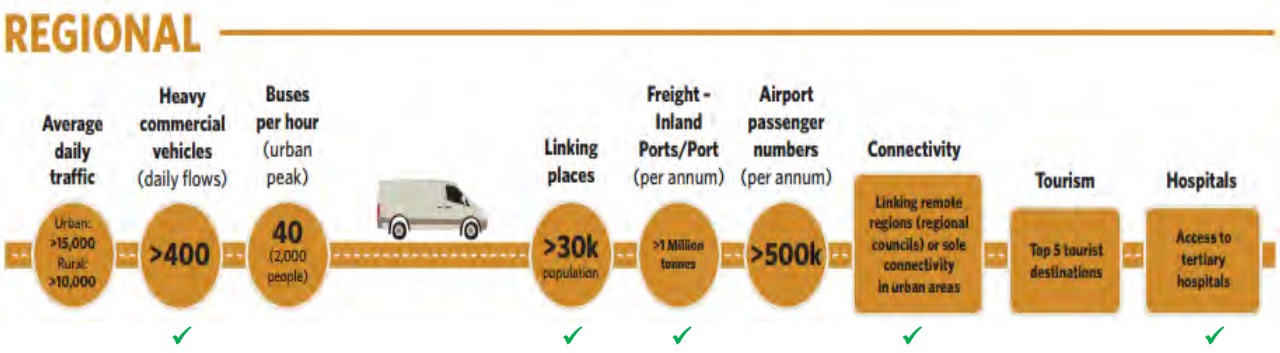


Figure 3.2 – ONRC Regional Road Classification

While linking Taranaki to the north, SH3 also provides a critical alternative route when both SH1 and SH4 are closed because of inclement weather, as occurred during the 14 July 2017 storm.

The Transport Agency carries a statutory duty as a lifeline provider to maintain its network to function at the fullest possible extent during and after an emergency. SH3 plays a significant role in this regard. The alternative route north from Taranaki is via SH43 through Whangamomona and on to SH4 at Taumarunui. This route is severely limited and not recommended by the vehicle rental, bus and heavy transport industries as a suitable and safe route (being narrow (1 lane in places), windy and partly unsealed). High Productivity Motor Vehicles (HPMV) are not permitted on SH43.

In this regional and national context, SH3 is of significant strategic value, being Taranaki's main connection to the north, and also providing a lifeline function when the wider North Island State Highway network is impaired.

3.2.2 Travel patterns

2016 weekday travel demands on the principal road corridors through Taranaki, measured in vehicles per day (vpd), are shown in Figure 3.3.

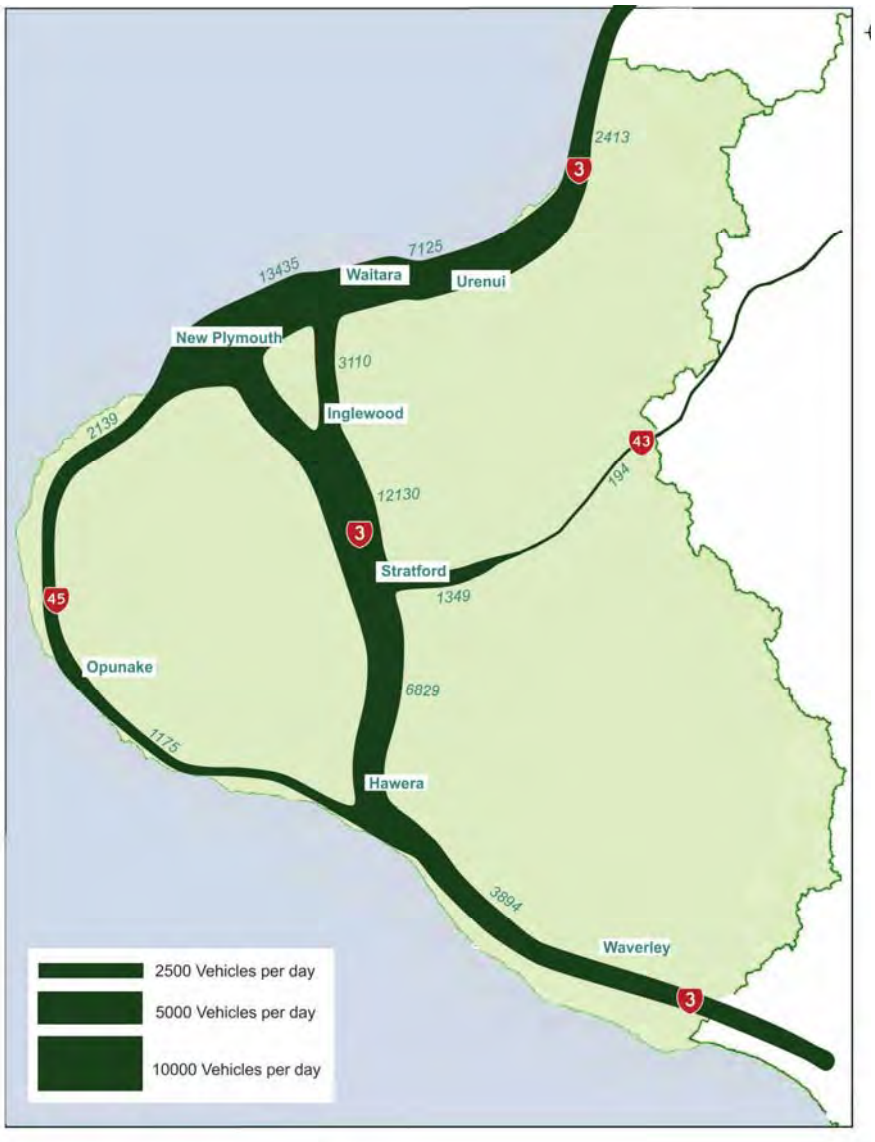


Figure 3.3 – 2016 Daily Travel Demands

This shows that the wider regional traffic volumes being carried on SH3 north of New Plymouth total some 7200 vpd at Waitara, and 2300 vpd at Mt Messenger. Of this total, about 20% of all the traffic is heavy commercial vehicles.

The long-term pattern of ongoing traffic growth on SH3 in the vicinity of Mt Messenger, as recorded at the permanent traffic counting station at Tongaporutu[7], is shown in Figure 3.4.

[7] located about 5 km north of Ahititi on SH3

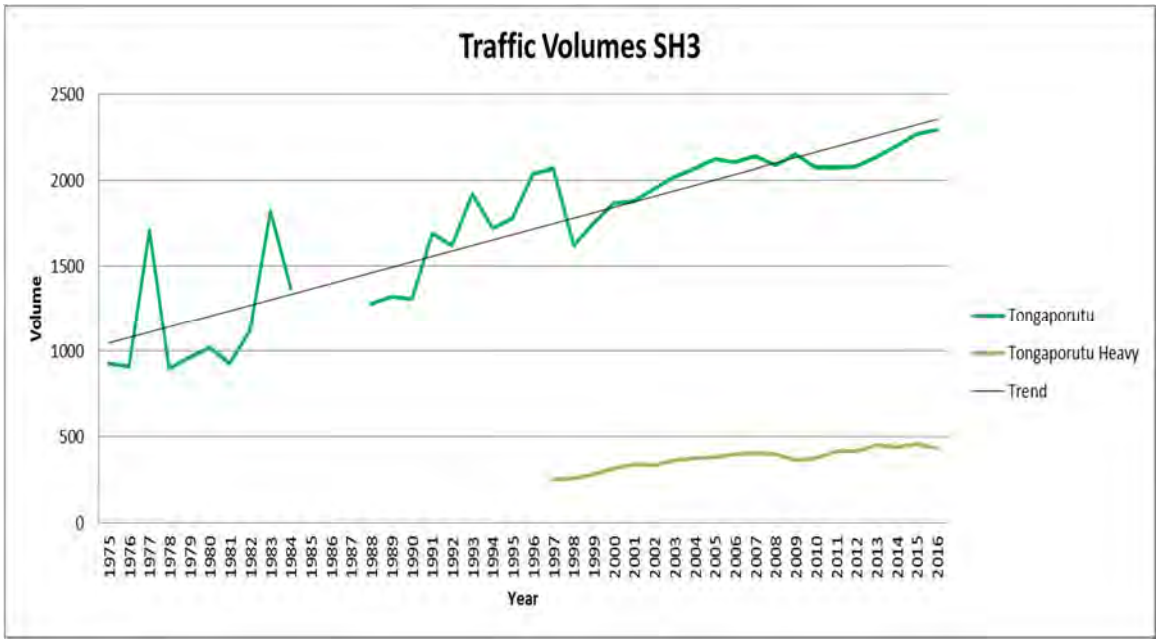


Figure 3.4 – 40 year pattern of Traffic Growth 1975 – 2015 SH3 at Tongaporutu[8]

This data shows the annual average daily volume of traffic using the Mt Messenger section of SH3 has increased over the past 40 years at a long term and ongoing rate of some 3% per annum.

Figure 3.4 also shows the number of heavy truck movements on the Mt Messenger section of SH3. The route is currently carrying an average 460 heavy truck movements a day. The majority of these movements are long-distance journeys carrying commercial loads and freight to and from Taranaki to destinations across the Waikato, and in Hamilton, Tauranga and Auckland.

Truck volumes have approximately doubled over the last 20 years. Since 2014 there is no longer container freight from Port Taranaki, and as such, Taranaki relies heavily on freight transport by road (95% of all freight movements from Taranaki[9]). Long haul carriers accessing Taranaki are predominantly B-trains and quad axle semi-trailers.

These patterns reflect the importance of this SH3 route in connecting the wider areas of Taranaki and its rural and industrial production through to the Waikato and the key economic and transport hubs of Hamilton, Tauranga and Auckland.

3.2.3 Economic importance of SH3

The Taranaki Region has a population of approximately 116,700, which is steadily growing (an increase of 8.8%[10] between 2006 and 2016). By 2043 the region's population is expected to have grown to 130,200.

Taranaki's key economic drivers are agriculture, manufacturing (including agricultural product processing and the heavy engineering industry) and the oil and gas industry. Over

[8] NZTA State Highway Traffic Count Data, 1975 – 2017

[9] National Freight Demand Study, March 2014

[10] Statistics New Zealand www.stats.govt.nz; NZ.Stat; Sub-national Population Estimates, (data extracted 17 July, 2017).

the period 2011 to 2016 Taranaki's GDP has grown at 1.1% per annum, and the region records the country's highest GDP per capita[11].

SH3 is critical for supporting the Taranaki economy and its ongoing growth and development. The importance of the corridor to the Taranaki economy is described in detail in Technical Report 4 in Volume 3, and summarised for key sectors as follows:

- *Oil and Gas Industry* – Outputs from Taranaki's oil and gas industry are transported by pipeline (natural gas) and road (LPG). For LPG shipments to the north, SH3 is a vital link as sea transport no longer occurs. Additionally, the oil and gas industry relies on SH3 for transporting infrastructure critical to exploration, and to the operation and maintenance of existing facilities.
- *Heavy Engineering Sector* – Taranaki's heavy engineering sector, made up principally of the machinery and equipment and fabricated metal products manufacturing groups, services the local oil and gas sector as well as customers elsewhere in New Zealand and overseas. The sector relies on road transport, utilising SH3 for access to markets and for delivery of materials.
- *Agricultural Sector* – The following are the major agricultural industries in Taranaki:
    - *Dairying*: The bulk of milk produced within the Taranaki region is processed at Fonterra's milk processing plants within the region[12] and the dairy products produced by these plants are sent by rail for export. However, to balance plant capacity and milk supply at different times of the season, SH3 is used for the transport of milk to plants in the Waikato region and non-containerised milk products[13], which are shipped to stores in the north. Other major agricultural industries are based at Kapuni (Ballance Agri-Nutrients).
    - *Sheep and beef*: The largest meat processing works in Taranaki are located at Eltham (Riverlands Eltham Ltd), Hawera and Waitotara (Silver Fern Farms Ltd). Silver Fern Farms estimate around 30% of the stock they process is transported via SH3 north of New Plymouth. Some chilled products are also trucked north using SH3 for export.
    - *Poultry*: Taranaki is the major poultry producing region in New Zealand. Poultry breeding, growing, processing and distribution are concentrated in northern Taranaki, with the major processing facility at Bell Block owned by Tegel Foods Limited (Tegel). Tegel is the second largest private sector employer (behind Fonterra) in the Taranaki region providing over 1,000 jobs. Over half of the output from Tegel's Bell Block plant is sent by refrigerated truck north via SH3.
- *Forestry* – SH3 north of New Plymouth is used to transport logs from the north of the region (and to a lesser extent from South Waikato) to Port Taranaki for export.

[11] 2016 GDP per capita: Taranaki $71,297, Wellington, $67,888, Auckland, $58,717. The national average was $54,178.

[12] Fonterra has milk processing plants at Whareroa (near Hawera), Eltham (2) and Kapuni and a coolstore at New Plymouth.

[13] About 20 return "curtainsider" truck journeys per day for 300 days per annum.

While tourism currently plays a relatively minor role within the region's economy, it has the potential to increase in significance. The Lonely Planet publication[14] recently listed Taranaki as the second best region in the world to visit. SH3 plays a vital role in connecting Taranaki to the tourism market.

3.3 Operational problems over Mt Messenger

As described above, the constraints associated with SH3 over Mt Messenger (refer Section 3.2) include:

- steep grades, a tortuous alignment, restricted forward visibility;
- significant lengths with no or only limited shoulders;
- a narrow tunnel at the summit; and
- a vulnerability to interruption of service by breakdowns, crashes, landslips and rockfalls, with very limited (and longer, for freight significantly longer) alternative routes north.

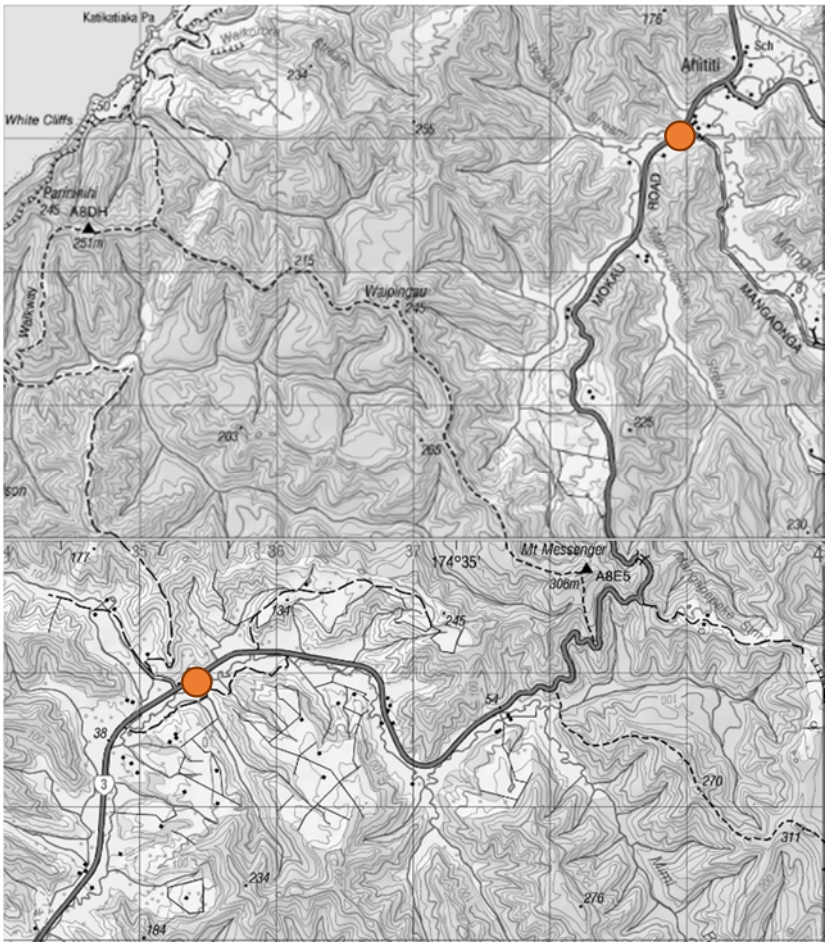


Figure 3.5 – Mt Messenger section of SH3

[14] Lonely Planet's *Best in Travel 2017* yearbook

These constraints translate to problems with safety, route resilience (road closures with no suitable alternatives), poor road geometry and low speeds. These matters are further explored below.

3.3.1 Safety

Technical Report 2 in Volume 3 of the AEE sets out a detailed analysis of road safety for the existing Mt Messenger section of SH3. The current road alignment means that the road environment is unforgiving, with driver mistakes leading to crashes, and subsequently deaths and serious injuries, as well as road closures. Over the five year period from 2012 to 2016, there have been no reported fatal crashes, 6 serious injury crashes, 8 minor crashes and 18 damage only crashes. Extended out to the last 10 years, the record includes 1 fatal crash.

A number of key factors have been identified as responsible for these crashes:

- 85% of all crashes are due to loss of control on bends/head on collisions. This percentage is high compared to the national rural state highway figures of 32%.
- 61% of crashes are due to poor handling. This compares to a national rural state highway figure of 30%.
- 39% of these crashes are due to drivers travelling too fast for the conditions, which compares to a national rate of 15%.

The existing carriageway configuration is typically a narrow, winding alignment with steep grades of up to 12% in some locations. In many locations, the roadside environment is characterised as having steep vertical cliffs on either side with the risk of an errant driver either colliding with, or falling down the adjacent hillside. These physical features contribute to driver frustration and the severity of the crashes along the corridor.

The Transport Agency's SafetyNet system rates the road and roadside environment from one star (most hazardous) to five star (safest road) on the basis that a more forgiving environment plays a significant part in reducing the severity of the crashes. The desired ONRC Customer Level of Service for a Regional Route such as SH3, including the Mt Messenger section, is 3 star. The existing road through Mt Messenger has a 2 star rating (refer to Figure 3.6), in part due to the following characteristics:

- The road has mostly 3.4m lane widths, with some narrower lanes in places;
- There is minimal sealed shoulder;
- There are very limited areas where overtaking can occur, either through formalised passing lanes and slow vehicle bays, or informal passing opportunities;
- There are no median barriers; and
- There are limited side barriers.

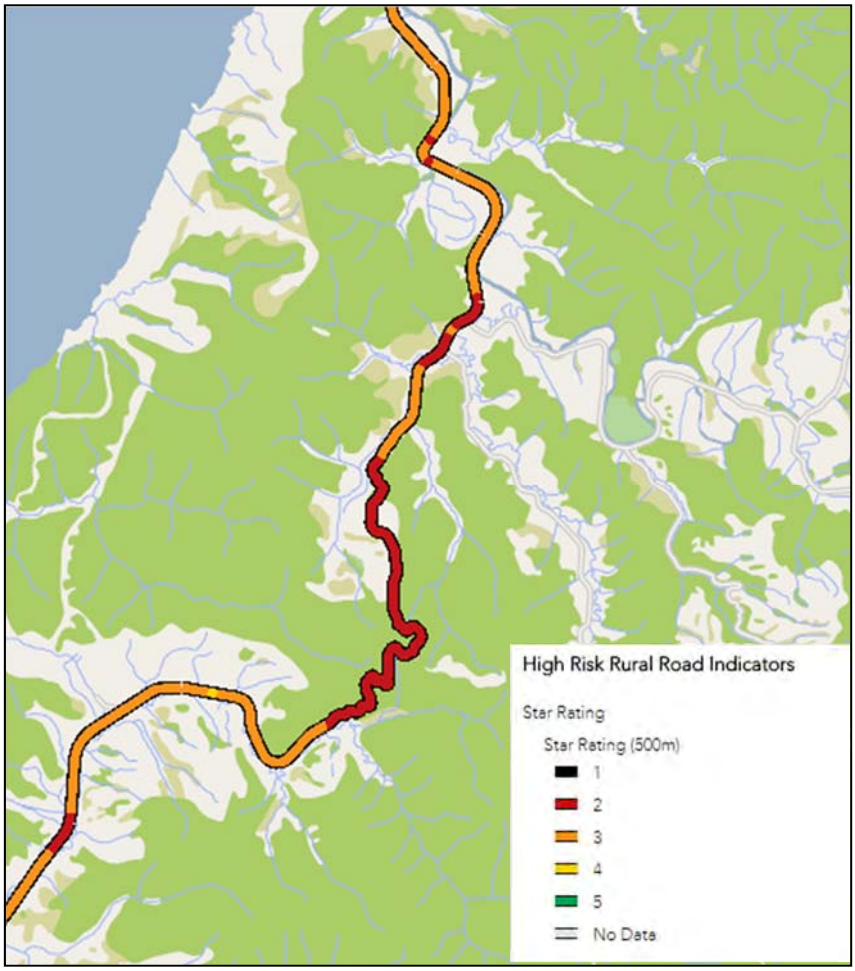


Figure 3.6 – Mt Messenger SafetyNet Rating

3.3.2 Road closures

Journey reliability is an important consideration for all road users, and particularly for those that need to have confidence in the network so that their choice of transport maximises their productivity. A detailed analysis of the vulnerability and reliability of the Mt Messenger section of SH3 is presented in Technical Report 1 in Volume 3 of the AEE.

Road closure records[15] show that, during the period 2011 to 2017, SH3 over Mt Messenger has been closed seven times. Causes include crashes (4 occasions), slips (2 occasions), and a tanker rollover (1 occasion) on a sharp curve. Considered against the Transport Agency's expected level of performance for the national highway network, closures of the Mt Messenger section of SH3 are of an unacceptable frequency and duration for a Regional Arterial road.

Travelling via SH3 between Hamilton and New Plymouth takes approximately 3 hours 10 minutes under normal conditions. If the road is closed along any portion of the route, there are very few detour routes that can be used.

[15] Records made available from TREIS (Traffic and Road Event Information System).

With advanced notice that the road is closed prior to leaving Hamilton or New Plymouth, the road user has alternative route options to choose from, although these increase the journey time by at least 30% (refer Table 3.1 below). However, if the user is unaware of this closure and has to turn around, the increase in journey time is significantly higher than 30%. This scenario is significant for heavy vehicles which encounter a closure on the Mt Messenger section of SH3 as there is no room to turn around and drivers must wait until the road is cleared.

Table 3.1 - Travel time on alternative routes

Alternative Route (if SH3 closed)	Travel time
SH43	4hr 30min: 1hr 45min longer (95km), not suitable for HPMV (unsealed in places and narrow, winding route alignment)
SH4	6hr 20min: 3hr 9min longer (243km)
SH1	6hr 55min: 3hr 45min longer (286km)

The shortest alternative route is via SH43, however, this is a narrow route with a winding alignment and is unsealed over a section, making it unsuitable as a major detour route. SH43 is not recommended by the vehicle rental, bus and heavy transport industries as a suitable and safe route. The alternative to SH43 (especially for freight) is the significantly longer route via SH4 and Wanganui, which doubles the travel time between Hamilton and New Plymouth.

3.3.3 Road geometry and travel speeds

As explained in Technical Report 2 in Volume 3 of the AEE, the existing Mt Messenger road has significant geometric deficiencies. These include:

- Numerous tight corners (with posted speeds down to 25km/h);
- Steep grades (up to 12% in parts);
- Narrow shoulders and frequent narrower lanes; and
- The narrow tunnel on a tight corner.

These geometric deficiencies restrict the speed of vehicles using the route (in particular, it is common for trucks to stop to enable one-way use of the tunnel). The existing average speed for the route is 56km/h, which is well below the average travel speeds on SH3 between New Plymouth and Hamilton of between 75 and 85km/h. These factors combined all contribute to driver frustration.

The existing Mt Messenger road geometry (associated too with the poor geometry at Awakino) means that SH3 is not an over-dimension vehicle route. Therefore, all over-dimension loads travelling north to or from the Taranaki region need to use SH1 which adds 3 hours 45 minutes to the journey time.

3.4 Developing a solution to the problems at Mt Messenger

3.4.1 History of developing the Project

Investigations into improvement of the SH3 corridor over Mt Messenger have been carried out by central and local government since the 1970s:

- 1970s & 1980s – Initial corridor investigations carried out by the Ministry of Works and Development for the National Roads Board;
- 2002 – Taranaki Regional Council established the SH3 Working Party in response to ongoing concerns about route security, safety and efficiency of the section of SH3 between Taranaki and Waikato. Out of this working group, Transit New Zealand (the pre-cursor to the Transport Agency) undertook an assessment of three options for the Mt Messenger route, including a coastal, western and eastern route (relative to the existing SH3 route). However, economic assessments confirmed that options did not meet the funding criteria in place at that time; and
- June 2014 – the Government announced funding to accelerate a package of regionally important State Highway projects through the ARRP. Taranaki was included as one of the regions eligible for funding to finalise investigation and consenting work for the SH3 Awakino Tunnel and Mt Messenger bypasses, and general improvements along this corridor of SH3.

In early 2016 the Minister of Transport announced that the Mt Messenger project would be funded by the Crown as part of the Government's ARRP. The announcement committed in the order of $90M funding and signalled a construction start date of late 2018/early 2019.

3.4.2 Project confirmation and options assessment

In March 2017 the Transport Agency appointed an Alliance (the Mt Messenger Alliance) to complete a detailed options assessment, and to progress design, consenting and construction of the Mt Messenger Bypass.

The Mt Messenger Alliance comprises: the Transport Agency, Downer Construction, Heb Construction, Opus International Consultants and Tonkin + Taylor. The Alliance has been given the name '*Te Ara o Te Ata*' by Ngāti Tama. Te Ata is a local taniwha which manifests on the coast of Parininihi (Whitecliffs) and is of cultural significance to Ngāti Tama.

The process for assessing options for the Project is summarised in Section 6 of the AEE, with the detailed options assessment reports presented in Volume 4. The process first involved consideration of a longlist of 24 options, with shortlisting and further consideration of 5 options. The 2017 options assessment process referred to, but ultimately superseded, a less detailed options process carried out in 2016.

Except for 'online' options within the Transport Agency's own SH3 land holding at Mt Messenger, all of the options considered traversed land to the west and east of SH3, which is land owned by Ngāti Tama. The options also traversed land owned by number of other private land owners.

Through the process of considering options the Transport Agency has consulted directly and closely with key stakeholders, which has included Ngāti Tama as landowner and mana whenua, other iwi including Ngāti Mutunga, and Ngāti Maniapoto, DOC, the private

landowners potentially affected by the options, and the SH3 Working Party. The Transport Agency has also undertaken wider public engagement throughout the development of the Project, including in respect of the five options shortlisted in 2017. The details of this consultation and engagement process are set out in Section 7.

On 31 August 2017 the Minister of Transport announced that the Transport Agency would be progressing the Project. The announcement confirmed the conclusion from the options assessment process, that the option to the east of SH3 would be progressed. The announcement confirmed that the Project will be funded through the Government's ARRP and National Land Transport Fund, with an estimated cost of $200M.

3.4.3 Mt Messenger Bypass Project Objectives

The Transport Agency's Project Objectives for the purposes of s171(1) of the RMA are:

1. *To enhance safety of travel on State Highway 3;*
2. *To enhance resilience and journey time reliability of the state highway network;*
3. *To contribute to enhanced local and regional economic growth and productivity for people and freight by improving connectivity and reducing journey times between the Taranaki and Waikato Regions; and*
4. *To manage the immediate and long term cultural, social, land use and other environmental impacts of the Project by so far as practicable avoiding, remedying or mitigating any such effects through route and alignment selection, highway design and conditions.*

These objectives respond to the strategic importance of SH3 and to the transportation problems that are currently experienced on the Mt Messenger section of the highway. They also reflect the important cultural and natural environment values associated with the Mt Messenger area, which are outlined in the sections below and described in detail in Section 8 of the AEE.

3.5 Benefits to be delivered by the Project

In delivering the Project and the above objectives, the following fundamental benefits are expected:

- Enhanced safety conditions on SH3 at Mt Messenger.
- A more resilient highway and enhanced journey time reliability.

This will in turn contribute to enhanced local and regional economic growth and productivity.

The Project will traverse areas with high cultural and natural environment values. Constructing and operating the new highway will result in effects on these values. These effects, and the need to avoid, remedy, mitigate or offset them was identified at the start of the Project. The Transport Agency has worked in close collaboration with Ngāti Tama. The Project has been developed with significant cultural and ecological mitigation and offsetting at its core. Delivery of the Project is also expected to result in positive environmental, cultural and social outcomes.

The assessments described in Section 9 of the AEE and in Technical Reports 1 to 4 illustrate how these benefits are being realised in more detail. The following sections summarise key positive outcomes delivered by the Project.

3.5.1 Safety benefits

The Project will result in significantly enhanced safety conditions on SH3 over Mt Messenger. Benefits are summarised in Table 3.2 below.

Table 3.2 – Safety Benefits

Benefit	Measure
Improved Safety Star rating	• Increase in safety Star Rating from 2 to 3 • The new road will be in context with the adjoining sections of SH3 to the north and south, which will benefit all road users, including tourist drivers who, in particular, may be caught unaware by the form and nature of the current Mt Messenger highway
Improved forward visibility	• Existing curves limit forward visibility limited to 30m – 40m on some corners • New road design provides visibility suitable for 100km/hr operating speed throughout
Passing opportunities	• Existing: Substandard passing lane (470m), climbing lane (120m) • Future: Improved forward visibility, increased passing opportunities throughout full length of Project
Reduced exposure	• Reduced length (existing SH3 over Mt Messenger is 7.4km while the new highway will be 6km)
Improved Geometry	• Eased curves with no curves requiring reduced speed advisory signs. • Flatter grades: o Existing max 12%, Average 8% (4.8km above 6%) o Future: max 7.5% (1.6km above 6% for new route) • Wider shoulders (current 0.5-1.5m, new 1.5m throughout (1.2m in tunnel)) • Wider lanes from 3.4m (in localised places narrower) currently, to 3.5m throughout for the new road • Side barriers provided throughout for the new road • The new road will enable safe travel throughout (current constraints such as the tunnel result in observed behaviour where vehicles stop in the lane to give way to oncoming traffic)
Reduce Driver Frustration	• Road Star rating and geometry will be in context with adjoining sections of SH3 creating a 'no surprises' environment • Improved journey time reliability and journey times
Safer connections to recreational walking tracks	• Improvements to existing unsafe vehicle stopping, pull-off and parking for accesses to the walking tracks.

Benefit	Measure
Better provision for active modes	• The current low volume/confident active users is not expected to change but wider shoulders and improved sight distances of the Project enhance safety.

Overall, the Project will enable the current SafetyNet Star Rating 2 to be improved to Star Rating 3, greatly improving the safety of this section of SH3, and importantly also ensuring the safety characteristics are in keeping with driver expectations throughout the adjoining corridor.

3.5.2 Resilience and journey time benefits

Resilience is a measure of the ability of systems to proactively resist, absorb, recover from, or adapt to, disruption within a timeframe that is tolerable from a social, economic, cultural and environmental perspective[16] (Money et al., 2017). In the context of the Project, disruptions may result from operational issues (road closures dues to crashes) as well as natural events (e.g. landslips, floods, earthquakes). As described in Section 3.3.2 above, SH3 at Mt Messenger does not currently meet the reliability standards expected for a Regional Road.

The Project will improve the resilience of the Mt Messenger section of SH3, and therefore the robustness of the broader regional transport network linking Taranaki to the north. This improvement will result from enhanced resilience to natural hazards, along with enhanced safety conditions resulting in fewer crashes and an improved ability to recover from incidents.

Enhanced resilience will in turn lead to significant improvements in the reliability of journey time to road users of SH3. Journey reliability is important for all road users, and particularly for those members of the community that need to have confidence in the network so that their choice of transport maximises their productivity. The reliability of the transport network is an important factor underpinning economic performance.

The Project will also deliver journey time savings for all vehicles (of 4 to 5 minutes), and for trucks in particular (saving 6 minutes 40 seconds on average).

These factors (combined with other projects currently being consented or completed) will significantly improve the connectivity of freight to and from the Taranaki region, appropriately reflecting the Regional Route classification of SH3.

[16] Money, C; Reinen-Hamill, R; Cornish, M; Bittle, N; and Makan, R; Establishing the value of resilience. NZ Transport Agency research report 614. 64pp, 2017.

Table 3.3 – Enhanced resilience and journey time reliability benefits

Benefit	Measure
Less closures	• Current SH3 has suffered six closures >2 hours in the last five years at a level more frequent than acceptable by the ONRC guidelines. The new road, with its wider lanes and shoulders and better design will minimise the potential for such closures • The new road will require less maintenance
Faster recovery	• The current road has poor geometry, narrow shoulders and carriageway. The new road will provide vehicles with greater opportunity to pass a vehicle which has broken down / crashed • Shorter/faster route will enable emergency services to attend events more quickly
Improved journey time reliability	• As a result of fewer planned (maintenance) and unplanned (slips, crashes) closures • Improved drainage/stormwater will reduce amount of closures • For freight (in connection with wider SH3 programme of work) improved network form from Taranaki through to Waikato, Tauranga and Auckland
Reduced driver frustration	• Greater certainty over road remaining open
Reduced journey times (Local)	• Reduced length: 7.4km to 6km • Reduces free-flow travel times: o 3:36min (saving 4:05min) (Light Vehicles) o 6:28min (saving 6:40min) (Heavy Vehicles)
Reduced journey times (Closures)	• Refer Table 3.1for additional journey time if SH3 closed: o Alternative routes add significant time to journeys • Improved road reduces risk/number of closures (see resilience outcomes above)
Reduced journey times (Over Dimension (OD) loads)	• SH3 is not currently suitable for OD loads due to dimension constraints (including the Mt Messenger and Awakino tunnels). The new road, along with other planned SH3 upgrades, will enable the route to accommodate OD loads • The current OD route using SH1 adds an extra 3hr 45min to the journey from Hamilton to New Plymouth
Reduced driver frustration	• Reduced travel times • Greater passing opportunities along full length of bypass • Improved journey time reliability
Increased speeds	• Increased average speeds (77.6km/hr compared to the existing average of 56km/hr)

3.5.3 Economic benefits

The contribution of the Project to enhanced local and regional economic growth and productivity is described in Technical Report 4 (Volume 3 of AEE). The connectivity that SH3 provides to and from the north is essential for the people and communities of Taranaki to

provide for their social, economic, and cultural well-being. SH3 links Taranaki through to the Waikato and on to key economic and transportation hubs at Hamilton, Tauranga and Auckland. The route connects Taranaki's oil and gas, agricultural, forestry and engineering sectors to markets in the north, and provides vital tourism linkages and access to health, cultural and other services.

The Project will lead to reductions in vehicle operating, travel time and road accident costs, along with improvements in route resilience, all benefitting local residents and businesses and visitors to Taranaki and the Taranaki economy.

Construction of the Project will bring additional specific benefits, including construction related expenditure, employment and income for Taranaki businesses and residents. Construction is expected to add 74 additional jobs, $5.5 million per annum in additional wages and salaries and $33.1 million per annum in additional expenditure on goods and services purchased from local Taranaki businesses.

Table 3.4 - Economic benefits

Benefit	Measure
Lower Vehicle Operation Costs (VOC)	• The new road will reduce grades, have a shorter length and height climbed resulting in lower vehicle operating costs (VOC). • Higher average speeds.
Lower VOC (during closures)	• Alternative routes add significant length with associated time/fuel costs. The Project will minimise future closures of SH3 at Mt Messenger.
Freight	• Significantly reduced journey times for OD loads which currently are unable to use SH3. • Significantly reduced journey times for heavy vehicles which, combined with other SH3 and wider network upgrades, will significantly reduce the Wiri – New Plymouth freight journey time. • The new road will provide the ability for trucks to turn around in unlikely event of road closure.
Reduced costs to communities	• Present value cost reductions of: o $44.8 million travel time savings. o $19.9 million vehicle operating costs. o $11.3 million accident costs. o $13.7 million road resilience benefits. o $1.0 million carbon emission reductions. o $1.2 million road maintenance costs.

Benefit	Measure
Wider economic benefits	• Increased attractiveness of Taranaki for business and residential development. • Improve accessibility for visitors. • Increased levels of economic activity. • Transportation industry benefits through enabling reliable return New Plymouth–Auckland journeys within daily maximum allowable driving hours, greater reliability in planning journeys to avoid congestion. • Enabling transportation of over-sized loads for oil and gas and heavy engineering industries.
Direct Project construction economic benefits	• Per annum benefits of: o 74 additional jobs. o $5.5 million in additional wages and salaries. o $33.1 million in additional expenditure on goods and services purchased locally.

3.5.4 Environmental, cultural and social benefits

While the Project will result in disturbance of habitats and the flora and fauna associated with the Project footprint, the Project will ultimately deliver significant ecological benefits through a substantial mitigation and biodiversity offset package. This package is a core part of the Project. It includes pest management in perpetuity (or until technology has changed) over a 560ha area, along with restoration plantings, and will achieve significant positive biodiversity outcomes that will continue on into the future. These benefits are described in detail in Technical Report 7h and in Section 9.8.9 of this AEE.

Environmental, cultural and social benefits are summarised in Table 3.5.

Table 3.5 – Environmental, cultural and social benefits

Benefit	Measure
Ecological benefits	• Pest management over an area of 560ha. Pest management will focus on controlling rats, possums, mustelids, feral cats, feral pigs and goats to very low densities in perpetuity (or until such time as pest management in the form we know of it today is no longer necessary to sustain the levels of biodiversity created), and will exclude all farm livestock. • Restoration planting of 6ha of swamp forest. • Planting of 200 seedlings of the same species for every significant tree that has to be felled, approximately 3000 trees. • Riparian planting and exclusion of livestock from approximately 9km of stream banks. • Restoration planting of 9ha of disturbed areas.
Wider environmental benefit	• Reduced CO_2 emissions from vehicles through shorter length, reduced climb and flatter grades.

Benefit	Measure
Cultural benefits	• Ongoing engagement with Ngāti Tama to ensure their aspirations for the Project are incorporated into the Project design and its construction and operation.
Social benefits	• Way of Life: o Greater resilience and enhanced journey time reliability for people and businesses • Economic growth and development: o Increased attractiveness of Taranaki for business and residential development o Improve accessibility for visitors o Increased levels of economic activity o Enhancing regional liveability which retains skills and services in the region o Improved access and journey experience to essential facilities in the Waikato, such as Waikato hospital (the nearest tertiary hospital) • Wellbeing: o Improvement in the journey experience through reduction in driver frustration o Improved response times for emergency services leading to improved outcomes and reduced perception of isolation

3.6 Ngāti Tama

Ngāti Tama are the iwi and exercise mana whenua for this part of Taranaki. [17]

For many generations Ngāti Tama have occupied, defended, and exercised mana over the land between the Mokau River and southward to the Titoki Stream that flows into the sea at Waiiti Beach. In Ngāti Tama tradition, Ngāti Tama descend from Tamaariki, Rakeiora, and Whata.

The Whitecliffs and Mt Messenger area is known to Ngāti Tama as Parininihi. Parininihi has been referred to as 'Te Matua Kanohi o Ngāti Tama Whanui', 'The parent face of Ngāti Tama'. It is an area of great cultural significance to Ngāti Tama.

The Ngāti Tama Treaty Settlement provided for the redress of historic breaches of Te Tiriti o Waitangi, and included commercial and cultural redress items. Part of this redress was the return of the Parininihi lands to Ngāti Tama (refer Figure 3.87), which provides the base for restoring Ngāti Tama sustenance and connection to the whenua, awa and moana.

[17] Ngāti Tama have provided the Transport Agency with a Cultural Impact Assessment report (CIA) on the Project. The CIA highlights the significant cultural values in relation to the wider Parininihi area and the Project alignment. The CIA may be updated as the Project progresses and as Ngāti Tama's cultural aspirations are addressed.

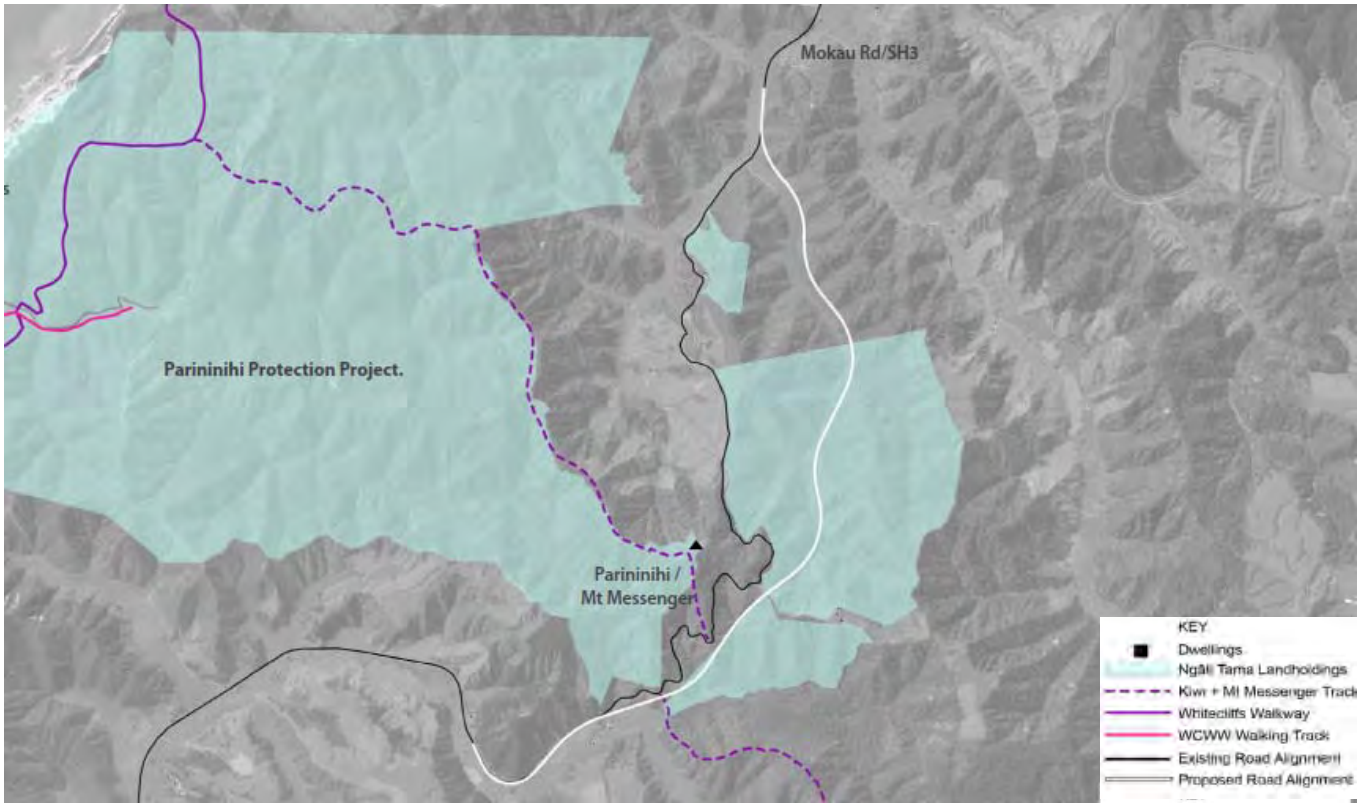


Figure 3.7 – Ngāti Tama land associated with the Project area

In addition, the Treaty Settlement Act acknowledges the cultural, spiritual, historical, and traditional association of Ngāti Tama with the wider 'Mt Messenger conservation area' and provides for a statutory acknowledgement over this area area (refer Figure 3.8).

The significance of the Parininihi land to Ngāti Tama is clearly acknowledged by the Transport Agency. It is recognised that the Mt Messenger Bypass traverses the eastern part of this land and that this will result in significant cultural effects. The Transport Agency has consulted directly and worked constructively with Ngāti Tama through the process of developing the Project. This has included through the options evaluation process and in developing the designs that these RMA applications seek to enable. Ongoing engagement with Ngāti Tama will occur as the Project progresses to ensure that Ngāti Tama's aspirations are incorporated into the Project development and design and on through construction and operation. Ngāti Tama have noted that they have no complaint about the consultation undertaken by the Transport Agency and the ability this has provided for Ngāti Tama to provide input and cultural views on the Project.

Ngāti Tama have led the protection and restoration of biodiversity values and the removal of pests from the Parininihi land to the west of SH3. Through the Tiaki Te Mauri o Parininihi Trust, this work has been ongoing since the late 1990s. An aspiration of the Trust has been to re-establish a self-sustaining population of kōkako within the pest controlled area of the Parininihi land. This was progressed in mid-2017 with the release of 20 kōkako to the west of SH3.

The ecological mitigation and biodiversity offset package proposed by the Transport Agency will lead to significantly enhanced biodiversity values on the land to the east of SH3, significantly expanding the area of pest management around the Parininihi land. The Transport Agency will continue to consult with Ngāti Tama on the development and detail of this package.

3.7 Natural environment values

The natural environment values of the Parininihi area are described in the ecology Technical Reports (Technical Reports 7a – 7h) and in the landscape assessment Technical Report (Technical Report 8a).

The Parininihi land to the west of SH3, which was previously known as "Whitecliffs Conservation Area" comprises a large tract (1,330ha) of mainly primary forest centred on the Waipingao Stream catchment (refer Figure 3.8). The area encompasses a continuous forest sequence from coastal through to the lowland area of Mt Messenger, and is of ecological significance. This area to the west of SH3 has been described as "the best example of primary coastal hardwood-podocarp forest on the west coast of the North Island"[18]. The ecological health and integrity of the area has improved significantly with the pest management work undertaken by the Tiaki Te Mauri o Parininihi Trust. As noted in Section 0, kōkako have recently been released into this area.

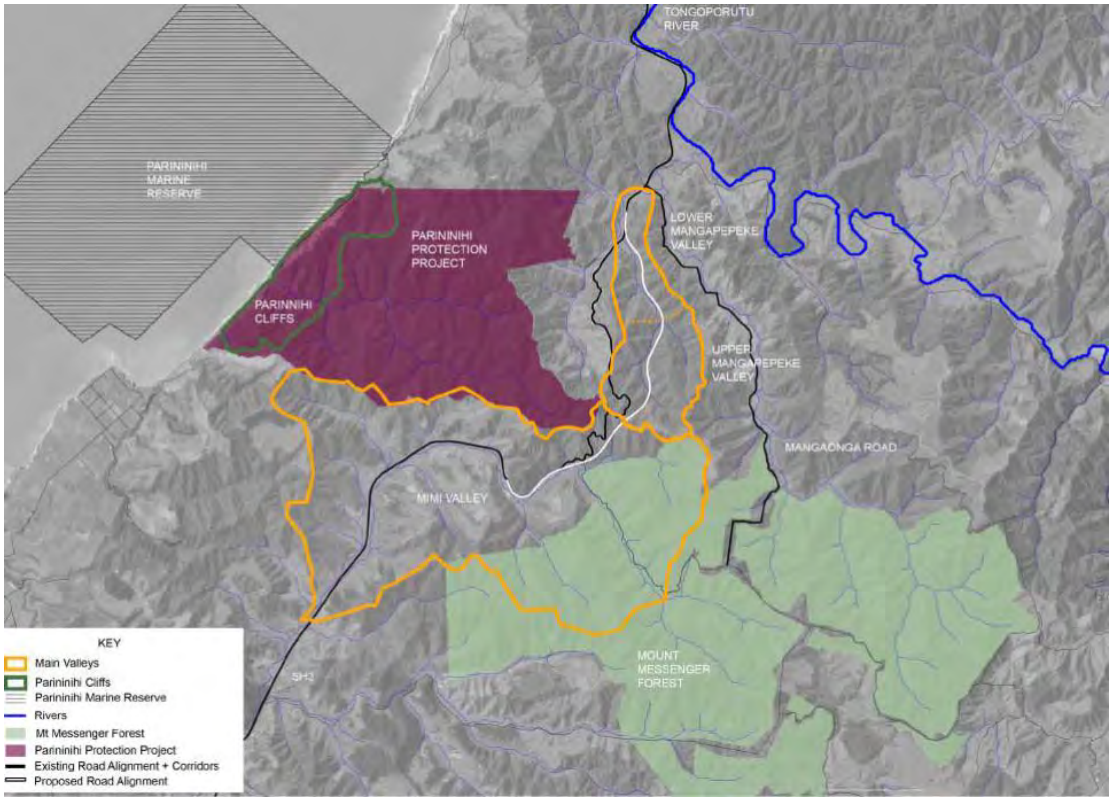


Figure 3.8 – Natural environment features

[18] Bayfield, M.A., Courtney, S.P, Wiessing, M.I. 1991. North Taranaki Ecological District. Survey report for the Protected Natural Areas Programme No. 16. Department of Conservation, Wanganui

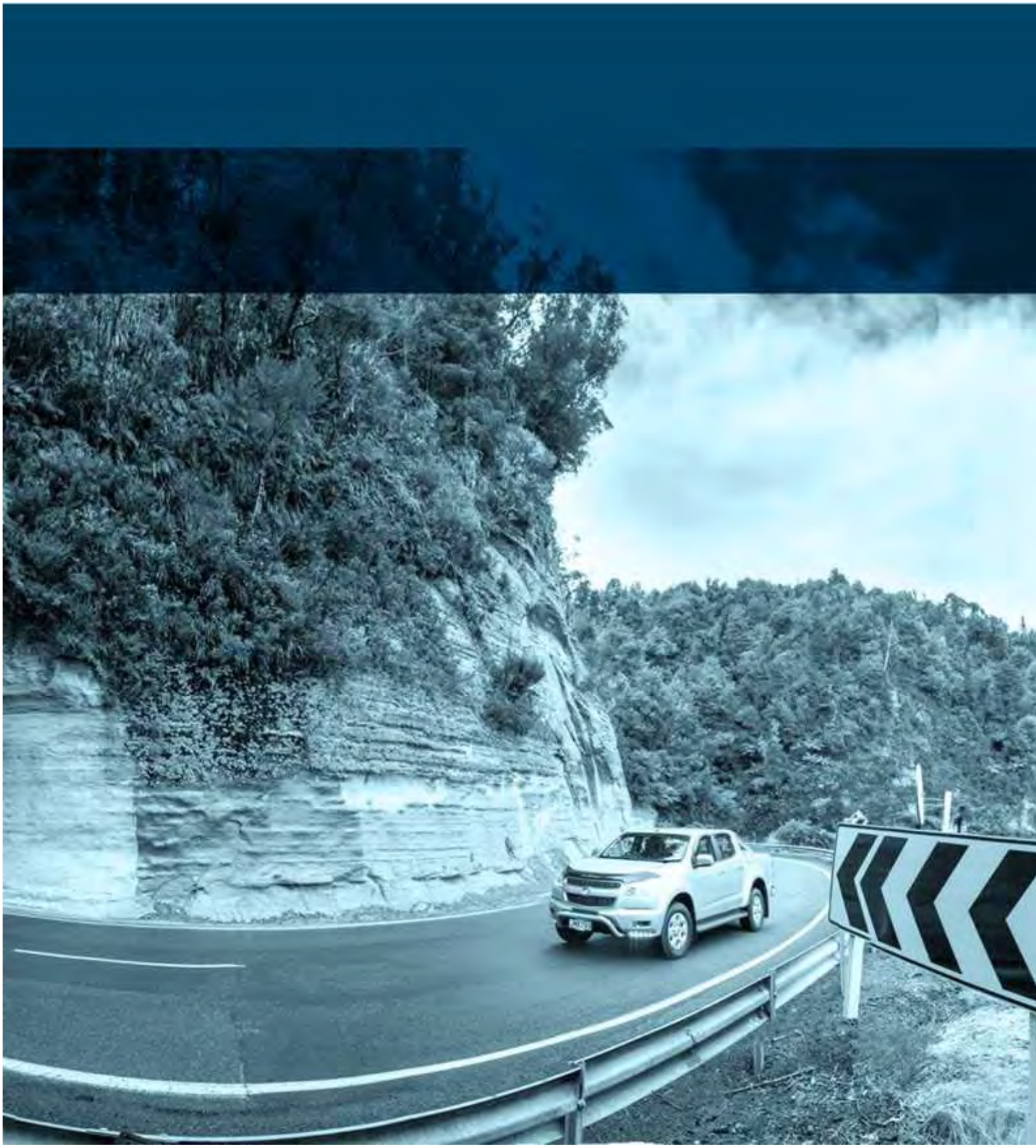
The Parininihi land to the west of SH3 has been mapped as a Regionally Significant Landscape in the Operative New Plymouth District Plan. The values of this area are outlined in Technical Report 8a.

The Project avoids all of the Parininihi land and associated natural environment values to the west of SH3.

The Ngāti Tama land to the east of SH3 primarily comprises forest, with some pasture farmland. The forest to the east of SH3, including the DOC Mt Messenger Conservation Area forest, is approximately 3,098ha in area and originally would have been very similar to the western part of Parininihi. However, this land has not had consistent pest management and consequently, the ecological condition of this area is poorer. Vegetation communities are more modified and have been affected by stock grazing, browser pressure, fire and logging.

The area of greatest ecological significance in immediate proximity to the Project alignment is the intact swamp forest and wetland areas in the valley floor of the northern Mimi River catchment (the Mimi swamp forest). The valley floor sequence within the northern tributary of the Mimi River represents a full range of swamp forest, scrub and non-forest wetland communities. This area will be avoided by the Project footprint, although the 120m bridge will span a tributary to part of the wetland.

Section 4 - Project description



4 Project description

4.1 Introduction

The Project involves the construction and ongoing operation of a new section of State Highway 3 (SH3), generally between Uruti and Ahititi to the north of New Plymouth. This new section of SH3 will bypass the existing steep, narrow and winding section of highway at Mt Messenger. Specifically, the Project comprises a new section of two lane highway, approximately 6km in length, located to the east of the existing SH3 alignment.

The Project will include the following key design aspects:

- A two lane road alignment (one traffic lane in each direction) with tie-ins to the existing SH3 corridor at the north and south of the alignment;
- A tunnel (approximately 240m in length) through the ridgeline near the existing Mt Messenger rest area, with an associated tunnel control building and emergency water-supply tanks;
- A 120m long bridge over a wetland on a tributary of the Mimi River;
- Ten rock cuttings up to a depth of about 60m and along a combined distance of approximately 2.6km (including the tunnel portals);
- Thirteen earth embankments up to about 40m in height (but typically less than 5m high), along a combined distance of approximately 2.5km;
- Retaining walls and MSE embankments; and
- Stormwater treatment and attenuation facilities (including stormwater retention ponds, swales and road drainage network).

These design aspects are discussed in further detail within this section. This section of the AEE should be read in conjunction with the drawing set in Volume 2[19].

A fundamental part of the overall Project is a package of mitigation and biodiversity offsets. The biodiversity offsets include pest management over a substantial area (560ha) of native forest, along with restoration planting. The details of the mitigation and biodiversity offset package are described in Technical Report 7h (Volume 3) and Section 9.8.9, and are summarised in Section 4.2.3 below.

4.2 Design Philosophy

4.2.1 Design Approach

The Project will be a new, two lane, dual carriageway over a length of 6km (including the tie-ins to the existing SH3 and improved sight lines to a curve south of the southern tie-in), located generally to the east of Mt Messenger and the existing SH3 alignment.

The design approach for the Project has been to:

- Design the Project to the relevant design standards;

[19] It is noted that the Project has been developed to a consent level design stage. As the design and investigation process continues it is possible that some design details may change.

- Enhance the resilience of the State Highway network;
- Adopt a whole of life approach to Project design, operation and maintenance requirements;
- Maintain connectivity provided by existing infrastructure, including property and farm access as appropriate;
- Acknowledge the cultural significance of the area to Ngāti Tama and provide for their kaitiaki responsibilities in the design process, as described in Section 4.2.2 below (and in Section 9.7); and
- Avoid, remedy, mitigate or offset associated adverse effects on the environment. In this regard, a fundamental part of the Project has been to avoid effects where this is possible (e.g. route selection), and then to mitigation and offset any residual effect (refer Section 4.2.3 below).

The existing section of SH3 that will be bypassed by the new alignment will likely become a local road, managed by New Plymouth District Council (refer Section 4.18).

4.2.2 Ngāti Tama cultural inputs

The Transport Agency has been working closely with Ngāti Tama in developing the design for the Project, with a focus on avoiding, mitigating or offsetting effects on cultural values, landscape and ecological values. This will continue over the duration of the Project.

As outlined in Section 0 and 8.4.1 of this AEE, the wider Project area is culturally significant to Ngāti Tama. The Project presents a number of unique design opportunities to develop the cultural narrative for the Project, including developing appropriate means of cultural expression within the integrated design treatments of elements, such as the tunnel and the bridge crossing over the Mimi swamp forest. Interpretation and celebration of the cultural landscape narrative is a key design principle that will continue as part of the design process for the Project.

'Recognising culture' and the human relationship to the land and the environment, including continuing the partnership with Ngāti Tama through the detail design, construction and operation of the Project, will provide opportunities for Ngāti Tama to express their mana whenua and kaitiakitanga responsibilities. Section 9.7 and 9.9 outline this in more detail.

4.2.3 Mitigation and biodiversity offset package

As noted above, a key part of the Project design is a comprehensive mitigation and biodiversity offset package. This is described in detail in Technical Report 7h (refer Volume 3) and in Section 9.8.9. The mitigation and biodiversity offset package is focused on achieving a net gain in biodiversity in the medium term following the completion of construction. The package comprises:

- Intensive, multi-species pest management over an area of 560ha[20], with the focus being on controlling rats, possums, mustelids, feral cats, feral pigs and goats to very low densities, and fencing to exclude livestock. This management will continue in

[20] This area comprises a core area of 222ha and a buffer area of 340ha, giving a total area of 562ha. 560ha has been used through the application documentation as an approximation for the overall pest management area.

perpetuity (or until such time as pest management in its current form is no longer necessary to sustain the levels of biodiversity created).

- Restoration planting of 6ha of swamp forest.
- Planting of 200 seedlings of the same species for every significant tree[21] that has to be felled.
- Riparian planting and livestock exclusion of approximately 8.9km of existing stream. Planted riparian margins of at least 10m each side of the channel will be created.
- Restoration planting of all secondary scrub areas along the footprint plus temporary construction areas such as access tracks and storage areas that retain conditions suitable for planting, being approximately 9ha in total.

In addition, the Transport Agency will rehabilitate fill areas with early successional plant species, stream diversion channels with riparian species, and enhance steep cut faces to promote natural plant regeneration where this is feasible.

Pest management and swamp forest restoration offsets have been developed in accordance with the New Zealand Government's *Guidance on Good Practice Biodiversity Offsetting in New Zealand* (August 2014), which is consistent with international guidelines for biodiversity offsetting.

The locations where the mitigation and biodiversity offset package will be implemented are shown in Technical Report 7h and on the landscape drawings in Volume 2 (Drawings MMA-DES-UDL-CO-DRG-1000 to 1010). Implementation details for the package will be contained in the Ecology and Landscape Management Plan (ELMP).

The expected outcomes are described in Technical Report 7h. In summary, a broad range of the indigenous flora and fauna present within the mitigation and offset area will benefit from the management of pest animals to permanently low densities and the establishment of new areas of swamp forest, shrubland and riparian habitat. The proposed mitigation will not only increase the area of healthy indigenous vegetation but will greatly improve the connectedness of the forested areas. The net result will be a significant increase in healthy available habitat, enhanced recruitment rates amongst a wide range of indigenous animals, improved condition of the remaining significant forest trees, especially totara and rata, and increased regeneration of many of the more palatable plant species.

Over time, further ecological benefits will accrue as a result of the offset programme. For example, the conditions created in the offset area will increase the likelihood of the survival and successful nesting of any kōkako that move east from the release sites in the western Parininihi land.

[21] Refer to Technical report 7h in Volume 3 for details. Individual trees are shown on the landscape drawings in the drawing set (Volume 2, drawings MMA-DES-UDL-CO-DRG-1000 to 1010)

4.2.4 Landscape and Environment Design

The Landscape and Environment Design Framework (LEDF) (Technical Report 8b, Volume 3) sets out the landscape and environmental design outcomes for the Project and how these fulfil the Transport Agency's landscape and environmental design policy requirements[22].

The overall design concept for the Project is for an alignment that is integrated with the landscape and delivers an outstanding scenic highway. The Project will form a new "valley-to-valley" bypass of the existing SH3 alignment.

The following principles have been developed with respect to the landscape and environmental design aspects of the Project:

- Retain key landforms and ridgelines by using a tunnel;
- Minimise stream and valley crossings;
- Develop cut faces that echo natural slope angles;
- Seek to enable natural successional re-vegetation of the roadside;
- Seek to enable landscape restoration where feasible;
- Provide an opportunity for cultural expression and recognition; and
- Deliver an enhanced driver experience and scenic amenity.

Landscape and design considerations for the Project detailed in the LEDF include:

- The road alignment;
- Earthworks (including cut and fill slopes) and MSE fills;
- The bridge and tunnel structures;
- The stormwater network;
- Highway furniture (barriers, lighting, signage); and
- Landscape treatment and planting.

Further detail on these specific design considerations in accordance with the principles outlined above is provided in the LEDF.

The LEDF also includes conceptual Landscape Plans for the Project that outline the proposed landscape and design features.

4.3 Design Standards and Guidelines

The design of the Project, including the geometric layout and operation of the route, stormwater management, structures and the tunnel have been developed based on the following guidelines and standards:

- Transport Agency design standards and guidelines;

[22] The LEDF takes its direction generally from the NZTA publication: *Environmental design framework guidelines.* That guideline notes that the purpose of the [LEDF] is to aid with 'integration of large scale and/or complex road infrastructure projects into the surrounding environment.'

- The Association of Australian and New Zealand road transport and traffic authorities (AUSTROADS) standards;
- Taranaki Regional Council and New Plymouth District Council standards and guidelines;
- New Zealand Standards and relevant International Standards; and
- Utilities standards.

The relevant guidelines and standards that have been used in the development of the Project are outlined in the respective sections below.

4.3.1 Safety in Design and Whole of Life

Safety in Design and Whole of Life have been integral to the design development process. These considerations have informed the design approach to enhance the safety of the Project and reduce environmental, cultural and social effects through the design, construction, operation and maintenance phases. Consideration has been given to matters including:

- **Pavement and surfacing** – predicted traffic volumes, pavement design life and maintenance requirements;
- **Stormwater collection and treatment** – consideration of drainage design and maintenance requirements, taking into account aesthetic considerations (culverts, swales, wetlands);
- **Landscaping** – choice of plant species and maintenance requirements, pest management to assist with revegetation;
- **Structures** – consideration of material types and design of bridge, retaining wall and embankment structures;
- **Tunnel** – consideration of construction methodology, durability, maintenance access and interval, energy saving lighting and minimisation of installed equipment; and
- **Traffic services** – barriers, traffic signage, line marking.

4.4 Road Design

The design of the alignment is shown in detail on the drawing set in Volume 2, which should be read in conjunction with this section.

4.4.1 Carriageway Design

The carriageway will generally incorporate the following (as outlined in Figure 4.1):

- 3.5m wide traffic lanes in each direction;
- 1.5m wide paved shoulders widened as required for sighting distance around curves;
- 1.2m wide shoulders through the tunnel (with a 600mm wide central flush median);
- On the bridge the outside shoulder width is 1.5m, and the inside shoulder width is 3.0m to allow for sighting distance around the curve; and
- Wire rope safety barriers on the outside of each shoulder along the full alignment length (apart from through the bridge and tunnel where concrete barriers will be used) Consideration is also being given to using steel 'W' section barriers in some areas.

A verge/swale will extend the length of the alignment, varying in width between around 3 – 4.7m. The verge width varies according to the local geometry of the road, whether the road is located in areas of cut or fill, the stormwater drainage network and roadside barrier locations (refer to Section 4.16.1 for further detail on the stormwater network for the Project).

The Project does not provide climbing lanes or slow vehicle bays. However, 1.5m shoulders will be provided along the alignment (with slightly narrower shoulders in the tunnel). Together with the improved forward visibility and 100km/h operating speed, this will improve the opportunities for safer informal passing across the full length of the Project alignment. The Project designation contains sufficient space to enable future provision of climbing lanes or slow vehicle bays if considered appropriate at some point in the future.

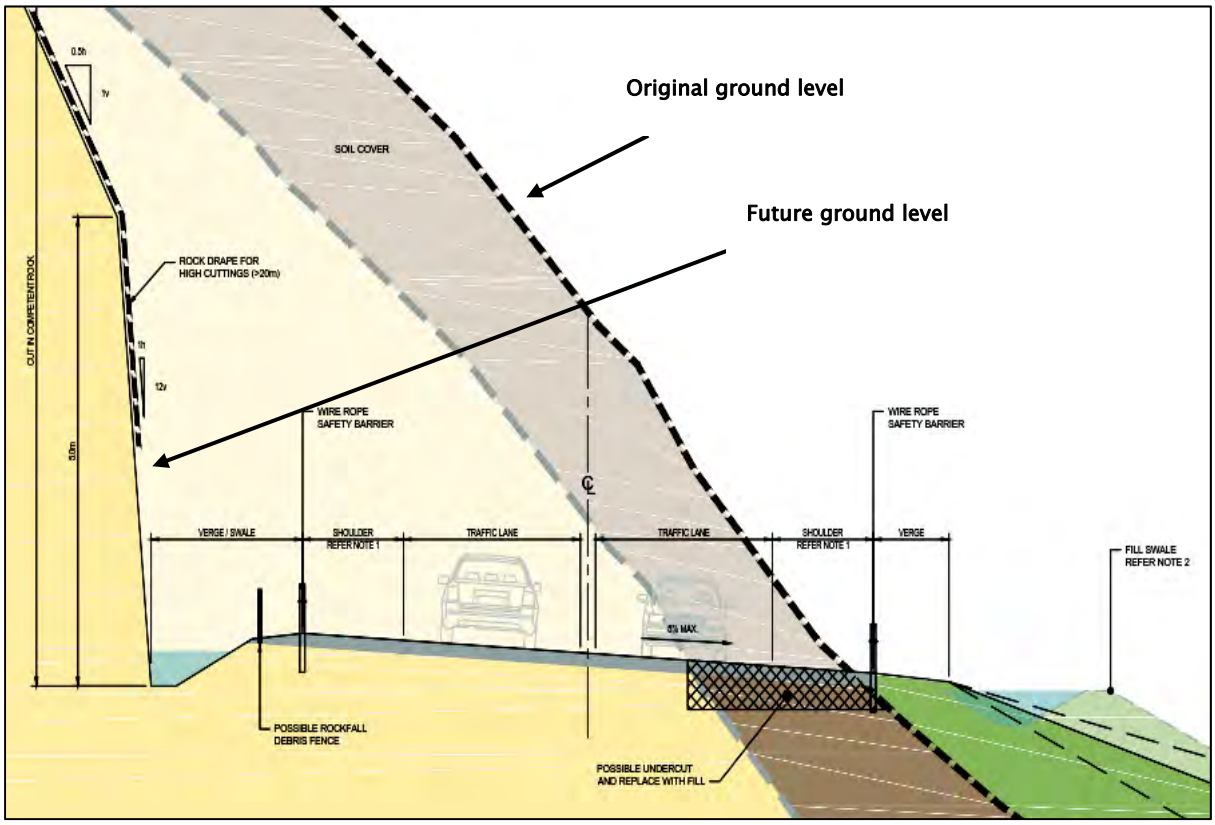


Figure 4.1 – Typical cross section of the carriageway at a cutting

4.4.2 Carriageway Design Standards

The Project has been designed in accordance with the standards outlined in Table 4.1.

Table 4.1 - Project Design Standards

Parameter	Value
Posted Speed	100km/h
Safe Operating Speed	100km/h[1]
Minimum Stopping Sight Distance[3]	151m[2]
Minimum Curve Radii	460m
Maximum Gradient	• 7.5% southbound (distance of 925m with a grade greater than 6%); and • 7.0% northbound (distance of 675m with a grade greater than 6%).

[1] A detailed risk assessment will be undertaken as part of the design development to determine whether safety considerations warrant a lower posted speed through the tunnel

[2] To be corrected for grades exceeding +/-3% (-15m/+25m) with an object height of 0.4m. Minimum SSD determined using 90km/h vehicle speed or alternatively a deceleration rate of 0.46g at 100km/h, due to the excessive widening required for higher speeds in highly sensitive environment.

4.4.3 Operating Speed and Travel Time

The alignment has been designed to a 100km/h operating speed. For traffic travelling at this speed, the alignment will result in an average travel time of 3:36 minutes through the bypass, a travel time saving of approximately 4:05 minutes (half the existing travel time of 8 minutes and 45 seconds for both north-bound and south-bound traffic)[23]. This will be a significant travel time saving in the context of this length of road, coupled with a safer and more user friendly route than the existing road.

It is unlikely that all vehicles will travel at the posted operating speed of 100km/h through the alignment. In particular, trucks (and cars following trucks) will likely travel at a slower speed through the steeper sections of the route.

The average operating speed across the Mt Messenger section of SH3 has been assessed as outlined in Table 4.2, taking into account the grades of the new alignment, along with typical vehicle composition.

[23] Obtained from google traffic application API platform, where travel times across the Project area were observed for a week-long period.

Table 4.2 - Operating Speeds (Average of all time periods and vehicles)

Operating Speeds (km/h)	Existing SH3 (7.4km length)	Mt Messenger Bypass (6km length)
Mt Messenger	56km/h	77.6km/h

In relation to heavy vehicle travel times along the new alignment in comparison to the existing Mt Messenger section of SH3, analysis indicates these will be as follows:

- Heavy Commercial Vehicle (HCV) travel time of 13:08 minutes over the existing 7.4km length of SH3 in the existing scenario;
- HCV travel time of 6:28 minutes over the 6km length of the new alignment (a saving of 6:40 minutes).

As such, the reduced length of the new alignment, coupled with the reduced grades across the route (compared to the existing section of SH3) will reduce the average travel times for Heavy Vehicles by approximately half of the existing travel times.

4.5 Alignment Description by Regions

The alignment of the Project is 6km in length, extending from the existing SH3 corridor approximately 1km south of Mangaonga Road through to a point near the property located at 2454 Mokau Road, Urenui where it will 'tie' back into SH3.

The Project area is divided into two regions:

- Northern Region from the northern tie into the southern tunnel portal (Chainage 0-3625); and
- Southern Region from the southern tunnel portal to the southern curve where sight lines are improved (Chainage 3625-5950).

4.5.1 Northern Region

From the northern tie in point (south of Mangoanga Road) the alignment heads south, sitting to the east of the existing SH3. The maximum distance between the new alignment and existing SH3 is approximately 1km.

The alignment traverses the lower Mangapepeke valley via the valley floor and then the eastern valley slopes to the upper Managapepeke catchment (Chainage 2850), over a distance of approximately 2km. This will require a series of cuts and fill embankments generally less than 5m high, with one embankment approximately 16m high.

In the upper Mangapepeke valley, from Chainage 2850 through to Chainage 3300 (a length of 450m), the alignment will be located on a large fill embankment, approximately 40m high, at the northern approach to the new Mt Messenger Tunnel. The gradient of the road gradually increases to around 7.5% through this section of the alignment, reaching a maximum elevation of 114m at the new tunnel.

4.5.2 New Mt Messenger Tunnel

The Mt Messenger Tunnel will extend over a length of approximately 240m through the main ridgeline between the Mangapepeke valley and the Mimi valley, to the east of Mt Messenger (Chainage 3400 – 3653). Further detail on the design of the tunnel is presented in Section 4.15.

4.5.3 Southern Region

The alignment will continue south, staying to the east of the existing SH3 (maximum 250m west of SH3), located on a large fill embankment approximately 16m in height through to Chainage 3925. A large cut slope, approximately 49m in height is located between Chainage 3900 – 4150.

From Chainage 4150, the alignment is bridged across the Mimi swamp forest, located on a tributary of the Mimi River. The bridge will be approximately 120m in length and 20m above the valley (refer to Section 4.14 for further detail on the bridge structure). The gradient of the alignment through this section will be around 7%.

The alignment then continues south through a series of smaller cuts and fills to the east of SH3 and into the Mimi valley. The gradient decreases to less than 1% as the alignment traverses the floor of the Mimi valley, before connecting with the existing SH3 route. The southern tie in to SH3 will be located at Chainage 5150.

To the south of the southern tie-in, the verge adjacent to the northbound lane of the existing SH3 corridor will be widened to improve sight lines.

The new alignment is shown on Figure 4.2.

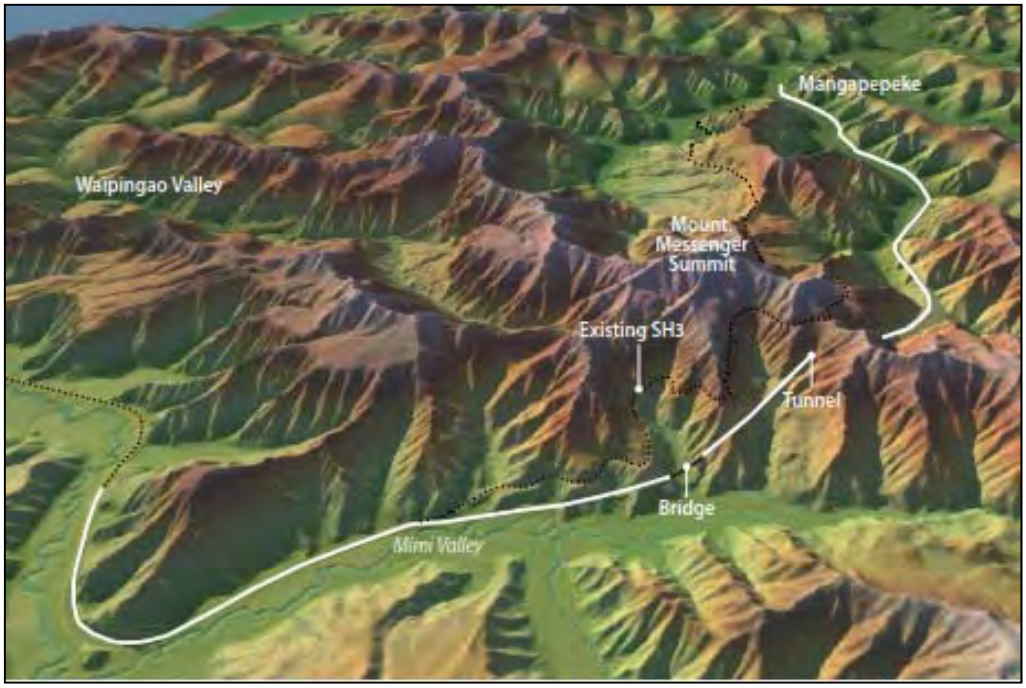


Figure 4.2 – Elevation model looking from the south to the north along the alignment

4.6 SH3 Tie-In Points

The alignment includes connections to the existing SH3 at the northern and southern extents of the Project. The tie-ins will be in the form of local T intersections arrangements designed in accordance with Austroads Part 4A.

There are no existing local roads impacted by the Project alignment.

4.7 Property Access

There are four private properties that are currently accessed from the existing section of SH3 which is being bypassed, including Ngāti Tama's Parininihi land block. Access to these properties connecting with SH3 is intended to be retained through the use of the bypassed section of SH3.

One property in the south (2528 Mokau Road) will require a new dedicated accessway to be formed directly onto the new SH3 alignment.

Property access arrangements will be finalised once the Project designation is confirmed and through the SH3 revocation process (refer Section 4.18).

4.8 Pedestrian and Cycling Provision

While cyclists and pedestrians are not commonly seen along this section of SH3, the carriageway width will be suitable for pedestrians and cyclists, with 1.5m shoulders provided next to the traffic lanes along the alignment, and 1.2m in the tunnel.

The increased width of the paved shoulders along the length of the alignment will provide cyclists with greater space and improved cycling conditions in comparison to the existing SH3 carriageway, which has shoulders of 0.5-1.5m wide.

4.9 Walking Track Access

The Project will provide safer conditions for users of the Mt Messenger and Kiwi Road walking tracks. A new parking area will be established for this purpose at a suitable location adjacent to the existing SH3 carriageway, which will have very low traffic volumes when the new bypass is operational.

4.10 Maintenance Bays

The design approach has focused on the provision of maintenance bays in those locations along the alignment where maintenance will be essential to the safe and efficient functioning of the state highway corridor, such as the inlets to culverts.

The road drainage network minimises the use of catchpit inlets, replacing these with open drainage channels where possible. Wetlands have been consolidated and located at the extents of the Project and at Chainage 1650 - 1700 where access is practical. Open drainage channels will be in natural rock or, where on earthworks, are proposed to be vegetated or rip-rap lined minimising the need for maintenance.

Consequently, provision of maintenance bays will be considered for the following features:

- Major culverts;
- Bridge abutments;

- Tunnel portals and tunnel control building; and
- Wetlands.

The maintenance bays will be protected by safety barriers.

4.11 Traffic Services

Traffic services along the alignment will include features such as:

- Permanent road signs;
- Road lighting at intersections and the tunnel;
- Road markings; and
- Barrier protection.

These features are detailed in Table 4.3.

Traffic services will be designed in accordance with the relevant standards. These services may be renewed and upgraded from time to time as required for the safe and efficient operation of the Project.

Table 4.3 - Traffic Services

Traffic Service	Design Details
Road Signage and Marking	• Signage and marking along the route will comply with the Transport Agency's Traffic Control Devices manual (TCD) including the Manual of Traffic Signs and Markings (MOTSAM) • Pavement markings, delineation, edge and lane lines will be installed according to the Transport Agency's Standard Specifications (M/7, P/22, T/8, M/20 and M24)
Lighting	• Lighting will be provided at the two local road intersections and in the tunnel, which will be lit at all times to provide for the safe and efficient operation. Lighting within the tunnel will be adjusted to respond to the ambient conditions (refer Section 4.15.2 for further detail). • Lighting will be designed to meet AS/NZS 1158 'Category V' requirements. LED road lighting luminaires are proposed where lighting is required and will meet the requirements of AS/NZS 1158.5:2014 Lighting for roads and public spaces - Part 5: Tunnels and underpasses
Barriers	• Wire rope safety barriers (TL-4 (NCHRP 350) or TL-3 (MASH)) will be installed on the outside of the road shoulders adjacent to the verge. Posts and wires will be unpainted galvanised finish. • Rigid concrete barriers will be used along the bridge and through the tunnel, with semi-rigid barriers on the approaches to the bridge and tunnel. (refer to Figure 4.3). • Semi-rigid barriers and a 'curved rail treatment' will be installed at intersections along the alignment and private property access points, as required. • All barrier protection installed along the alignment will be designed in accordance with the following standards (or any equivalent documents replacing those standards which apply at the time of construction):

Traffic Service	Design Details
	o NZTA M23 – Specification for Road Safety Barrier Systems; o AS/NZS 3845.1:2015 – AS/NZS 3845 :1999 – Road Safety Barrier Systems; and o Austroads Guide to Road Design Part 6: Roadside Design, Safety and Barriers.

Typical barrier details are shown in Figure 4.3.

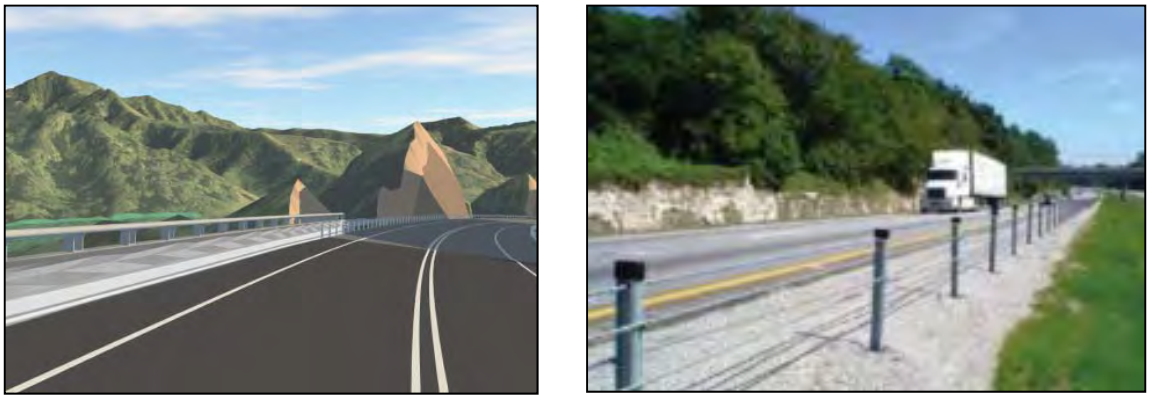


Figure 4.3 – Typical Barrier details (rigid and wire rope)

4.12 Pavements and Surfacing

All pavements will be designed in accordance with Austroads (2009) Pavement Design Guide and the Transit New Zealand supplement (2010/11).

The general pavement and surfacing philosophy is as follows:

- **Pavement** – will comprise granular sub-base and base layers along the alignment, including in the tunnel. Cement modification of the base-course will be considered as part of the design process to improve the performance of the pavement.
- **Surfacing** – chip seal is proposed along the alignment with the exception of the bridge deck and tunnel where it is proposed Stone Mastic Asphalt (SMA) surfacing will be used.

The final pavement and surfacing design will take into account the following:

- Subgrade strength and differential settlement issues;
- Requirements for sub-surface drainage;
- Rehabilitation of existing pavements;
- Construction methodology and impact on existing traffic;
- Use of locally available materials and recycling of existing pavement materials where possible and
- Surfacing considerations, such as high vehicle stress areas.

4.13 Cut Slopes and Fill Embankments

The alignment will extend through steep terrain bisecting a number of valleys and ridges. Accordingly, a number of cut slopes approximately 25m to 60m in height and embankments up to 27m in height will be required along the alignment. The Geotechnical Appraisal

Report (Technical Report 14, Volume 3) describes the typical cut slope and embankment designs.

4.13.1 Cut Slopes

Based on the geological structure of the Project area, cut slopes will be designed on the basis of the following geometry:

- From road verge level, an 8m high cut in rock formed at 12V:1H (approximately 85°).
- From the top of the 12V:1H cut, 1V:0.5H (approximately 63°).
- On the upslope of the cutting (where the existing ground level typically continues to rise above the top of the cut), the 1V:0.5H profile will continue to the ground surface, with soil nails where required to stabilise the surficial materials.
- On the downslope side of the cutting (where the existing ground surface typically drops away from the top of the cut), the batter slope of the upper 5m of the cut has been reduced to 1V:2H (approximately 26°) to avoid the need for soil nailing.

A typical cutting profile is shown in Figure 4.4.

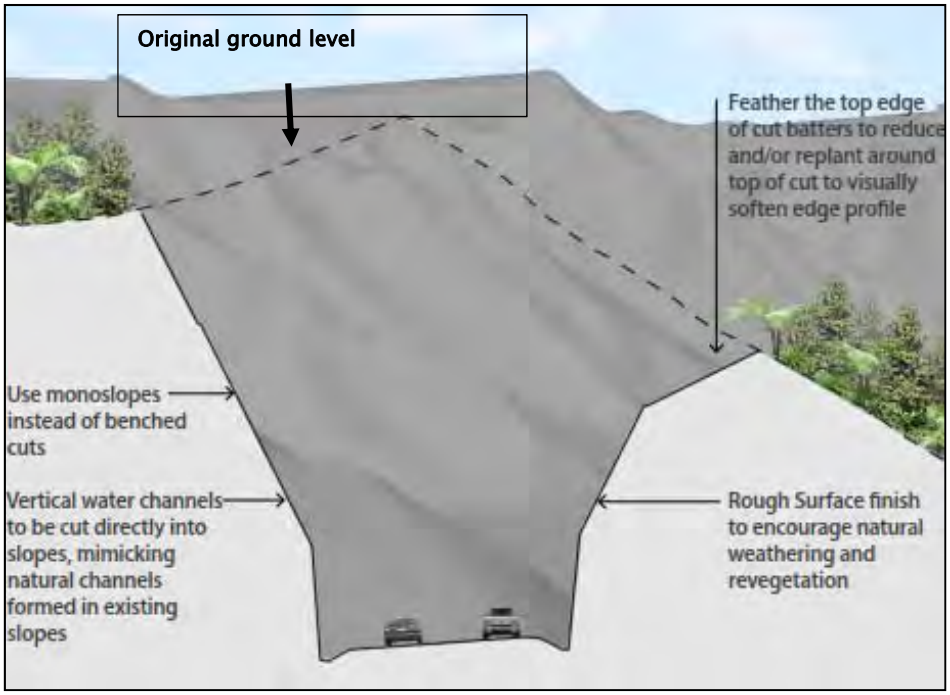


Figure 4.4 – Typical Cut Slope Profile

Cut slopes will either be actively re-vegetated or allowed to revegetate naturally over time, as shown in Figure 4.5 and outlined in the LEDF.

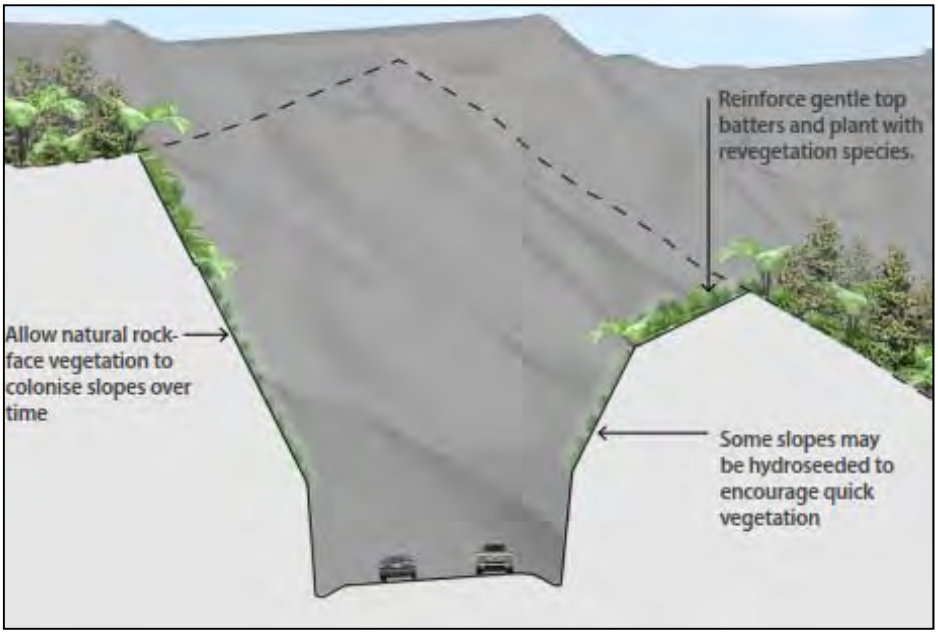


Figure 4.5 – Typical revegetated cut slope

A summary of the main cut slopes required along the alignment is provided in Table 4.4.

Table 4.4 – Main Cut Slopes along the Alignment

Chainage (m)		Approx. Length (m)	Approx. Depth (m)
From	To		
260	490	230	48
1100	1280	180	52
1560	1670	110	26
1950	2280	330	38
2450	2850	400	57
3300	3400	100	32
3630	3680	50	29
3900	4140	240	49
4270	4370	100	31
4430	4550	120	30

NOTES:

[1] Currently assumed 5m depth of soil / completely weathered rock which requires soil nailing for stability when cut at 1 in 0.5 on upslope side of cutting. For downslope side, upper 5m of cut is formed at 1V:2H.

[2] Cutting extends to tunnel portal.

4.13.2 Embankments

Embankment slopes will vary from 14° for typical embankments, through to 45° for steeper embankments.

Detailed and site specific embankment designs will be carried out during detailed design, in accordance with standard geotechnical guidelines and accepted New Zealand design criteria

and standards. It is noted that embankment designs are currently preliminary and profiles may change as the design development progresses, or in response to changes in construction methods or the need for additional placement of fill.

Based on the ground conditions of the Project area and the road alignment, embankment profiles will be designed on the basis of a 'core' of general fill with 1V:1H batters, supported by buttress slopes constructed to 1V:4H (14°) or 1V:3H (18°). The buttress slopes will be either general fill or landscaping fill, which is not suitable for use in the core (i.e. derived from excavated soil and completely weathered rock).

The embankments required along the alignment can generally be divided into two types, which reflect the different ground conditions along the alignment (refer to Table 4.5). The embankments will require the placement of large volumes of fill material, along with localised stabilisation measures.

Table 4.5 - Embankment Typologies

Embankment Type	Design Details
Low Embankments Typically lower (<5m high) embankments constructed on relatively level ground along the edge of the valleys at the southern and northern ends of the alignment.	• Lower embankments will typically be underlain by deep, very soft to soft and highly compressible soils. • Design of these embankments will be driven by maintaining stability of the embankments in the short term, requiring staged construction, limiting long-term total and differential settlements and seismic displacements. • Embankment construction may require the use of a geofabric / geotextile separator layer with a basal drainage blanket, a high strength geotextile basal reinforcement and preload fill.
Higher Embankments Larger (up to 40m high) embankments constructed across elevated gullies along the central portion of the alignment	• Higher embankments may require undercutting of weak surface soils and/or the installation of a drainage blanket or a supporting raft for maintaining stability of the embankment • Depending upon the permeability of fill materials available and the embankment height, intermediate sub-horizontal drainage layers may be required to control the build-up of pore pressures within the embankment during construction.

A typical embankment profile is shown in Figure 4.6.

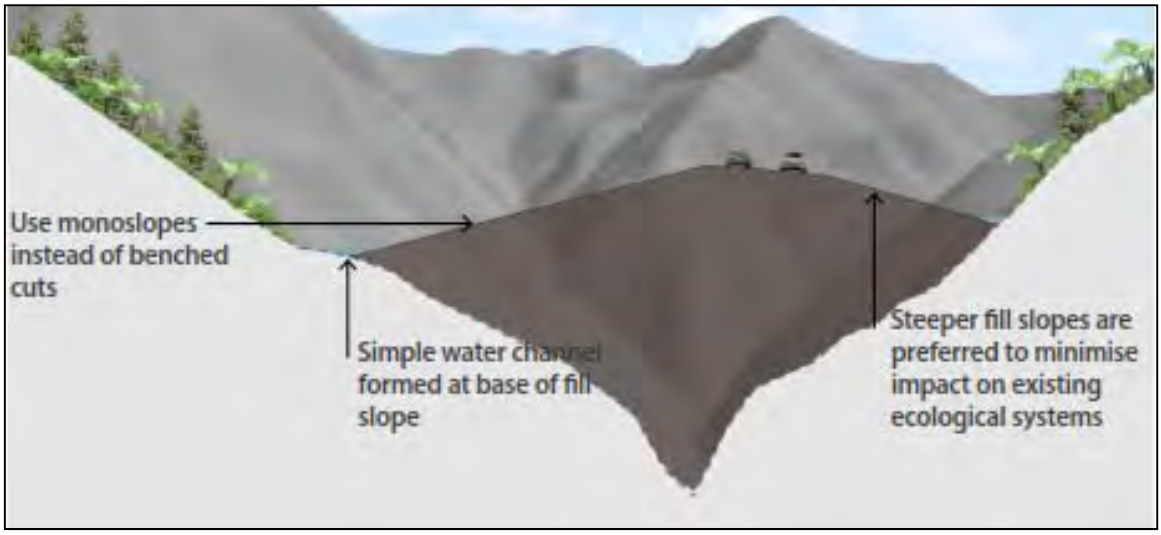


Figure 4.6 – Typical embankment profile

Embankments will revegetate over time as shown in Figure 4.7 and outlined in the LEDF (Technical Report 8b, Volume 3).

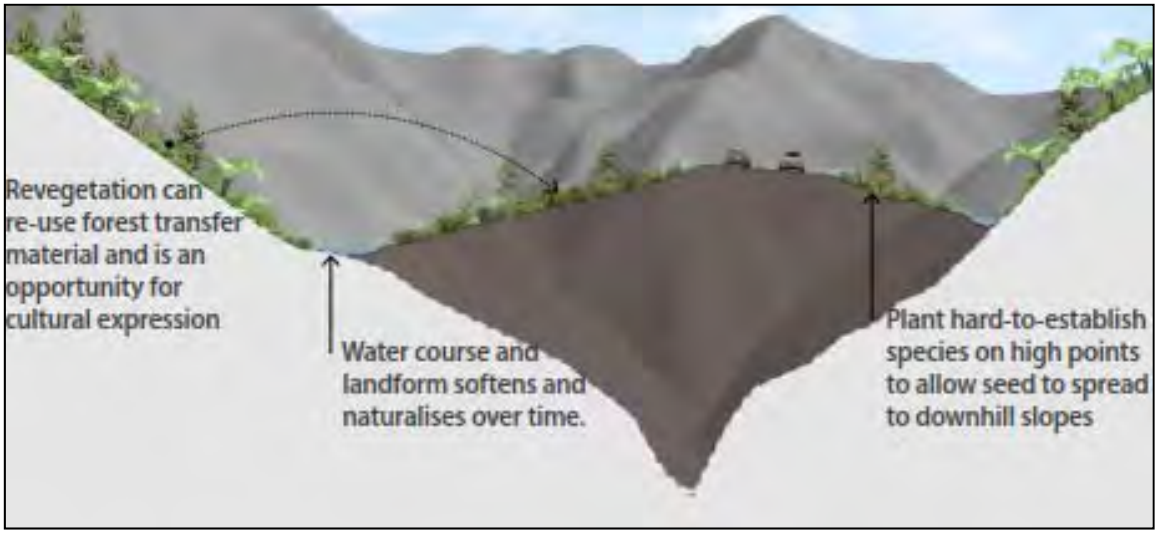


Figure 4.7 – Typical revegetated embankment

A summary of the main embankments along the alignment is provided in Table 4.6.

Table 4.6 – Main Embankments along the Alignment

Chainage (m)		Approx. Length (m)	Approx. Height (m)	Anticipated Subgrade Materials
From	To			
550	970	420	3.0	Alluvium + slope deposits on sidelong ground.
1300	1370	70	3.5	Alluvium + slope deposits on sidelong ground.
1510	1560	50	3.5	Predominantly alluvium.
1700	1950	250	3.5	Alluvium + slope deposits on sidelong ground.
2300	2430	130	16.0	Slope deposits / Alluvium.
2850	3300	450	40.0	Across base of gully – slope and alluvial materials.
3680	3890	210	16.0	Across base of gully – slope and alluvial materials.
4370	4420	50	6.0	Slope deposits / Alluvium.
4560	4660	100	4.0	Predominantly alluvium.
4740	4790	100	1.5	Predominantly alluvium.

The Geotechnical Appraisal Report (Technical Report 14, Volume 3) presents further details on embankment design.

4.13.3 Retaining Walls and MSE Slopes

Two MSE embankments will be located along the alignment to provide additional stability where steeper embankments (greater than 45°) will be required and are subject to space constraints in order to avoid impacts on areas of high ecological values. MSE walls will be located at:

- Chainage 2300 – 2430 – which crosses a steep sided gully in the valley of the Mangapepeke Stream. The embankment will be up to 16m high and extends over a length of approximately 130m, grading into rock cuts at either end[24].
- Chainage 4370 to 4420 – located across a short gully feeding into the Mimi River towards the southern end of the route. The embankment will be up to 5.0m high and extend over a length of around 50m.

[24] Recently completed geotechnical investigations at this location indicate soft soils to a depth greater than expected. While an MSE embankment is proposed at this location ongoing design development could determine that the MSE embankment is replaced by a bridge spanning the gully or an alternative embankment solution.

MSE slopes will comprise geogrid reinforcement placed horizontally as layers of embankment fill are built up, finished with a grassed slope facing.

Further MSE walls or retaining wall may be required at additional locations along the alignment, such as the bridge abutments, or to minimise the length of culverts passing beneath high embankments. This will be confirmed during final design of the Project.

Further detail on MSE slopes and retaining walls can be found in the Geotechnical Appraisal Report (Technical Report 14, Volume 3).

4.14 Bridge Structure

The alignment includes the construction of one bridge located between Chainage 4150 and 4270. The bridge will be approximately 120m long, crossing the steep sided and flat bottomed valley occupied by the high ecological value Mimi swamp forest.

The key design aspects of the bridge are:

- The bridge will be a three span steel ladder deck superstructure with a composite concrete deck slab. The middle span will be approximately 50m in length while the two outer spans will be approximately 35m in length. The bridge deck will be approximately 12.8m wide.
- The structure will comprise inclined steel frame piers supported from the sides of the valley.
- The piers will be constructed on a rock slope and founded on reinforced concrete pads. Mini-piles may be installed if necessary depending on the depth to competent rock. Rock bolts and/or netting drapes may need to be installed to control stability and local rock-fall near pier foundations.
- The bridge abutments will be reinforced concrete, founded on rock, with bored piles as required depending on the depth to competent rock.

The bridge design of steel piers and steel superstructure will enable the bridge components to be lifted in place and the bridge constructed from the abutments with large cranes. As such, access to the valley floor below and the construction of large staging platforms will not be required, minimising effects on this environment.

Figure 4.8 shows the typical bridge arrangement (from a similar example at the Matahorua Gorge) while the drawing set in Volume 2 provides the bridge design details.

Figure 4.8 – Similar Bridge Arrangement (Matahorua Gorge)

4.14.1 Design Standards

The bridge will be constructed in accordance with the relevant Transport Agency and New Zealand and Australian design standards for bridges, concrete and steel structure standards, as follows:

- The Transport Agency Bridge Manual, Third edition, Amendment 2, May 2016;
- NZS 1170.5:2004 Structural Design Actions – Earthquake Actions, New Zealand;
- NZS 3101:1995 Concrete Structures Standard;
- NZS 3404:1997 Steel Structures Standard; and
- AS 5100 Australian Standard for Bridge Design.

Key aspects of the design are outlined in Table 4.7 – Bridge Design Aspects.

Table 4.7 – Bridge Design Aspects

Design Aspect	Design Details
Bridge Width	• With allowance for centre line markings, the carriageway width between barriers is approximately 11.8m. Allowing 0.5m width on each side for edge barriers gives an overall bridge deck width of 12.8m.
Lane and Shoulder Width	• The bridge will carry two 3.5m wide lanes of traffic and is on a 460m radius horizontal curve. The curve requires the bridge deck to have an 8% cross fall. • The outside shoulder width is 1.5m, and the inside shoulder width is 3.0m to allow for sighting distance around the curve.
Barriers	• Edge protection on the bridge will be provided by TL-5 HT type barriers in accordance with the Transport Agency Bridge Manual. These barriers comprise a concrete wall and steel top rail.
Vertical Clearance	• The bridge is on a 7% longitudinal gradient, so the height of the bridge deck above the valley floor varies. However, the maximum vertical clearance between the underside of the deck and the floor of the valley is approximately 20m.
Design Loading	• The bridge will be designed for HN-HO-72 live traffic live loading in accordance with the Transport Agency Bridge Manual. • All other design loads (including dead load, seismic, wind etc.) will be determined in accordance with the relevant design standards noted above on the basis of a 100 year design life and Importance Level 3 for the structure.
Materials and Finishes	• Weathering steel is preferred for the structure (however suitability is to be confirmed given proximity of the structure to the coast). Otherwise, normal grades of steel will be used, in conjunction with high durability, long lasting coating systems. • Plain or regular pattern concrete finishes are proposed for the bridge finishes. Refer to the LEDF (Technical Report 8b, Volume 3) for further detail on the visual appearance, materials and finishes of the bridge.
Drainage	Bridge drainage will be as follows:

Design Aspect	Design Details
	• Stormwater upstream of the bridge will be collected and conveyed in a piped system within the bridge structure. • Runoff from the bridge deck will be directed off the traffic lanes by the cross fall, conveyed along the channel at the edge of the bridge deck and piped to a constructed wetland located at the southern end of the alignment. • Drainage inlets on the bridge structure will not be required.

Refer to the bridge drawings in Volume 2 for the general arrangement and typical sections of the bridge.

4.15 Tunnel

The alignment includes a tunnel, approximately 240m in length, through the ridgeline to the east of Mt Messenger. This avoids the significant adverse effects that would be associated with a cut through this ridgeline. The tunnel will be in the order of 93m below the crest of the ridge.

The key design aspects of the tunnel will be as follows:

- The tunnel cross-section is dictated by the need to cater for over-dimension vehicles for which a clearance envelope of 10m x 6m is required. A cross-section through the tunnel is shown in Figure 4.9;
- The tunnel will be an arch shape (refer to Figure 4.9), around 10m high with a maximum cover depth in excess of 80m;
- The road cross-section in the tunnel differs from that elsewhere along the route as follows:
    - Lane widths remain at 3.5m but will be separated by a 600mm wide flush median to provide separation of traffic while allowing people to cross the road and reach the egress passage if required in an emergency;
    - Shoulder widths will be 1.2m, and will provide sufficient width for use by cyclists.
- Roof support is likely to be by means of rock bolts, with a shotcrete lining;
- Approximately 25 to 30m deep rock cuttings will be required at the approach to each tunnel portal. The tunnel portal will extend clear of the adjoining rock face to allow for a barrier to protect the roadway from the potential of rock fall debris (refer to Figure 4.11);
- The tunnel will include a fire-rated emergency egress passage for pedestrians;
- A tunnel control building housing the main electrical plant for the tunnel will be required. This will be located alongside the northbound carriageway to the south of the tunnel. Fire hydrant water tanks will be located above the tunnel at the existing rest area at the SH3 Mt Messenger summit;
- Wash-down water and any hydrant water will be carried away via catch pits and subsurface drains connected to the main highway drainage system; and

- The tunnel will be monitored and some equipment controlled from the Transport Agency's Traffic Operations Centre.

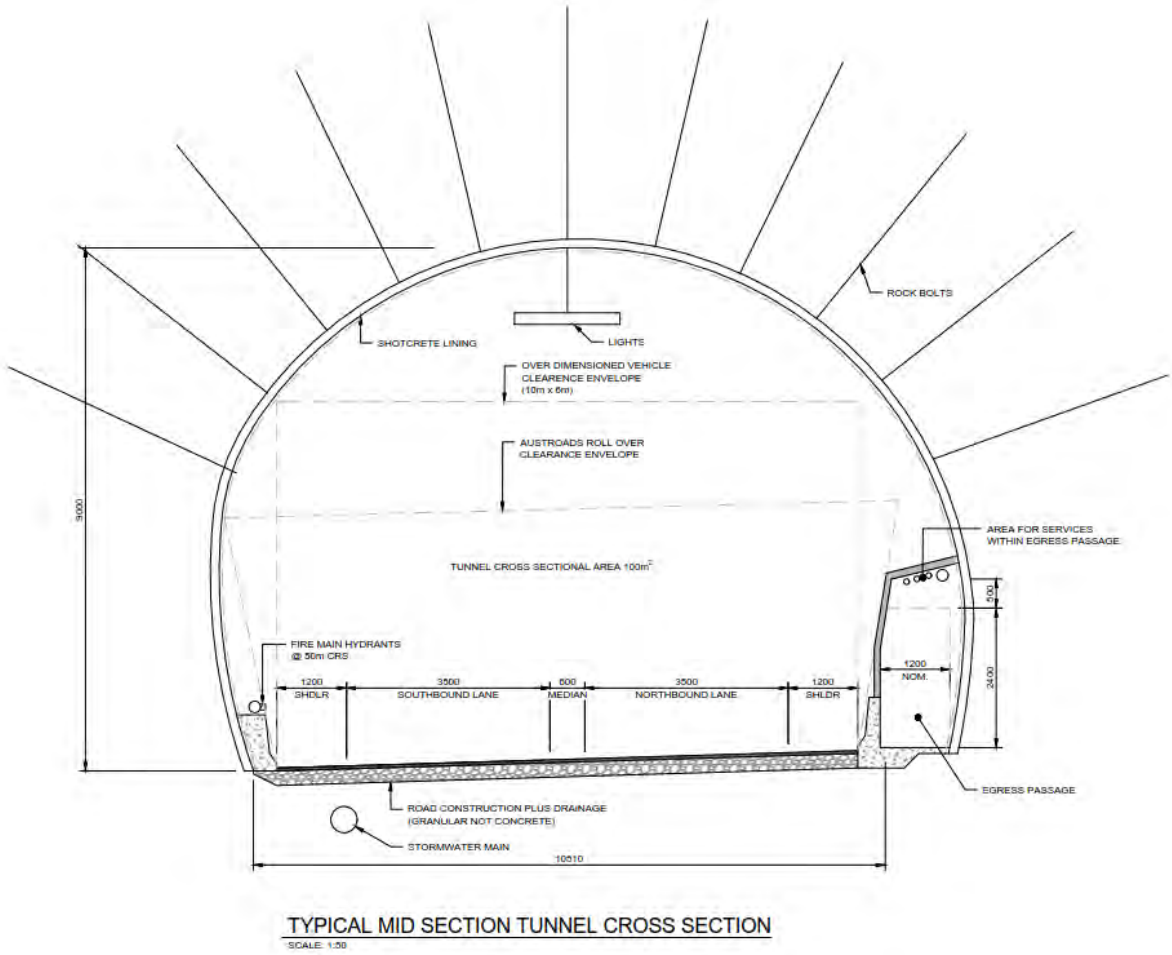


Figure 4.9 – Typical tunnel cross-section

Figure 4.10 – Indicative view of tunnel approach showing the main tunnel portal and safety barriers

Figure 4.11 – Indicative view of the tunnel portal and rock fall protection

Further details on the tunnel, tunnel control building and water tanks are presented in the drawings in Volume 2. The LEDF provides further detail on the design of the tunnel portals, as a significant gateway feature along the route.

The key tunnel design and operation aspects are further detailed below. Dangerous goods vehicles will be permitted to use the tunnel.

4.15.1 Power supply

An electrical power supply will be provided to a point of connection to provide the permanent electrical supply required for operation of the tunnel. It is likely this will be from a new underground cable installed adjacent to the new alignment.

A generator located in the control building (refer Section 4.15.5) will provide back-up power for electrical systems in the tunnel.

4.15.2 Tunnel and Egress Passage Lighting

Lighting of the tunnel roadway and emergency egress passage will be provided along the full length of the tunnel for general and night-time illumination.

Road lighting will be provided at the tunnel approaches. Emergency lighting is outlined in Section 4.15.4.1.

The design of tunnel lighting, emergency lighting, and electrical services will be in accordance with the relevant New Zealand and Australian codes and standards.

4.15.3 Tunnel Operation and Control System

The tunnel operations and management and control system will be controlled locally in the tunnel control building and remotely from the Transport Agency's Traffic Control Centre.

Warning signs will be provided within and outside of the tunnel. Remotely operated barriers will prevent traffic entering the tunnel during an incident.

Given the tunnel's short length and bi-directional operations no mechanical ventilation or deluge system are required.

4.15.4 Fire & Life Safety

4.15.4.1 Emergency Egress

An emergency egress passage will be provided with fire-rated doors spaced regularly along the side of the tunnel. The passage will meet accessibility requirements and will be lit and monitored remotely.

4.15.4.2 Fire Hydrant System

A fire hydrant water system will deliver water to dual head hydrants located at intervals along the tunnel. Three water tanks with a total capacity of 350,000 litres will be installed at the rest area on the existing SH3, above the tunnel. Water supply for the tanks will be by tankers. The tanks will be screened with vegetation as shown in Figure 4.12 – Water tanks at the existing SH3 rest area

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The length of the tunnel and traffic volumes are such that a fire suppressant deluge system and smoke handling ventilation are not required.

Figure 4.12 – Water tanks at the existing SH3 rest area

4.15.4.3 Tunnel Safety Requirements

Tunnel safety equipment will include:

- A public address system, a fire detection system and closed circuit television (CCTV) system (consisting of CCTV cameras mounted within the tunnels and egress passage to provide continuous coverage of the tunnel interior and exit portals). The systems will be monitored from the Transport Agency's Traffic Operations Centre.
- Signage and strobe lighting to guide pedestrians to the exit doors in an emergency.
- Emergency lighting in the tunnel and egress passage with connection to an uninterruptible power supply (UPS).
- External traffic barriers and signage.

4.15.5 Tunnel control building

A tunnel control building housing the main electrical plant and control equipment will likely be located in the vicinity of the southern approach to the tunnel (refer Figure 4.13 for indicative details).

Electrical plant housed within the control building will include the main switchboard, UPS, emergency generator and associated fuel and electrical infrastructure. General lighting and power controls will also be located in the plantroom. External security lighting with motion sensor controls may be installed. Outside the building an access road off the highway will be provided to the building, which will be set back from the main carriageway, fenced and screened by planting.

The plantroom will be the minimum size required to house the tunnel equipment and provide safe access for both maintenance and future replacement (approximately 15m long, 8m wide and 6m high. Solar panels may be installed on the control building roof, to supplement power supply to the plantroom and tunnel systems. A power company transformer will be located outside.

The tunnel is required to comply with the Building Act 1990 and regulations. Fire systems are subject to the Compliance Schedules and the associated regulator testing. The building will be designed to address Crime Prevention Through Environmental Design (CPTED) considerations.

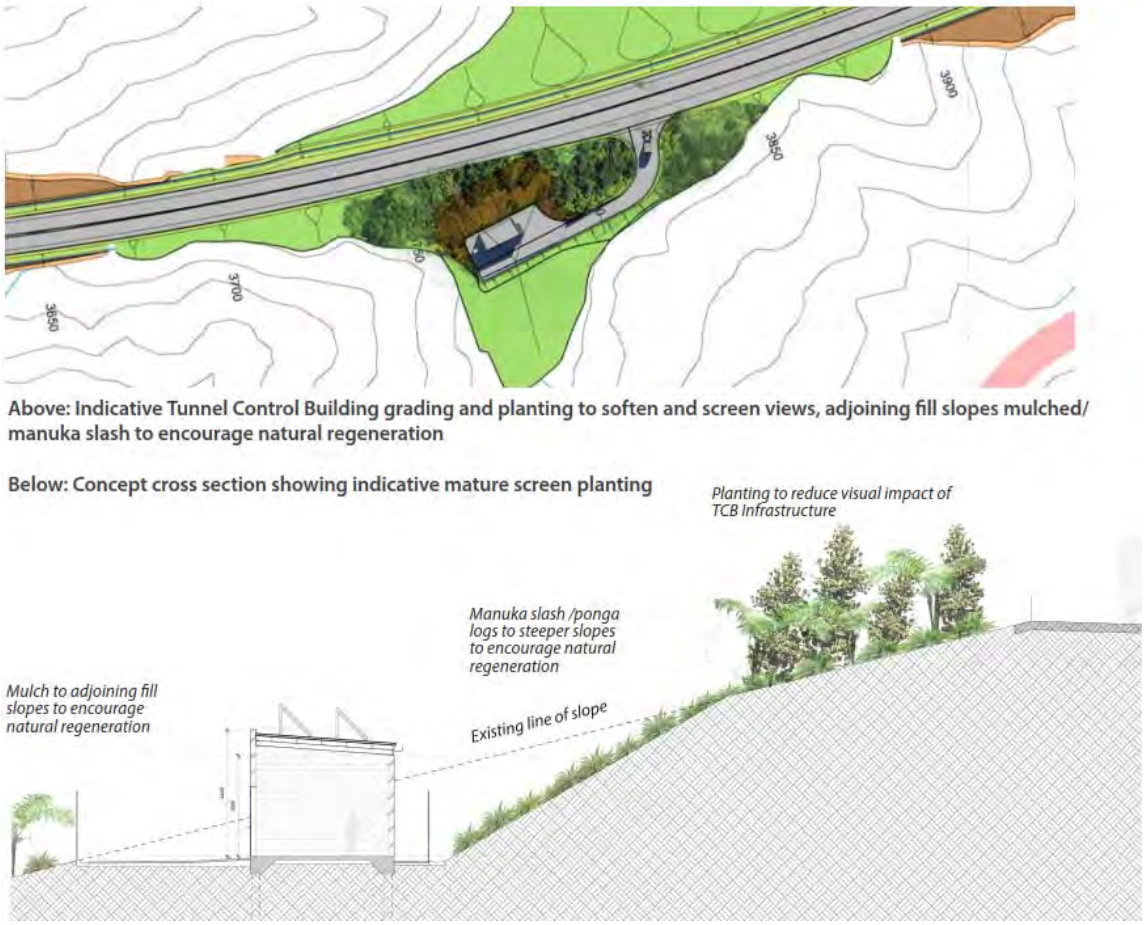


Figure 4.13 – Tunnel control building

4.16 Operational Stormwater Management

This section outlines the stormwater management proposed for the operation of the Project. (Stormwater treatment proposed during construction of the Project is outlined in Section 5 of this AEE.)

The stormwater design for the operation of the Project is based on having a stormwater network that is fit for purpose and meets the relevant Transport Agency, Taranaki Regional Council and Austroads standards (including the Transport Agency's *Stormwater Treatment Standard for State Highway Infrastructure*) and is appropriate for the rural environment in which the Project is located. Key features of the Project's operational phase stormwater design are as follows:

- Runoff will be collected and conveyed in a safe, low-maintenance and simple drainage network;
- Culvert crossings will be used to maintain flows across valleys and natural flowpaths within the Project area;
- Stream diversions will be minimised where practical, and existing streams improved where diversions are necessary;
- Constructed wetlands will collect road run-off and provide treatment, extended detention to minimise scour/erosion of streams and contain emergency spills; and
- Fish passage, where it exists naturally.

4.16.1 Stormwater Conveyance and Treatment

The Project will increase the area of impervious surface in both the Mangapepeke Stream and Mimi River catchments. However, in absolute terms the impervious area remains very low. Where stormwater ponds are planned in the lower Mangapepeke Stream the impervious surface will be about 2.4% of the catchment; while in the Mimi River it will be 0.7% of the catchment after the Project completion (refer Technical Report 7b in Volume 3, for further detail in this regard).

The catchment areas identified for stormwater treatment include:

- All new road surfaces, including pavement, median, shoulder, drainage channels; and
- Rock cuts and re-vegetated areas above rocks cuts where stormwater cannot be readily intercepted.

Stormwater quality treatment will be designed to:

- Reduce total suspended solids (TSS) in accordance with the Transport Agency's Stormwater Treatment Standards on a long term average basis
- Reduce contaminants, including particulate trace metals, particulate nutrients, oil, grease and bacteria on sediments; and
- Remove gross litter and floatables, such as oil and volatile hydrocarbons.

Stormwater quantity will be designed to:

- Convey flow as a minimum for the extended detention flow, as defined by the Transport Agency's *Stormwater Treatment Standard* and, where no acceptable alternative overland flow path is available, the 100 year ARI flow;

- Minimise erosion of streams by providing extended detention and controlled release of runoff generated in a rainfall event of 36mm, discharged over a 24 hour period.

The stormwater drainage network and treatment system for the Project will comprise the following (described in further detail in subsequent sections):

- Open roadside channels (swales) constructed along the alignment to convey flows up to the extended detention flow rate collected from the road surface downstream to the valley floors to constructed wetlands.
- Stormwater will then be contained, treated and detained in the wetlands, prior to discharging to the receiving environment.
- Where the alignment crosses natural valleys and watercourses on fill embankments, culverts will be installed to provide for the conveyance of flows from one side of embankment to the other and enable the continuation of streams and overland flowpaths. Where fill embankments are located parallel to watercourses, the watercourses will be diverted along the toes of the embankments.
- Runoff from the bridge will be collected and conveyed along the face of the barrier. Upstream flows discharging across the bridge deck will be minimised by diverting upstream flows greater than the Extended Detention storm event.
- As the tunnel will be located adjacent to the high-point in the road geometry, there will be no upstream catchment flowing through the tunnel. Where drainage is provided within the tunnel, this will be specifically designed to ensure that this cannot promote the spread of fire.

Refer to Drawings MAA-DES-DNG-DRG-1000-1010 in Volume 2 for details of the Project's stormwater conveyance and treatment system.

4.16.1.1 Swales

Swales will be used to convey and provide some pre-treatment of runoff from the road surface, upstream of the constructed wetlands. All swales will be designed in accordance with the Transport Agency's *Stormwater Treatment Standard for State Highway Infrastructure*. Three swale typologies will be used for the Project. Typical details are shown in Figure 4.14:

- Type 1 – unlined swale in natural rock
- Type 2 – vegetated swale and
- Type 3 – lined channel.

Where practicable, swales will also be used to provide stand-alone treatment to portions of road at the extremities of the Project area.

Figure 4.14 – Typical swale design

Refer to the stormwater drawings in Volume 2 for further detail.

4.16.1.2 Constructed Wetlands

Constructed wetlands will be used to treat surface runoff from the road. Two constructed wetlands will be located within the northern region while a third will be located within the southern region as outlined in Table 4.8.

Constructed wetlands perform well as treatment devices, removing suspended solids (can remove 75% TSS on a long-term basis), heavy metals, hydrocarbons, and other traffic-related pollutants, as well as providing additional filtering and biological treatment. In addition to water quality treatment, the constructed wetlands will also provide for extended detention. The constructed wetlands will be developed in accordance with the Transport Agency *Stormwater Treatment Standard for State Highway Infrastructure*.

In general the constructed wetlands will be designed and operated as follows:

- The surface area of the constructed wetlands will be sized based on 2% of the total contributing catchment.
- Water depths will be typically range between 0.15 – 1m.
- Stormwater will be discharged from the conveyance network into the wetland forebay where coarse sediment will settle out. Flows will then enter the main vegetated area of the wetland, where fine particulates and dissolved pollutants will be removed.
- Treated water will discharge through the outlet to the receiving environment.

Table 4.8 – Constructed Wetlands

Wetland ID and Chainage	Impervious Catchment Area (m^2)	Pervious Catchment Area (m^2) *	Total Catchment Area (m^2)	Surface Water Area Required (m^2)	Functions
W1 Ch 640 – 675	11,900	20,570	32,470	650	Water quality treatment and extended detention
W2 Ch 1650 – 1700	18,600	39,500	58,100	1200	Water quality treatment and extended detention
W3 Ch 4720 – 4750	11,580	20,400	31,980	650	Water quality treatment and extended detention

*Treatment for pervious areas is not necessary, however if pervious areas are contributing to the wetland, the equivalent Water Quality Volume will be allowed for.

The wetlands will be planted, with indicative details shown on Figure 4.15. Typical design details for constructed wetlands are provided in the drawing set in Volume 2.

Figure 4.15 – Typical constructed wetland design and planting

4.16.2 Permanent Stream Diversions

Permanent stream diversions will be required where it is necessary to realign a natural stream channel (or section of stream channel) for the Project. A summary of the stream diversions required for the Project is provided in Table 4.9 below (refer also to the stream diversion drawings in Volume 2).

Stream typologies have been developed as follows (and as shown in Figure 4.16 and on the stream diversion drawing):

- **Stream Diversion Type 1** – Lowland stream that will require recreation of habitats associated with a natural lowland stream. Approximately 450m of Type 1 stream diversions will be required for the Project.
- **Stream Diversion Type 2** – Steep stream that will require the recreation of habitats associated with natural steep streams. Approximately 2500m of Type 2 stream diversions will be required for the Project.

Table 4.9 – Stream Diversions Summary

Stream	Approximate Length (m)	Stream Type	Stream gradient	Fish passage type[1]	Diversion Type
Mangapepeke Stream (Ch. 700–775m)	75	Perennial	Low (0.5–1% gradient)	Swimming	Type 1
Minor Tributary of Mangapepeke (Ch. 600m)	90	Perennial	Low (0.5–1% gradient)	Swimming	Type 1
Tributary of the Mangapepeke Stream (Ch. 1050m)	900	Perennial	Steep	Climbing	Type 2
Tributary of the Mangapepeke Stream (Ch. 1100m)	200	Perennial	Steep	Climbing	Type 2
Mangapepeke Stream (Ch. 1650–1950m)	220	Perennial	Low (0.5–1% gradient)	Swimming	Type 1
Upper reaches of Mangapepeke Stream (Ch. 2800–2900m)	100	Perennial	Steep	Climbing	Type 2
Upper reaches of Mangapepeke Stream (Ch. 3000–3350m)	350	Perennial	Steep	Climbing	Type 2
Tributary of Mimi River (Ch. 3650–3900m)	300	Perennial	Steep	Climbing	Type 2
Tributary of Mimi River (Ch. 4750m)	230	Perennial	Steep	Climbing	Type 2
Minor tributary of Mimi River (Ch. 5225–5300m)	75	Perennial	Low (0.5–1% gradient)	Swimming	Type 1
Minor tributary of Mimi River (Ch. 5450–5750)	340	Intermittent	Low (0.5–1% gradient)	Swimming	Type 2
Upstream & Downstream of Culverts	20–30 each	Varies	Varies	Varies	Varies
Notes: [1] Designed for fish passage provision to reflect nature of fish community in upstream waters					

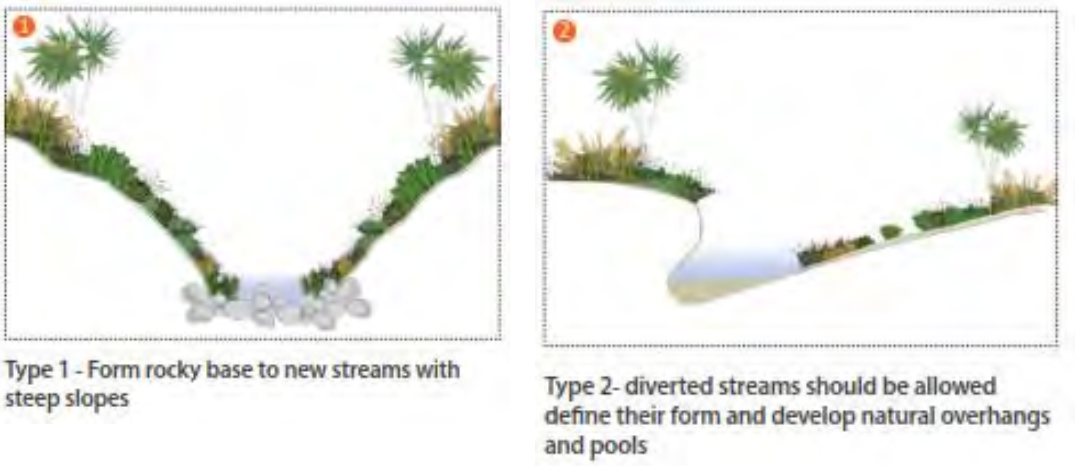


Figure 4.16 – Stream diversion typologies

All diversions will be undertaken in accordance with the following principles:

- Diversions will seek to replicate the character of the overland flowpath and/or watercourse;
- Re-aligned overland flowpaths and/or watercourses will have similar hydraulic capacity to existing channels;
- Where floodplain flow is interrupted, additional waterway capacity will be provided in compensation;
- Reconstructed watercourses will replicate the natural materials and characteristics of the original watercourse to ensure similar ecological functions are maintained;
- Fish-passage will be restored where it is interrupted and determined to be necessary by the freshwater ecologist; and
- Culverts are likely to have minor (10 – 15m) stream diversions upstream and downstream of inlets and outlets to ensure required levels are achieved and culverts are located on firm ground.

4.16.3 Cross Culverts

4.16.3.1 Culvert Details

Culverts will be required along the alignment to provide for the conveyance of flows from one side of the alignment to the other and enable the continuation of streams and overland flowpaths. The Project will require the installation of culverts on both permanent and intermittent watercourses, as outlined in Table 4.10 and shown on the culvert drawings in Volume 2. The total length of culverts to be installed along the alignment is in the order of 1200m.

Table 4.10 – Summary of Permanent Culverts

Culvert #	Chainage	Catchment (ha)	Diameter (mm)	Length (m)	Cover (m)	Grade (5)	Fish Passage	Permanent flow	Debris Fence[25]
1	250	3.82	1050	24	1.2	1	Type 1	No	None
2	300	1.80	825	26	1.2	1	None	No	None
3	570	9.31	1500	67	1.2	1	Type 2	No	None
4	750	1.91	600	81	1.2	1	Type 2	Yes	None
5	870	9.41	1350	87	1.2	3	Type 2	No	Debris Fence
6	1300	6.82	1350	27	1.2	1	Type 2	No	Debris Fence
7	1500	5.78	1200	36	1.2	3	Type 2	No	Debris Fence
8	1700	7.95	1200	35	1.2	4	Type 1	No	Debris Fence
9	1850	66.78	4x1350	56	2	0.5	Type 2	Yes	Debris Fence
10	2220	1.99	750	37	1.2	1	None	No	Debris Fence
11	2300	1.55	750	25	4	17	Type 2	No	Debris Fence
12	2400	9.84	1200	74	12	7	Type 1	Yes	Debris Fence
13	2700	1.65	600	15	1.2	14	None	No	Debris Fence
14	2900	4.72	900	117	16	16	Type 1	Yes	Debris Fence
15	2960	50.49	2550	210	26	1	Type 2	Yes	Debris Fence
16	3800	13.64	1500	115	11	3	Type 1	Yes	Debris Fence
17	4400	3.04	825	22	1.2	14	Type 1	Yes	Debris Fence
18	4750	25.54	2100	29	1.2	1	Type 2	Yes	None
19	4750	25.54	2100	43	1.2	1	Type 2	Yes	None
20	5150	13.55	1650	40	1.2	1	Type 2	No	None
21	5650	11.90	1350	34	1.2	1	Type 2	Yes	None

The drawings in Volume 2 provide typical culvert design details.

[25] Subject to confirmation during detailed design

Culverts will be designed with best practice consideration of fish passage, erosion control and debris management, and energy dissipation as described in the following sections.

4.16.3.2 Fish Passage

Fish species are limited to climbing fish in the steeper, upper reaches of the catchments within the Project area while the lower, flatter valley floors are inhabited by a mix of climbing and swimming species (refer to Technical Report 7b, Volume 3). The new culverts will incorporate fish passage as follows (refer drawing set in Volume 2):

- **Steep culverts** – fish passage will be provided by flexible plastic baffles that will accumulate sediment and form rifles and rest areas for fish during typical flow conditions (Type 1 fish passage).
- **Shallow grade culverts** – the culverts will be oversized and the invert sunken below bed level such that the original streambed reforms (Type 2 fish passage).

4.16.3.3 Debris Control Measures

Debris can accumulate at culvert inlets or become lodged in the inlet structure, which can lead to the blockage of culvert entrances and impact flow capacity through the culvert.

Debris control measures will be installed at culvert inlets located in densely vegetated areas with a high risk of debris generation. Typically, debris control fences will be installed upstream of culverts to prevent the downstream passage of debris, such as logs, that have the potential for blocking culvert entries.

A secondary scruffy dome inlet will also be provided in some locations so that should the primary inlet of a culvert block in a storm event, flows are not impeded and significant ponding does not occur.

Refer to the drawings in Volume 2 for typical debris control details.

4.16.3.4 Scour Protection and Energy Dissipation

High velocity flows at stormwater discharge point / culvert outlet structures can result in the scour and erosion of downstream channels and stream banks. All outlet structures will be designed with rip rap basins to provide adequate energy dissipation and erosion protection measures. Rip rap basins are a rock lined basin containing a pool of water at the culvert outlet. Rock aprons may be provided to further spread flows and reduce flow velocity before it discharges to the downstream receiving environment. Rip rap basins will be sized for the 100 year ARI storm event to minimise the requirement for maintenance given access to culverts will be difficult post construction. Refer to the drawings in Volume 2 for typical rip rap basin details.

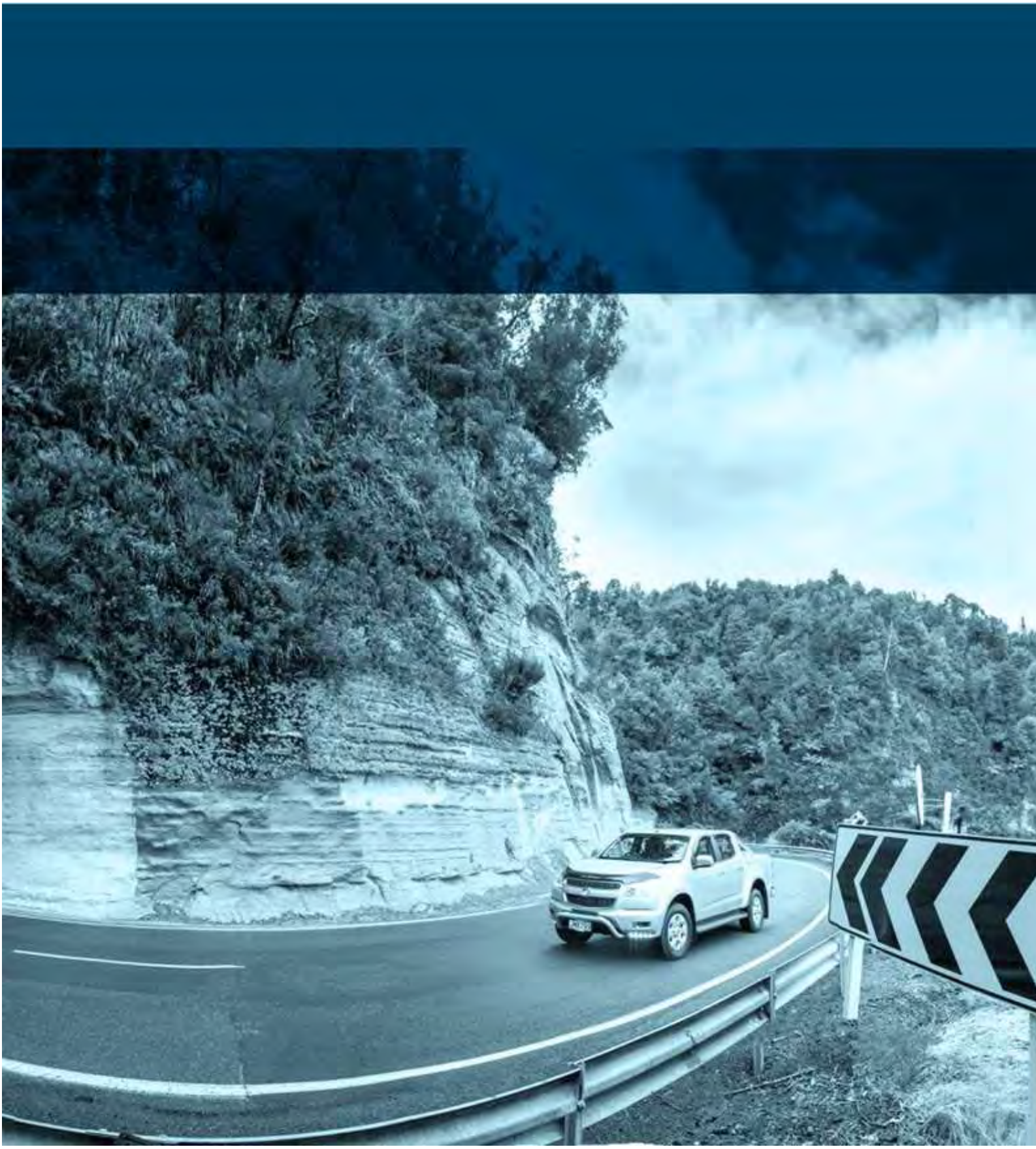
4.17 Network Utilities

Existing services that will be affected by the construction works include Vodafone and Chorus cables in the verge of SH3. Local diversions of these cables are likely to be necessary where the Project intersects the existing road. The extent and scope of any diversions will be discussed with the relevant service authorities.

4.18 Revocation of existing SH3

The Transport Agency has initiated a process with the District Council to establish the future requirements for the existing section of SH3 that will be bypassed on completion of the Project. This includes addressing ongoing access requirements for existing land owners with access off this section of highway. The process had not been completed at the time of lodging these applications and is not a matter for consideration under the RMA. The Transport Agency will consult with affected landowners with access onto the bypassed section of SH3, including with Ngāti Tama. Once the revocation process has been complete ownership and control for this section of road will transfer to the District Council.

Section 5 – Construction of the Project



5 Construction of the Project

5.1 Overview

This section provides an overview of the proposed construction methodologies for the Project. It should be read in conjunction with Section 4 and with the construction drawings provided in Volume 2 of the AEE.

Construction of the Project will inevitably result in adverse environmental effects that need to be assessed and managed. Effects include those related to construction water management, terrestrial and aquatic ecology, noise, vibration, dust, and traffic. The Construction Environmental Management Plan (CEMP) (refer Volume 5) provides a framework for the management of construction activities and any associated effects.

Construction of the Project will take approximately four years, and will be progressed at several locations simultaneously, along the 6km length of the route. The construction methodology refers to a number of construction zones along the alignment.[26]

5.2 Introduction

This section provides an overview of the proposed construction methodology, sequencing and staging across the Project, followed by further information relating to the nature, scale and duration of construction activities, within the main construction zones. A general description of the following construction activities is provided in this section:

- Construction establishment, including yards and site and haul road establishment;
- Water and wastewater;
- Vegetation clearance;
- Earthworks and erosion and sediment control;
- Streamworks;
- Drainage;
- Bridge construction;
- Tunnel construction;
- Pavement and surfacing;
- Landscape reinstatement; and
- Network utilities management.

This section contains cross-references to the relevant technical reports (in Volume 3), construction drawings (in Volume 2) and management plans (in Volume 5), where further information about the construction of the Project can be obtained.

[26] It is noted that the Project has been developed to a consent level design stage. As the design and investigation process continues it is possible that some design details and aspects of the construction methods may change.

5.3 Construction Environmental Management

Given the sensitive cultural and natural environment values associated with the Project alignment, careful management of works will be undertaken to avoid, remedy, mitigate or offset environmental effects during construction.

5.3.1 Construction Environmental Management Plan

A draft CEMP has been prepared for the Project (refer to Volume 5) and provides the overarching framework for the management of environmental effects associated with construction of the Project. The CEMP is supported by a suite of management plans, which outline the management of specific construction effects, including:

- Construction-related water discharges (Construction Water Management Plan (CWMP));
- Ecological and landscape effects (Ecology and Landscape Management Plan (ELMP));
- Construction traffic (Construction Traffic Management Plan (CTMP));
- Construction noise (Construction Noise Management Plan (CNMP));
- Dust (Dust Management Plan (DMP)); and
- Disturbance and handling of contaminated material (Contaminated Land Management Plan (CLMP)).

The environmental management framework for the Project is further described in Section 10 of the AEE.

5.3.2 Recognising Cultural values

The Transport Agency has consulted directly with Ngāti Tama in developing the Project. This will continue over the duration of the Project. Protocols will be developed with Ngāti Tama to recognise Ngāti Tama's cultural values and significant sites and provide for appropriate cultural management during construction. These protocols will cover aspects such as:

- Kaitiaki responsibilities, including cultural monitoring requirements for activities occurring at sensitive sites, such as vegetation clearance, earthworks, salvaging and translocation of protected fauna;
- Tikanga and cultural practice in relation to Project activities;
- Vegetation clearance, cultural harvest and use of vegetation to be removed during construction;
- Accidental Discovery Protocol.

5.4 Construction method development

The construction methodology and activities outlined in this section were developed through a collaborative and iterative process involving engineers, constructors and ecologists. The intention has been to balance the engineering and construction requirements, programme implications and likely environmental effects to achieve a methodology that, as far as practicable, avoids or, where avoidance is not possible, remedies or mitigates adverse effects. This included consideration of the following:

- The location and extent of construction yards, laydown areas and construction access tracks/haul roads. The intent was to minimise disturbance and vegetation clearance in sensitive environmental areas, and as far as practicable avoid locating construction activities in or in close proximity to sensitive features;
- Construction of bridge and tunnel works to minimise impacts on sensitive environmental areas and habitats;
- Construction programme and timing of particular activities to take advantage of seasonal weather conditions or minimise disruption to ecological breeding and migration patterns where feasible; and
- Transport Agency construction guidelines and standards that seek to avoid and minimise adverse environment effects.

The construction methodology described here aims to retain flexibility for future refinements that might be required during the detailed design or during construction of the Project, while at the same time, ensuring sufficient certainty of outcomes to enable effects to be robustly assessed in this AEE.

5.5 Construction programme

5.5.1 Construction duration

The Project is anticipated to take four years to construct. Construction works are programmed to commence in Quarter 4 2018 and be complete around the end of 2022. An indicative programme is set out in Figure 5.1.

5.5.2 Working hours

General working hours will be between Monday and Sunday 6.30am-9pm. These general hours take into account the remote Project location and small number of surrounding dwellings.

There will however be some construction activities undertaken outside the general working hours. These activities may include:

- Works on the existing SH3 corridor, including construction of site access points (SAPs) at the start of the Project and tie-ins of the new alignment to the existing State highway at the end of the Project;
- After-hours material and plant delivery, including bridge and tunnelling equipment and materials where the transport of oversize loads outside working hours will be less disruptive;
- Tunnelling works, which will be undertaken 24 hours a day; seven days a week during the relevant phase of the Project;
- Early morning concrete pours; and
- On-site servicing of plant and equipment to minimise impacts on construction programme.

All construction works are predicted to comply with the Monday to Saturday day-time construction noise limits set out in NZS 6803: 1999 - Acoustics - Construction Noise (NZS6803:1999).

There is the potential that construction works outside Monday to Saturday 7:30am to 6:00pm will exceed the night-time and Sunday construction noise limits set out in NZS 6803: 1999. However, much of the alignment has large setbacks to the nearest receivers and natural shielding by the local topography, which will, in most cases, enable compliance with the night-time noise limits.

The intention is that works in close proximity to occupied dwellings will be scheduled to be carried out during the hours of Monday to Saturday 7:30am to 6:00pm, to ensure compliance with the NZS6803:1999 limits. However, works outside these hours, which would in turn potentially exceed the night and Sunday noise limits in NZS6803:1999, may be required.

Construction activities will be undertaken in accordance with a CNMP (refer Volume 5). The CNMP will:

- enable the construction team to determine the necessary setbacks, mitigation measures and procedures to enable compliance with the limits; and
- outline the management and communication procedures for night and Sunday works in excess of the noise limits.

5.5.3 Construction regions and zones

For the purposes of programming and physical works management, the Project area has been split into two main construction regions, north and south of the new Mt Messenger tunnel. The regions follow the natural split of the Project area into the Tongaporutu and Mimi catchments.

The construction regions are further split into ten construction zones as outlined in Table 5.1 and illustrated on the construction zone drawings in Volume 2.

Table 5.1 - Construction Regions and Zones

Construction Regions and Zones	Overview of Main Construction Features / Activities
NORTHERN CONSTRUCTION REGION - Chainage 0 – Chainage 3635 Cuts and fills of structural fill are balanced in the northern region, with buttress fill to be imported from the southern region once the tunnel and bridge are complete.	
Zone 1- Chainage 0 – 350	• Northern tie-in to existing SH3 on alignment Note: Zone includes additional 400m on the existing SH3 for construction works
Zone 2 - Chainage 350 – 2375	• Cuts and fills, drainage works • Establishment and operation of main construction yard • Stream diversions • Access tracks / haul roads • Fill disposal site
Zone 3 - Chainage 2375 - 3400	• Cuts and fills, including a large fill on the tunnel approach • Drainage works

Construction Regions and Zones	Overview of Main Construction Features / Activities
	• Piling under fills • Temporary storage of fill material • Stream diversions • Access tracks / haul roads
Zone 4 – Chainage 3400 – 3635 (The tunnel)	• Tunnel portal construction • Tunnel construction yard establishment and operation • Tunnelling operations • Pavement and surfacing and installation of lighting, ventilation etc. • Construction of tunnel control room and water tanks
SOUTHERN CONSTRUCTION REGION – Chainage 3635 to Chainage 5955 Excess fill from the southern zone will amount to approximately 145,000m³ of structural fill and likely will be moved from the south to the north or taken to nearby spoil disposal sites depending on programme.	
Zone 5 – Chainage 3635 – 4150 (The bridge)	• Large cut and fill works between the tunnel and the bridge • Access tracks • Drainage works
Zone 6 – Chainage 4150 – 4270	• Access tracks to the bridge work site • Bridge construction yard establishment and operation • Bridge construction, which will comprise: o Piling works o In-situ pour concrete o Steel erection o Deck slab construction o Pavement and surfacing
Zone 7 – Chainage 4270 – 4825	• Cuts and fills • Access tracks • Drainage works • Spoil disposal site
Zone 8 – Chainage 4825 – 5250	• Cuts and fills • Drainage works • Access tracks • Southern tie-in to existing SH3
Zone 9 – Chainage 5250 – 5955	• Cuts and fills • Drainage works • Access tracks • Tie-in to existing SH3

Construction Regions and Zones	Overview of Main Construction Features / Activities
	Note: Zone includes additional 450m on the existing SH3 for construction works
Zone 10 (no Chainage)	• Fill disposal site

5.5.4 Construction sequence

Construction of the Project will be undertaken on a number of fronts or work faces, such that different construction operations will, at times, be simultaneously progressed across multiple construction zones (refer construction zone drawings in drawing set – Volume 2).

As each zone, or subzone, is accessed the approach will involve:

- **Preparatory works**[27] – Initial works to enable Establishment Works and Construction Works, such as:
  - site surveys;
  - investigations (including geotechnical investigations);
  - monitoring;
  - land disturbance activities to establish site access, access tracks, construction yards, laydown areas and spoil disposal sites and associated erosion and sediment control. Aspects of these works may be undertaken as Permitted Activities (refer Section 2.5).
- **Establishment works** – Progressively opening up the site including, for example, narrow access tracks to reach and construct sediment ponds; followed by wider vegetation clearance, stream diversions, and construction of full width access tracks and construction yards.
- **Main construction works** – Ground improvement, bulk earthworks (including cut and fill activities), drainage installation, bridge construction, tunnelling, pavements and surfacing, reinstatement of site following the completion of construction, landscaping, installation of permanent road furniture and ancillary works.

An indicative construction programme is set out in Figure 5.1.

[27] Preparatory Works do not include vegetation clearance.

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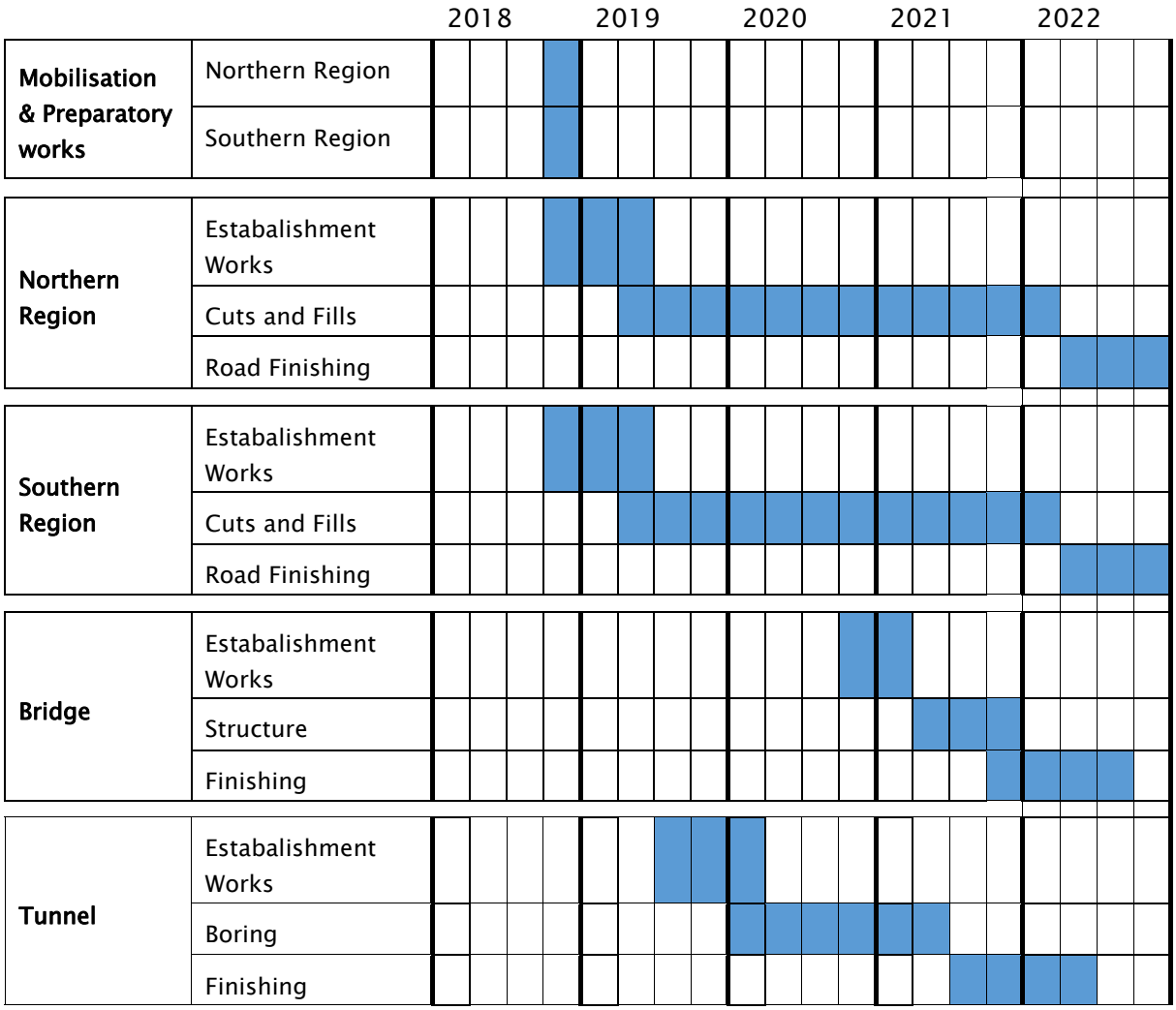


Figure 5.1 – Indicative Construction Programme and Sequencing

The overall construction sequence will generally be as follows:

- Establish construction yards, SAPs, access tracks and erosion and sediment controls in the northern construction region. Undertake site survey prior to vegetation clearance (refer to Section 5.12.2). Install drainage works, including temporary and permanent works as appropriate (drainage will continue to be installed throughout the construction phase).
- While works in the northern construction region are underway, commence construction of SAPs, laydown areas, and installation of environmental controls in the southern construction region. The initial focus will be on establishing a number of SAPs to allow multiple work fronts to be opened.
- Works in the northern construction region will focus on establishing access to the northern tunnel portal, construction of the tunnel yard, and commencing bulk earthworks and cut and fill activities within the northern construction region.

- Once working areas are established at the northern tunnel portal, work will begin on construction of the northern tunnel portal.
- Works in the northern and southern construction regions will continue, including constructing access to the southern tunnel portal before the tunnelling operations reach that point.
- Tunnelling will begin from the northern or southern end, depending on actual programme.
- Construction of the bridge abutments and foundations, following by construction of the bridge structure itself.
- Once the tunnel has broken through, material can be transported from the southern construction regions to the on-alignment disposal sites in the north (Zone 3).
- Once areas subject to bulk earthworks and cut and fill activities are at final levels, any overburden or preload will be removed and final pavement and surfacing works for the road will begin. This will be followed by the installation of road furniture (lighting, barriers, signage etc.), line marking and landscaping.
- Reinstatement and rehabilitation works will be completed across the wider Project area, including reinstatement of construction yards and haul roads, and completion of ecological and landscape planting in accordance with the ELMP.

Refer to the construction staging drawings in Volume 2 for further detail on construction staging and sequencing.

Throughout this work a programme of ecological monitoring and management will be put in place to avoid, remedy, mitigate or offset potential ecological effects. This programme will include the salvage, recovery and translocation of high value flora and fauna from within the construction footprint, where practicable.

In addition, replacement and restoration planting will be carried out to mitigate and offset the effects of the construction of the Project. This will include restoration planting of 6ha of swamp forest and wetland, restoration of 8.9km of riparian margin, replacement mitigation planting of 9ha, and revegetation of as much of the construction footprint that will not be road as is practicable.

The details of the mitigation and offset measures are discussed in Technical Report 7h, and will be set out in the ELMP. Wider environmental management measures will be in place through the construction period as detailed in the CEMP.

5.6 Construction establishment

One main construction yard will be established for the Project, along with smaller yards to support bridge and tunnel construction activities and works where crews are based in remote locations.

The construction yard locations (outlined below and shown on the construction staging and the erosion and sediment control conceptual plans in Volume 2) are based on consideration of a number of factors, including:

- Sites which minimise environmental, social and cultural effects;
- Access to and safe operation of yard access in relation to SH3;

- Proximity to the alignment and key work areas, such as bridge or tunnel works; and
- Topography of the area, favouring reasonably level sites to minimise site establishment works.

All yards will be fenced as required to make them secure during the construction phase. Yard establishment will include site clearance, ground preparation, and the installation of erosion and sediment control measures and temporary drainage (refer to the CWMP for detail on the latter).

Upon the completion of works, the construction yards will be disestablished and the areas reinstated. Reinstatement requirements will be detailed in the ELMP.

5.6.1 Main construction yard

The main construction yard will be located at the northern end of the alignment (around Chainage 400 – 550). A new SAP will be established to provide a safe entry and egress to the yard from SH3 (refer to Section 5.7.2 for further detail on the SAPs for the Project).

The northern construction yard will be the central hub for construction work providing for:

- Main Project office, administrative centre (with training room, first aid room and toilets), and meeting place for construction staff and visitors;
- Main carpark for the site;
- Main plant/equipment storage and workshop and servicing;
- Limited fuel storage and refuelling facilities;
- Main access to northern end of alignment;
- Main delivery point and laydown area for materials (including stockpiles); and
- Transfer and segregation point for site and Project office waste (for off-site disposal).

The yard will be approximately 5,000m^2 in size with an indicative layout shown in Figure 5.2.

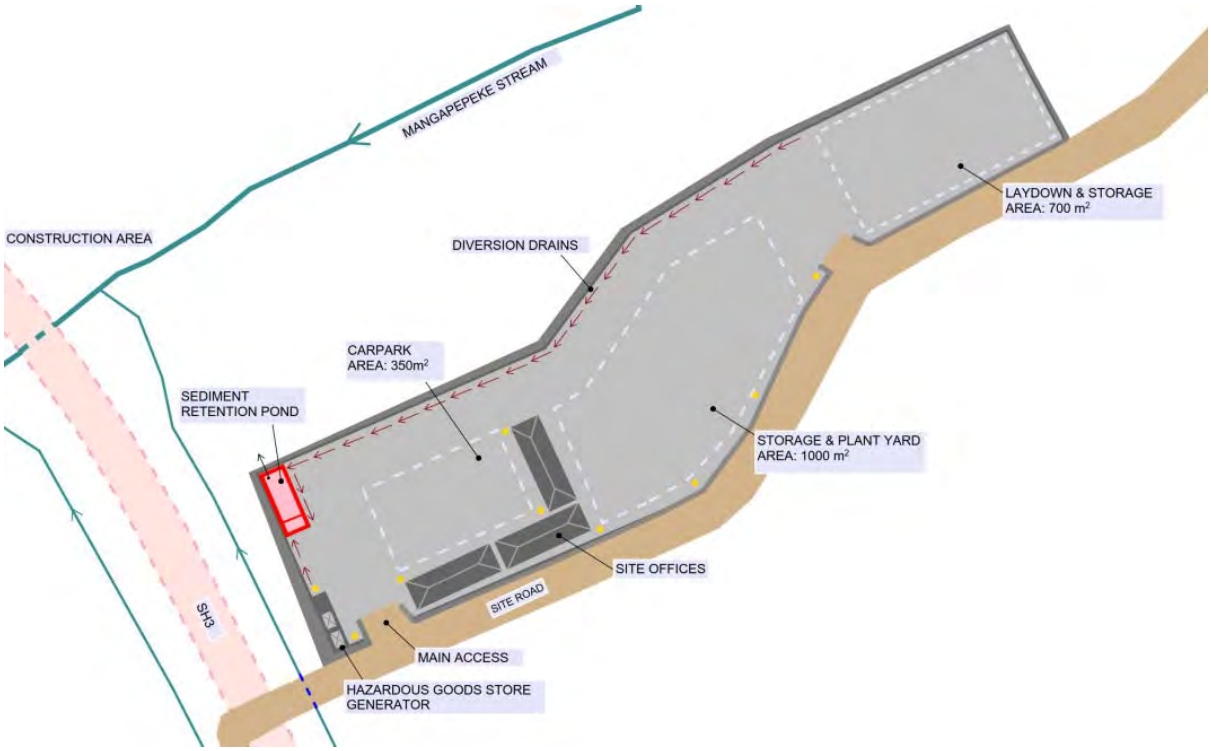


Figure 5.2 – Main construction yard – indicative layout (refer to Volume 2 for full size drawing)

5.6.2 Secondary construction yards

Small construction yards (approximately 2500m^2) will be established at the bridge and tunnel construction work areas, along with remote locations where crews are based. The yards will comprise a small office and welfare facility for the duration of the respective works. The yard will also provide for:

- Local plant/equipment storage;
- Local access to alignment;
- Delivery point for construction materials; and
- Collection of site waste.

5.7 Site access and haul roads

5.7.1 Access philosophy

Site access arrangements for the construction phase have been designed to provide direct access to key work areas, including the bridge abutments and the tunnel, and enable work to be undertaken concurrently in several construction zones. Compared with the alternative of having to work progressively from each end of the Project, this will provide the following benefits:

- Accelerated construction of the bridge and tunnel to facilitate the transport of material from the southern to northern construction regions, minimising the transportation of fill on public roads;

- Minimises unnecessary traffic on the temporary access tracks, enabling their widths to be kept to a minimum; and
- Enables the most efficient sequence for the tie-ins of the new road to SH3 by keeping them free of construction traffic and minimising the duration of potential disruption and traffic impacts.

5.7.2 Site access points

Access to the site during construction will be via specified SAPs as shown Figure 5.3 below and outlined in Table 5.2.

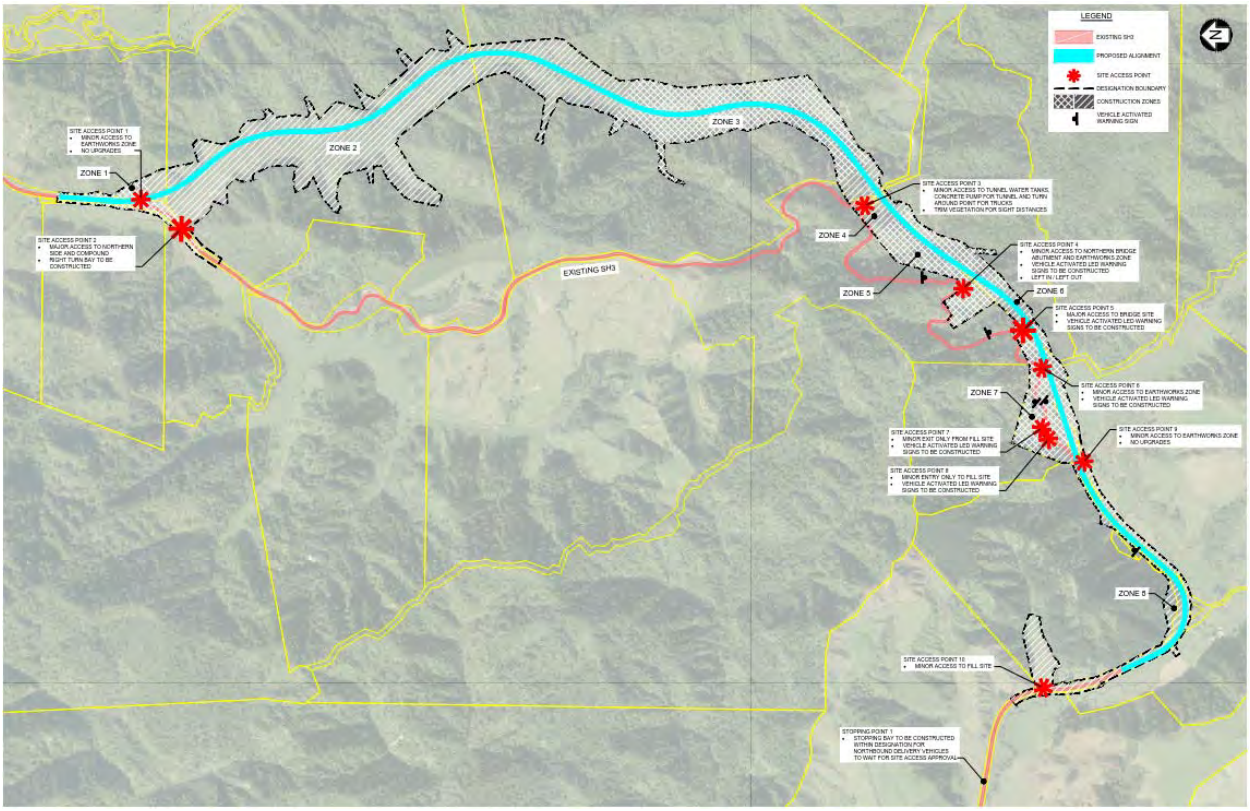


Figure 5.3 – Location of SAPs along the alignment (refer to drawing MMA-DES-TRS-C0-DRG-1001, Volume 2 for full size drawing)

Upgrading of discrete sections of the existing SH3 network will be required to accommodate the safe operation of the SAPs as summarised in Table 5.2.

Table 5.2 – Site Access Points

SAP and work Zone	Purpose	SAP Operation
SAP 1 Zone2	SAP 1 will provide access to zone 2 during the early phase earthworks.	The first 10m of the access point will be sealed.
SAP 2	SAP 2 will be the primary access point for the northern construction region, including access to the main construction yard. .	A right turn bay will be constructed (in accordance with Austroads Guide to Road

SAP and work Zone	Purpose	SAP Operation
Northern Construction Region		Construction) to facilitate the safe movement of traffic in and out of the site.
SAP 3 **Zone 4**	SAP 3 is located at the top of the hill adjacent to the tunnel control building and will provide access for: • Light construction staff vehicles and trucks transporting building supplies and equipment for the tunnel control building. • Concrete trucks delivering concrete for the tunnel linings (approximately 8 deliveries/day) • Trucks turning around to access SAP 4	Visibility at SAP 3 will be improved by thinning vegetation on the inside of the adjacent corners.
SAP 4 **Zone 5**	SAP 4 will enable access to the northern bridge abutment and the cut and fill between the bridge and the tunnel. Early access to this area is critical to completing the southern haul route.	SAP 4 will be located on the inside of a bend in a steep, slow speed area. Safety improvements will include: • LED warning signs on each approach that illuminate when a vehicle is approaching on SH3 and a vehicle is exiting or entering SAP 4. • A left in/left out restriction will apply at SAP 4
SAP 5 **Zone 6**	SAP 5 will be the primary access to the northern end of the southern construction region for: • the southern bridge abutment and laydown area; and • earthworks cuts immediately south, from which material will be transported north to construction zone 3.	SAP 5 is located on the outside of a corner, where approach speeds and visibility are constrained by the road's geometry. Vehicle activated LED warning signs will be provided for this access.
SAP 6 **Zone 7**	SAP 6 will be a minor access point for preparatory works in zone 7 (environmental controls, vegetation clearance etc), when access via SAP 5 is not practical.	Vehicle activated LED warning signs will be installed.
SAP 7 **Zone 7**	SAP 7 is will provide access to an area that will potentially be used as a spoil disposal site and/or laydown area. SAP 7 will provide the exit from the one-way loop.	Vehicle activated LED warning signs will be installed in conjunction with SAP 8.
SAP 8 **Zone 7**	SAP 8 will be the corresponding entry to the spoil disposal area / laydown area for SAP 7.	SAP 8 will have LED warning signs to indicate when a vehicle is waiting to turn right into the

SAP and work Zone	Purpose	SAP Operation
		site, operating in conjunction with SAP 7.
SAP 9 Zones 7 and 8	SAP 9 is located at the southern end of the Project where the new alignment meets SH3. • It will initially facilitate earthworks access in zone 7. • Following haul road establishment it will be a primary access point for the southern construction region, and pavement and surface works.	SAP 9 has good sight distances in each direction. No upgrades are proposed.
SAP 10 Zone 10	SAP 10 will provide access to the fill site just south of the Project. If used, trucks will turn right into the site and left out.	No upgrades are proposed other than sealing the first 10m of the accessway.
Stopping Bay 1	A stopping / pullover bay will be located on the southern approach to the site, for trucks to wait if site access is not immediately available. Truck drivers will have radio contact with site crews to check site access prior to entry.	The stopping bay will comprise a 4m wide and 100m long sealed shoulder.

All SAPs will be signposted and secured with gates and security fencing so that access will only be possible for those authorised to access the site (including workers, and movement of materials and plant). Access points will be locked overnight when not in use. All site accesses will be developed so as to ensure good visibility to and from the accesses in keeping with the approach design speeds.

SAPs will be managed in accordance with the Transport Agency Code of Practice for Temporary Traffic Management (CoPTTM) and the CTMP (refer Volume 5). Appropriate controls such as flashing beacons and speed restrictions will be implemented as required. Where appropriate, access points will be sealed for the first 10m to prevent the tracking of debris onto the SH3 network.

5.7.3 Haul roads / access tracks

Temporary construction access tracks and haul roads will be required along the length of the alignment to transport, plant, machinery, personnel, construction materials and fill material throughout the Project area and between construction zones.

Where possible, haul roads will be constructed on the permanent alignment to minimise the extent of disturbance and vegetation clearance. Access tracks and haul roads are shown on the construction staging drawings and in further detail on the erosion and sediment control conceptual plans in Volume 2.

Construction of the access tracks is detailed in Section 5.13.2.

5.7.4 Temporary traffic management

The offline location of the alignment from the existing SH3 corridor will enable most construction activities to occur without disrupting passing traffic. Aside from the SAPs

described in Section 5.7.2, the only locations where the public will be affected by the proposed construction works are the northern and southern tie-ins to the existing SH3 at the completion of the Project.

The tie-ins will involve reconstructing the existing SH3 carriageway to provide a new shape (camber) and pavement through replacement of basecourse and/or cement stabilisation. These works are similar to standard pavement rehabilitations routinely undertaken across the State highway network. Works will occur on one side of SH3 at a time, with stop/go control of traffic in place. Given the relatively low volume of traffic on SH3 (2,300 vehicles per day), a stop/go operation will be able to clear waiting traffic every time, without a build-up of queues as can occur on busier roads.

All construction works involving temporary traffic management will be undertaken in accordance with the CTMP (refer Volume 5). The CTMP has been prepared in accordance with the CoPTTM, and outlines the requirements for safe and efficient traffic management during construction in order to reduce adverse effects on the State Highway network. Specifically, the CTMP addresses:

- SAPs and associated traffic controls;
- Temporary speed limits during construction;
- Delineation devices, such as cones;
- Advance signage;
- Maximum delays permitted during traffic management control; and
- Notification to road users of potential disruptions on the State highway network as a result of the Project.

5.7.5 Construction material sources and transportation

Materials required for construction of the Project, along with the source and transport requirements, are outlined in Table 5.3.

Table 5.3 - Construction Materials

Material	Source
Bulk Fill	• Earthworks will be mostly managed on-site, avoiding the transport of bulk fill via SH3 and the local road network. Up to approximately 87,000m^3 of cut material may be transported to the fill sites on the southern side of the Project, involving approximately 80 truck movements per day over six months.
Aggregates	• Aggregates for access tracks, drainage fill and pavements will be imported to site from quarries within the Taranaki region depending on material type (size quality etc.) and haulage distance to site. • Aggregate will be transported to site by truck and trailers along SH3. Trucks will access the site via the SAPs outlined in Section 5.7.2. Aggregate deliveries will average around 10 deliveries per day over the duration of construction. The peak will occur when pavements are being laid with up to around 60 deliveries per day.

Material	Source
Concrete	• Concrete for the bridge and tunnel construction will be delivered ready-mixed from New Plymouth. During tunnel lining, approximately eight truck deliveries per day can be expected, for around 12 months.
Pavement and surfacing Materials	• Chipsealing materials (bitumen and chip) and asphalt will be delivered to site as required for pavement and surfacing works. Based on typical production rates, surfacing days will require around 60 deliveries per day. Surfacing will occur over a total of around 20 days. • Asphalt required for bridge and tunnel surfacing will be transported from New Plymouth.
General construction items and consumables	• General construction items, such as culverts, geotextile, steel, barriers, fencing will be manufactured off-site and delivered to site as required (likely via SH3, from either New Plymouth or Hamilton). These materials will generally arrive on single unit trucks or semi-trailers. • Fuel will be delivered to site on a daily basis by mini tanker and transported on-site to plant and equipment. Potable water and trucks to remove sewage from on-site toilets will visit the site as required.

As these various activities will not overlap, an average of between approximately 30 and 80 truck deliveries per day is anticipated, depending on the stage of construction. However, the normal fluctuations of construction activity will require larger numbers of trucks at times during the construction period.

5.8 Water & Wastewater

5.8.1 Water

Water will be required for a number of construction activities. The bulk of the water will be used for dust suppression. Other activities, such as compaction of granular materials, ground improvements, structural work and vehicle washdown, will be secondary uses of water.

Surface water will be abstracted from the Mimi River in the south, and the Mangapepeke Stream in the north (downstream of the confluence of Mangapepeke Stream and an unnamed tributary). Abstraction volumes will likely range from 300m^3/day – 450m^3/day during dry weather:

- 300m^3/day is the likely estimate with dust control rationalised to locations of sensitive receptors (refer to the DMP in Volume 5 for further detail).
- 450m^3/day is the conservative upper limit where dust control is applied across the full construction site (regardless of the presence of sensitive receptors).

At these locations a screened intake and pump will be established in a deeper section of the stream. To raise the water level locally it may be necessary to establish a low weir across the streambed. If this is required, a temporary structure made from sandbags or similar temporary materials would be constructed either partially or fully across the stream bed. The structure would be constructed to enable fish passage.

Abstracted water will be pumped from both the north and south construction regions to holding tanks.

Abstraction will likely occur for a period of approximately 10 – 24 hours per day. The instantaneous abstraction rate will vary with pumping times, as summarised in Table 5.4.

Table 5.4 - Indicative daily volume and instantaneous flow rates

Total daily volume (m^3/day)	Volume from Mimi River (m3/day)	Instantaneous flow rate (l/s)		Volume from Mangapepeke Stream (m^3/day)	Instantaneous flow rate (l/s)	
		10hr	24hr		10hr	24hr
300	150	4.2	1.7	150	4.2	1.7
450	150	4.2	1.7	300	8.3	3.5

Water from sediment retention devices will be re-used in construction operations, as practicable.

Potable water will be brought to site via water tankers and stored on site in the construction yards in water tanks.

5.8.2 Wastewater and washwater

Wastewater or washwater will be managed as follows:

- All sewage will be removed from site via tankers for treatment at an approved treatment plant (i.e. no wastewater treatment or disposal will occur on site).
- Dedicated hardstand wash out areas for items such as tools and small equipment, and concrete washout water, will be provided on site in accordance with the CWMP. All washout areas will drain to sediment ponds for treatment.

5.9 Construction workforce and transport

Most of the construction workforce will likely reside in Waitara and New Plymouth, with a smaller proportion in Mokau, Tongaporutu, and Urenui. No accommodation will be provided on-site.

At peak periods, a total of 200 to 250 staff are expected to be on-site at any one time. By the nature of the workforce, some will travel to site by a single occupant vehicle, while others will choose to carpool with three to four people per vehicle. Carpooling and minivan transport will be actively encouraged.

Vehicle parking will be provided within the Project construction yards or dedicated areas within the construction area.

5.10 Site communications

Site communications will be via a series of dedicated radio channels. Each radio channel will be allocated to a particular area or work type. All emergency management and day-to-day activities will be managed through this system.

Cellphone coverage in the area is not reliable, so land-line telephone systems will be installed for wider communications. It is noted that Crown Fibre Holdings have announced

plans to upgrade mobile coverage in the area from Mt Messenger to Tongaporutu as part of a programme to upgrade mobile coverage at mobile blackspots for around 1,000km of State highways.

5.11 Construction lighting

Temporary construction lighting will be required at construction yards and active working areas to enable construction during the hours of darkness, especially during the winter period.

Construction lighting, including light spill will be managed through:

- Considering the selection, layout and arrangement of temporary lighting including shrouding and spectrum limits to minimise impacts on adjacent ecological habitats and any residential;
- Separation between the night time work and any residential boundary; and
- Reducing construction yard lighting to low levels for security purposes when yards are not in use.

Glare from any lighting will be kept below the recommendations in AS 4282 – 1997 "Control of the Obtrusive Effects of Outdoor Lighting".

5.12 General construction activities

5.12.1 Demolition

Any demolition required within the Project area (such as the removal of the small number of existing buildings or structures) will be undertaken in accordance with the Best Practice Guidelines for Demolition in New Zealand (NZDAA November 2011). The guideline include procedures for safely handling any hazardous substances, such as asbestos.

5.12.2 Vegetation clearance

Vegetation removal will be required for construction of the Project, however clearance will be limited to the minimum areas required for construction of the alignment and associated activities, such as spoil disposal sites, construction yards and access tracks. The erosion and sediment control conceptual drawings (Volume 2) show ecologically significant vegetation to be protected during construction. This vegetation will be confirmed during site surveys prior to the commencement of construction.

Vegetation clearance will be undertaken in accordance with the CEMP and the ELMP (Volume 5), including bat, lizard and tree felling protocols. It is anticipated that vegetation clearance, cultural harvest and use protocols will be developed in collaboration with Ngāti Tama prior to the commencement of construction.

Prior to any vegetation clearance, a pre-clearance ecological survey will be undertaken to identify trees and areas of habitat where fauna are residing and a constraint map will be produced for each zone, showing the survey findings (e.g. trees to be protected, and general vegetation types to be cleared – native, exotic etc).

Physical delineation (such as fencing or flagging tape) will be used to clearly mark the extent of vegetation clearance to be undertaken, along with vegetation to be protected. Vegetation

will be cleared only prior to construction works beginning in the area in order to reduce habitat effects and reduce the potential for erosion and sediment generation.

Exotic vegetation will be cleared by bulldozer or chainsaw, with cleared vegetation mulched and stockpiled for re-use in the landscape planting following the completion of construction.

Wherever practicable, native trees will be felled by a chainsaw and smaller native bush felled by bulldozers. The trees will be de-limbed and vegetation (branches) removed from the logs will be stockpiled adjacent to areas of remaining native vegetation.

5.13 Earthworks

The alignment has been designed to minimise the amount of earthworks required for the Project. Approximately 960,000m^3 of excavated (cut) material will be generated from the site. Of this, 890,000m^3 of material is to be placed in fill embankments on-site. As such, an excess of approximately 70,000m^3 structural fill will be disposed of within the designation boundaries either in spoil disposal sites or embankments. A further 75,000m^3 of unsuitable material is expected and will likely be disposed in spoil disposal sites (refer to Section 5.13.4 for further detail on the disposal sites).

The earthworks will generally comprise the following, outlined in further detail below and in Technical Report 13 (Volume 3) and the CWMP (Volume 5):

- Site establishment works – topsoil stripping, establishment of erosion and sediment controls, installation of permanent and temporary drainage;
- The establishment of spoil disposal sites;
- Gully clearing and filling;
- Bulk earthworks, including cut and fill activities and embankment construction; and
- Site reinstatement and rehabilitation following the completion of construction.

Cut and fill activities will include the following:

- A number of cut slopes (up to approximately 60m in height);
- A number of deep rock cuttings (up to approximately 60m deep);
- Low earth fill embankments (typically <3.5m high) across low-lying valleys within the Project area;
- Higher earth fill embankments (up to approximately 40m high) crossing the more elevated gullies in the Project area; and
- MSE fills in localised areas of the alignment where steep-sided embankments are necessary.

5.13.1 Establishment

Site preparation prior to the commencement of earthworks will require:

- Identification of the location of services, which may require diversion outside the area of excavation;
- Clearing of vegetation and stripping of topsoil; and
- Installing erosion and sediment control measures (refer to the CWMP in Volume 5).

The construction methods for earthworks include:

- Cut to fill within the earthworks zone;
- Cut to fill using the haul road; and
- Import fill from other zones.

5.13.2 Access tracks

Temporary access tracks will be established by placing a layer of geofabric on the existing ground and overlaying structural fill. On soft ground or in flood-paths, appropriately sized temporary culverts will be installed beneath the access track.

In areas of very weak ground, a bridging layer of logs may be used with the geofabric. This construction method will generally be applied in locations where the depth of weak ground means that removal is not practical (eg where depth is greater than 500mm).

If required to provide an all-weather access, access tracks and haul road running surfaces will be constructed using imported basecourse.

Diagrams of the proposed access track construction are presented in Figure 5.4 and Figure 5.5.

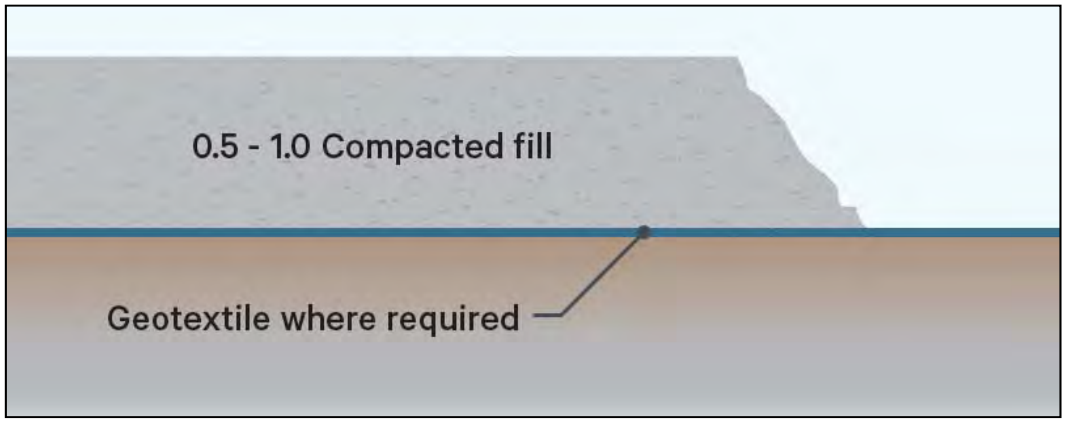


Figure 5.4 – Proposed construction of the access track

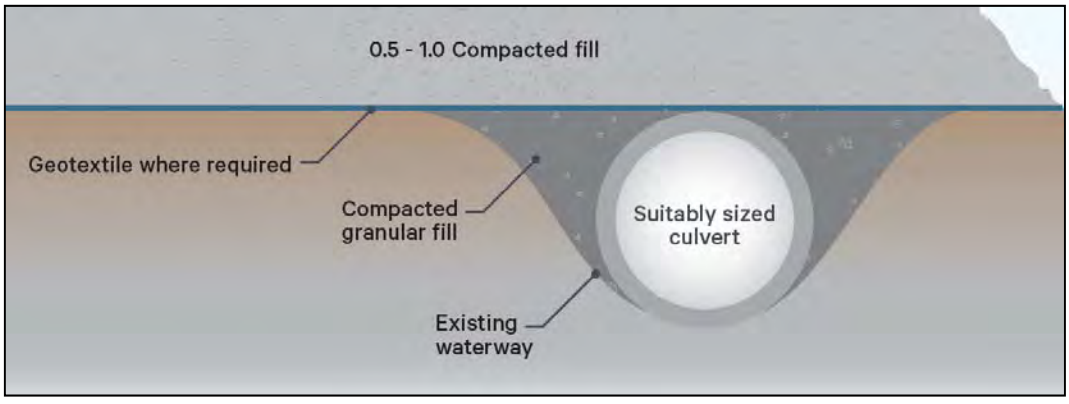


Figure 5.5 – Proposed construction of an access track over an existing waterway

When working uphill, erosion and sediment controls will be installed prior to the commencement of track construction and will remain in place during construction. Water from track construction will be channelled back along the side of the track to the previous sediment pond. When construction reaches the site of the next sediment pond, construction of that pond will commence while work continues on access track construction. During this time, the water will track back to the previous pond until the next pond is completed and stormwater from the access track can be diverted into it.

When working downhill, a narrow access track will be constructed initially to reach the next sediment pond site. The pond will then be constructed before the access track is widened to full width.

5.13.3 Gully clearing and filling

Gullies along the alignment will need to be cleared and filled as part of the early works to enable both construction access and subsequent construction of the alignment.

The gully filling methodology will likely be as follows:

- Clear topsoil and excavate unsuitable materials;
- Diversion of watercourses;
- Installation of temporary / permanent culverts; and
- Placement of fill within the gully to the level required for access track or alignment construction.

In some of the very narrow valleys, diverting the watercourse will not be practical. Instead, short sections of stream will be over-pumped while the stream bed is inlaid with a perforated pipe culvert wrapped in drainage metal and filtercloth. This process will be repeated in short steps working up the valley.

The gully areas will be subject to further filling during the main phase of construction works, in order to form the final contours of these areas.

All gully works will be undertaken in accordance with the relevant ecological and erosion and sediment control requirements outlined in the CEMP, CWMP and ELMP (refer Volume 5).

5.13.4 Spoil disposal sites

Construction of the Project will generate approximately 145,000m^3 of surplus fill material (structural and unsuitable).

Potential permanent spoil disposal sites are shown on the construction staging drawings and the erosion and sediment control conceptual plans in Volume 2 (referred to on the drawings as Provisional Fill Sites). Two spoil disposal sites are located in the southern construction region where earthworks will generate a surplus of material, thereby reducing haulage distances. Spoil disposal sites have also been identified in the northern construction region, allowing similarly for efficiencies of haulage and materials handling.

These spoil disposal sites could be utilised for both / either the permanent placement of spoil, and / or for the temporary storage of topsoil, and for spoil stockpiling on-site until alternative fill sites become available, or for spoil conditioning. The sites will have a

combined volume sufficient to accommodate surplus fill[28]. The decision as to how much spoil to send to each site will be based on actual earthworks progress rates, and the most efficient site relative to the cut location at that time, along with considerations of the final use and form of the spoil disposal site, including any requirements of landowners.

Appropriate erosion and sediment controls will be installed for the respective disposal sites as outlined in the CWMP (refer Volume 5) and as shown on the erosion and sediment control conceptual drawings in Volume 2. Wet materials will be contained behind bunds to manage any discharge from the material.

Following completion of construction, disposal areas will be contoured, landscaped, and vegetated in accordance with the provisions of the ELMP and LEDF (refer Volume 5 and Technical Report 8b in Volume 3).

Where ephemeral streams or flow channels are located within the footprint of spoil disposal sites, subsoil drains will be aligned at the base of these fill sites. Following completion of works, water will either drain around the edge of the fill area or across the surface.

5.13.5 Temporary stockpiling

Topsoil or other unsuitable materials will be stockpiled on site until suitable permanent disposal sites have been developed. These temporary stockpiling areas may also be used to store construction equipment during the construction phase of the Project or for disposal.

Temporary stockpiling areas will be established in designated areas across the Project (refer to the erosion and sediment control conceptual drawings in Volume 2). Stockpiles will be constructed and bunded in accordance with erosion and sediment control and dust management requirements outlined in the CEMP. Temporary stockpiles will be removed at the completion of construction.

5.13.6 Cut slopes

Material will be excavated mechanically from cut faces and will be stockpiled or loaded directly onto trucks to be transported for use as fill elsewhere on the Project, or for disposal.

Figure 5.6 provides an indication of how access to the top of the cut slopes will be gained using temporary haul roads across the cut face of up to a 15° gradient.

[28] It is noted that the fill embankments described in Section 4.13 and in Sections 5.13.8 and 5.13.9 could be designed to accommodate additional fill if that is required during construction.

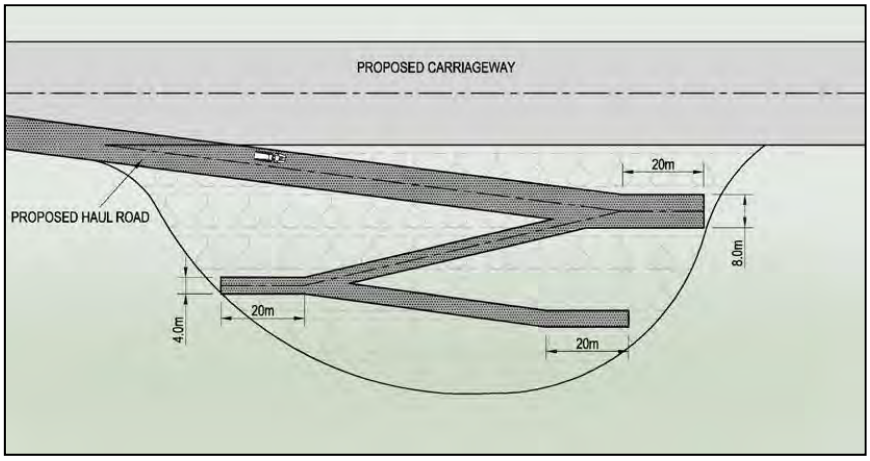


Figure 5.6 – Indicative haul road configuration for large cut slopes

At the cuttings, it is anticipated that a number of perched water tables will be present within the coarser sandstone layers. Based on the available information, preliminary modelling of possible groundwater seepage from the road cuttings indicates that in the order of 10 to 30m^3/day of groundwater could drain from the combined total area of cut faces along the Project alignment.

5.13.7 Rock cuttings

A combination of soil nails, rockfall drape and a catch-ditch will be installed to mitigate the effects of minor rock falls and slabbing failures within the rock cuttings (refer Section 4.13 and Figure 4.1). The soil nails and anchors for the rock drape will be installed as the cuttings are excavated to minimise the risks associated with manual work at heights.

5.13.8 Low earth fill embankments

The embankments located in low-lying valleys are expected to be underlain by a significant depth of very soft to soft, highly compressible alluvial soils (refer Technical Report 14 in Volume 3 for further detail). These embankments will be pre-loaded with surcharge fill material and wick drains (pre-fabricated vertical wick drains covered with a drainage blanket) installed, to accelerate settlement of the embankments and consolidate the ground below at a quicker rate. The surcharge fill will be approximately 1 – 2m high and will be in place for around six to nine months. Refer to Section 5.13.10 for further detail on surcharge fill and wick drain construction.

Staged construction may be required for the higher embankments on very soft soils. Where possible, surcharge fills will be placed on the central portion of the embankments and used to create the gentle 1V:4H batter slopes once preloading is complete.

Erosion and sediment controls will be in place throughout the pre-load period, as set out in the CWMP (refer Volume 5).

5.13.9 Higher embankments and MSE fills

Where higher embankments with steep slopes and MSE fills are located on soft alluvial soils, these will either be undercut and replaced with compacted fill (if excavation depths are

manageable), or a load transfer platform constructed at the base of the embankment using the likes of driven timber piles with geogrid and a gravel platform.

Higher embankments located in the more elevated gullies are expected to be underlain by a relatively thin cover of surficial materials, except in localised areas where former landslips have occurred or colluvial materials have collected at the toe of slopes or on level areas. The weak, surficial soils will be excavated and slopes benched ready for placement of cut to fill material from nearby cuttings and/or the tunnel.

Upon completion of cut to fill activities within each construction zone, any further earth moving required between zones is likely to be carried out after completion of the bridge and tunnel structures.

The ground conditions associated with these two embankment types are very different and this is reflected in the construction and treatment requirements for each.

5.13.10 Ground improvements

5.13.10.1 Wick drains/driven timber piles

As outlined in Section 5.13.8, wick drains will likely be required to assist with embankment construction in low-lying valleys within the Project area in order to speed up dissipation of excess pore pressures (to achieve foundation soil strength gain and allow staged construction to proceed quickly). This will minimise the amount and/or duration of surcharge preloading required. The proposed installation method involves constructing access tracks and embankments over the peat deposits in the valley floors, as follows:

- Top soil will be left in place;
- A high strength geotextile will be placed directly on the existing ground surface;
- The base of the embankment will be constructed using a granular rock fill, with engineered bulk fill placed above;
- Wick drains will then be installed into the existing ground; and
- Once the wick drains are installed, a further layer of fill will be placed to create the embankment or access track.

Figure 5.7 shows the typical wick drain installation method, while Figure 5.8 shows an indicative wick drain layout.

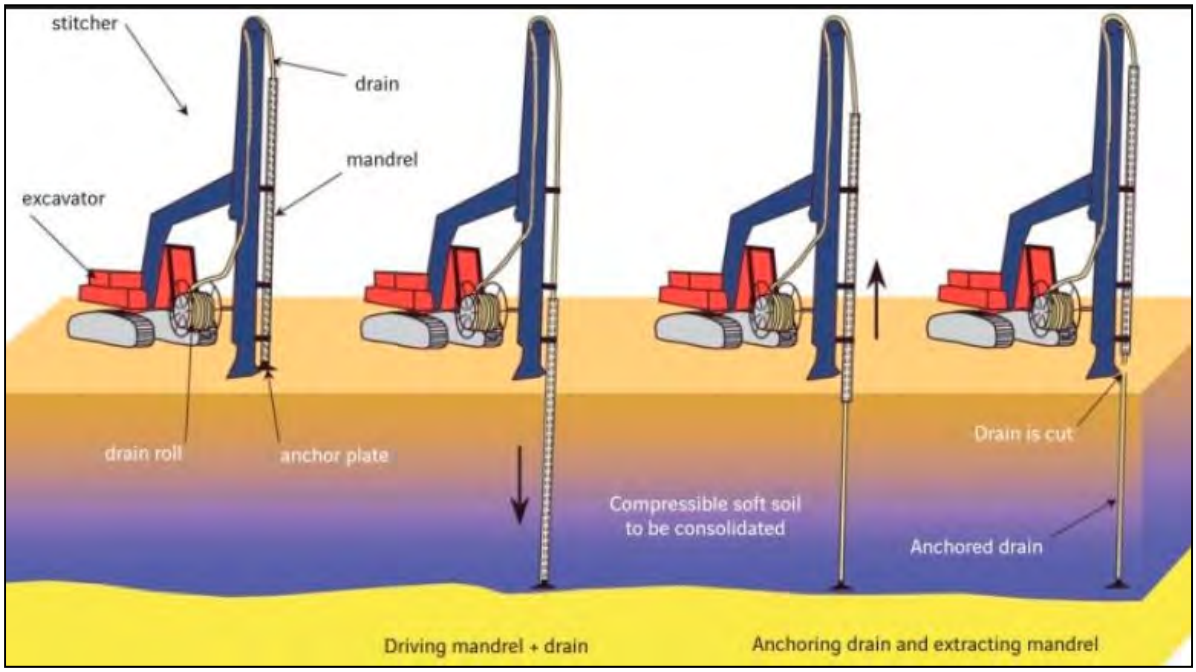


Figure 5.7 – Wick Drain Installation Method

Figure 5.8 – Indicative wick drain layout

In some areas, driven timber piles will be used instead of wick drains. Timber piles will only be used where the required length of pile is less than the economic length of timber piles (usually less than 12m). Timber piles will be driven into the ground to the required depth using an excavator or crane mounted driving hammer.

5.13.11 Construction water management

The Project will require the disturbance of land within the designation boundary for earthworks and vegetation removal. An overriding principle has been to minimise the land disturbance required in order to reduce construction-related sediment from entering

watercourses within the Project area and the downstream environment. To achieve this, construction works will be undertaken in accordance with the best methods and practice available at the time of construction to:

- Minimise the volume and area of the proposed earthworks required for the Project through the Project design matching expected soil types and geology while meeting the road geometry requirements;
- Minimise the potential for sediment generation and sediment yield while maximising the effectiveness of erosion and sediment control measures associated with earthworks; and
- Avoid or mitigate potential adverse effects on freshwater and marine water environments within or beyond the works boundary, with particular regard to reducing opportunities for sediment generation.

Principles and approaches for construction water management works are set out in Technical Report 13 (Volume 3) and the CWMP (Volume 5).

5.13.11.1 Erosion and sediment controls

Sediment control on the Project will involve the interception and treatment of sediment-laden runoff from the various construction areas along the Project, and will be carried out in accordance with the Transport Agency and Regional Council land disturbance guidelines[29]. Sediment control will be established through the use of recognised sediment control measures and site management practices.

The general sediment control measures to be used on the Project are set out in Technical Report 13 (Volume 3) and the CWMP (Volume 5) and include:

- Sediment retention ponds;
- Decanting earth bunds;
- Container impoundment systems;
- Silt fences and filter socks; and
- Chemical treatment (use of flocculants).

Typical details are shown on the erosion and sediment control conceptual drawings in Volume 2.

The CWMP will guide the overall approach for construction water management during construction. Given the scale of the Project, Specific Construction Water Management Plans (SCWMPs) will be developed for specific locations and activities, in accordance with the direction and principles of the CWMP. The SCWMPs will outline the location and activity specific construction methodologies and management measures to be implemented during works.

[29] Guidelines for Earthworks in the Taranaki Region (Taranaki Regional Council , 2006); Erosion and Sediment Control Guidelines for State Highway Infrastructure – Construction Stormwater Management (Transport Agency, 2014)

5.14 Works in streams

5.14.1 Stream realignments

Stream diversions will be required during construction to temporarily divert flows around working areas in order to allow construction works to progress or provide access to construction areas. Permanent stream diversions will also be required to divert streams around or through a permanent Project feature, such as an embankment, bridge or culvert. In both temporary and permanent cases, the stream diversion will be necessary in order to establish an 'off-line' environment to allow construction works to be completed outside of the active stream channel.

Stream realignments and works in streams are generally considered to have a greater potential for adverse effects than earthworks activities due to works being undertaken within the immediate receiving environment and the associated potential for direct impacts on a watercourse. Stream works will be carefully managed to minimise risk to the receiving environment in accordance with the CWMP and SCWMP.

A conceptual sequence of works required to complete a temporary or permanent stream diversion is outlined in the CWMP (Volume 5). SCWMPs will be prepared for each location / activity where works in streams are required and shall include the methodology for stream realignment works within the particular Project location.

5.14.2 Culverts and erosion control and protection structures

Temporary and permanent culvert construction will be required in a number of locations throughout the Project area. Temporary culverts will be provided to allow construction vehicles to cross watercourses and overland flowpaths. All temporary culverts will be removed when no longer needed.

Where works are required within a stream channel to construct the culverts, two main methodologies will be used: either using bypass pumping around the area of works or by creating a temporary stream diversion around the culvert footprint (refer to the CWMP for details).

Key considerations for culvert construction activities are discussed in the CWMP. SCWMPs will be prepared for all culvert installation and works in streams associated with erosion control and protection structures and shall include the methodology for culvert works in the particular Project location.

5.15 Drainage

The installation of the permanent stormwater drainage along the alignment will generally be completed during or prior to ground improvements and earthworks.

5.16 Bridge construction

5.16.1 Bridge foundations

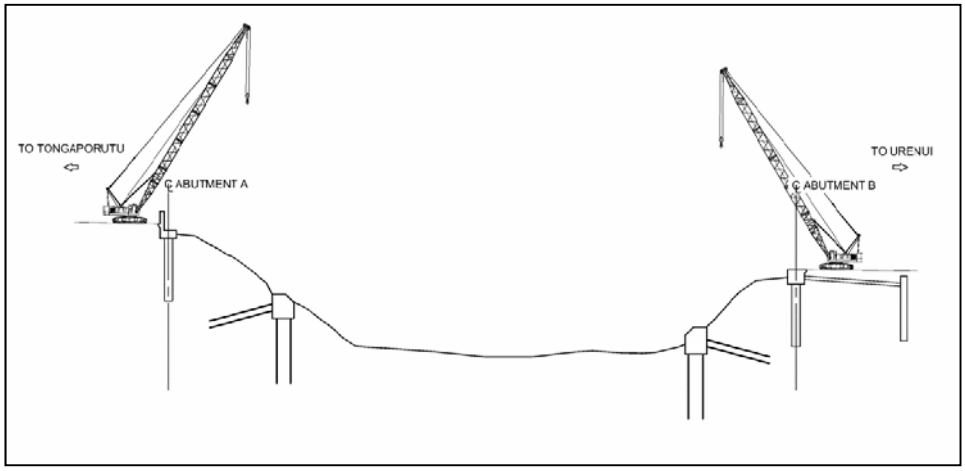
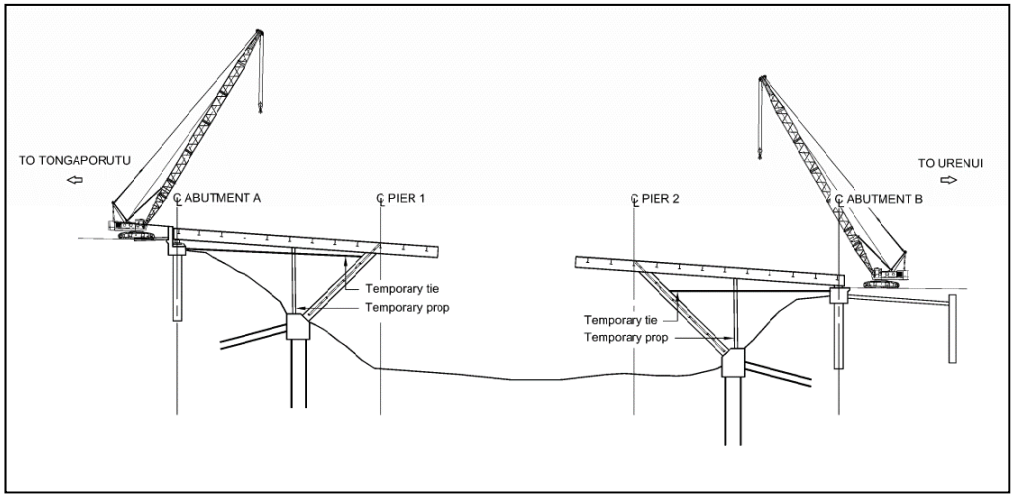
Bridge foundations will comprise either:

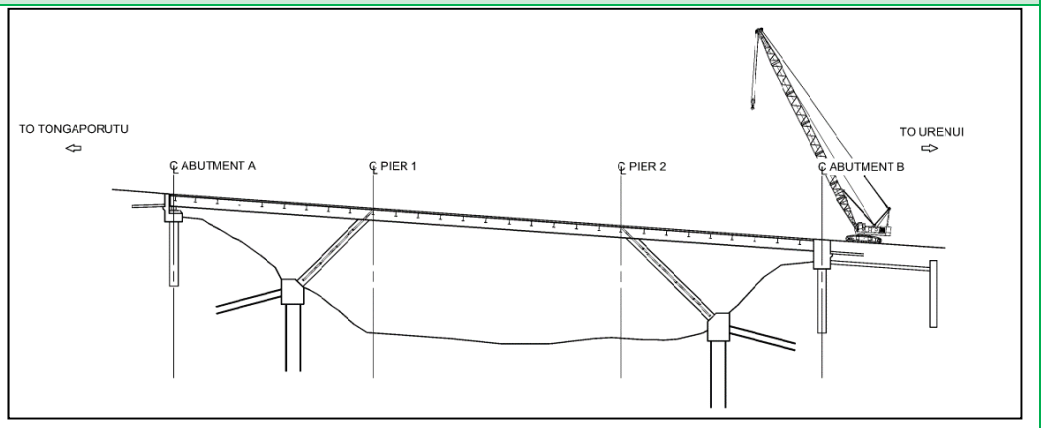
- Shallow pad foundations; or
- Piled foundations (combination of large diameter bored piles and small diameter micro-piles).

The proposed bridge construction sequence is outlined in Table 5.5.

Table 5.5 - Bridge Construction Works

Stage	Proposed Works
Stage 1	<u>Bridge Abutment Foundations</u> Construction of the bridge abutment foundations will be as follows: • Access to the bridge abutments for all plant and equipment (e.g. piling rig, service crane, excavators etc). • The drill rig or excavator will be positioned at the abutment locations. • The pile will be drilled and material excavated to the required depths, following which reinforcement and concrete will be installed. • If a pile cap is required, the pile cap will be excavated and the concrete will be placed connecting the piles to the pile cap. • All excavated spoil will be utilised as construction fill. <u>Bridge Pier Foundations</u> Construction of the bridge pier foundations will be as follows: • Micropiles or shallow foundations are proposed to limit the construction footprint of the piers. • Plant and equipment (drill rig and excavator) will be craned into place from the abutments to avoid impacts on the Mimi swamp forest. • Excavation for the piles will occur using a rotary drill ("wash-drill") technique, or with an excavator for the shallow foundations. • Reinforced piles and concrete/grout will be installed. • All excavated spoil will be utilised as construction fill.

Stage	Proposed Works
	 *Indicative Stage 1 Construction*
Stage 2	<u>Bridge Piers</u> • Erect braced piers at both ends • Place steel superstructure to both ends.  *Indicative Stage 2 Construction*
Stage 3	<u>Bridge Deck</u> • Erect central steel superstructure span • Complete temporary deck bracing • Remove temporary ties and props • Erect deck slab panels • Construction of in-situ deck and concrete barriers • Install expansion joint, barrier joints and barrier steel top rail.

Stage	Proposed Works
	 *Indicative Stage 3 Construction*

5.17 Tunnel construction

The new Mt Messenger tunnel will be located between Chainage 3400 – 3635 and pass under the ridge line east of Mt Messenger. Construction works in the tunnel zone will include earthworks at the northern and southern tunnel portals, and excavation under the ridge line to connect the northern and southern construction zones.

The tunnel will be constructed using a Roadheader similar to that shown in Figure 5.9.

Figure 5.9 – Tunnel construction using a Roadheader

A Roadheader is an excavation machine that has a boom mounted rotating, rock-cutting head on the front and operates on bulldozer style tracks. Roadheaders are designed to continuously operate and excavate rock, resulting in efficient tunnel construction.

The tunnelling works will be progressed generally as outlined in Table 5.6, as shown by Figure 5.10 and on the tunnel drawings in Volume 2.

Table 5.6 - Tunnel Construction Sequence

Construction Stage	Construction Activities
Stage 1	1. A tunnel construction yard will established at one end of the tunnel, followed by assembly of tunnelling equipment (including installation of the construction ventilation, water treatment and electrical systems).
	2. A working platform will be constructed for concrete delivery. A chute may be installed between this platform and a suitable location to allow concrete trucks to deliver concrete to the top of the chute. Otherwise, concrete will be delivered to either side of the tunnel via the site access tracks.
	3. A rockfall protection structure will be constructed, either from existing rock or a precast rockfall protection structures. Tunnel construction will commence by building one of the tunnel portals, using arched steel tunnel sets and rock-bolts and shotcrete, as required.
	4. Construction of the upper section of the tunnel will commence using a Roadheader. Tunnel support by rockbolting and shotcreting of the excavated material will be installed in stages as tunnel construction progresses. Dump trucks will remove tunnel spoil from the tunnel as it is generated for use as general construction fill.
	5. Access to the second portal will be constructed in preparation for the breakthrough of the upper tunnel section. This will be followed by construction of the second tunnel portal as per the method outlined in stages 3 and 4 above.
Stage 2	6. Construction of the lower section of the tunnel will commence using either a Roadheader and/or excavators to complete the lower part of the tunnel excavation and installation of lower ground support (rockbolts or shotcrete) as required.
	7. A temporary access track will be established as required to allow trucks direct access to the tunnel to transport construction materials through the tunnel to the adjacent construction zones.
Stage 3	8. The final construction stage will involve building the tunnel control room (approximately 12m in length, 5m in width and 4m in height) and installation of the water tank for the fire hydrant system. Works will also involve construction of permanent pavements and structures, and installation of tunnel furniture (e.g. lighting, automation/monitoring). Commissioning and testing of the tunnel system will follow the tunnel fit-out.

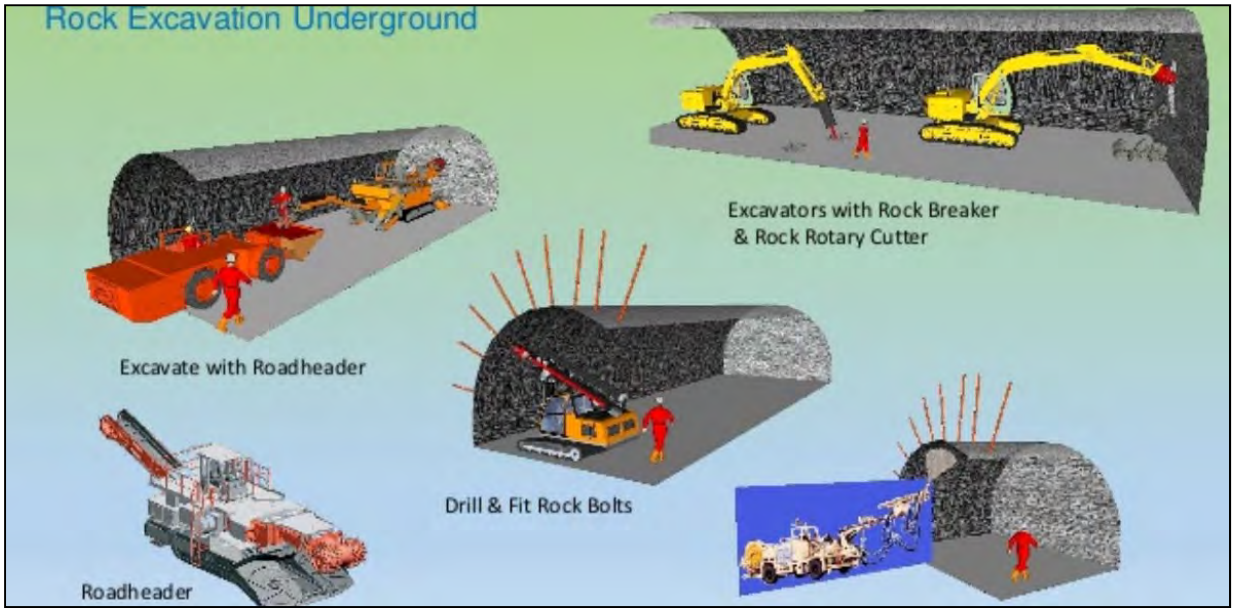


Figure 5.10 – Typical tunnel construction using a Roadheader

Given the nature of the ground conditions, any groundwater inflow to the tunnel is expected to be at low rates. If groundwater is encountered, it will be collected on-site and treated by container impoundment systems (CIS) to an acceptable standard prior to its discharge into clean water drains located within the adjacent construction zones. Sediment laden water generated from localised earthworks for the portal entrance will be collected and treated in accordance with the CWMP.

In the order of 10m^3/day of groundwater inflow is conservatively estimated for the fully excavated tunnel.

Any water associated with shotcreting will be collected and treated.

5.18 Pavement and surfacing

Upon completion of the bulk earthworks, drainage, tunnel and bridge construction, pavement materials will be laid along the alignment. This will likely occur in sections as construction works are completed. The carriageway will be completed to sub-base level to protect the sub grade and create the proposed alignment haul route for the bulk earthmoving activity and other construction traffic.

Pavement materials will then be placed on the carriageway to complete the road structure.

Once all works are complete within each section of the carriageway, traffic services, roadside furniture and landscaping will be installed.

5.19 Landscape Restoration

The approach to restoration of the landscapes and habitats affected by construction of the Project is described in the LEDF (Technical Report 8b, Volume 3) and ELMP.

The effects of work on the Mangapepeke and Mimi Valleys will involve a vegetation mitigation strategy that focuses on:

- Site rehabilitation – replanting/restoring disturbance effects of the new road alignment construction.
- Ecological restoration – a wider package of mitigation and offsetting.

This is summarised in Section 5.5 of the LEDF and in the landscape concept design drawings in Volume 2. The ELMP addresses ecological mitigation and restoration in detail.

5.20 Network utilities

In accordance with the Code of Practice for Utility Operators (which picks up the requirements of the various Acts and Regulations), Network Utility Operators will have the opportunity to lay new services in the new road corridor as it is constructed.

New ducts for fibre-optic cable may be installed during construction of the Project along the berm of the new alignment, under the new bridge, and through the tunnel. The details of these works, along with any other utility works, will be identified through the process mandated in the Code of Practice.

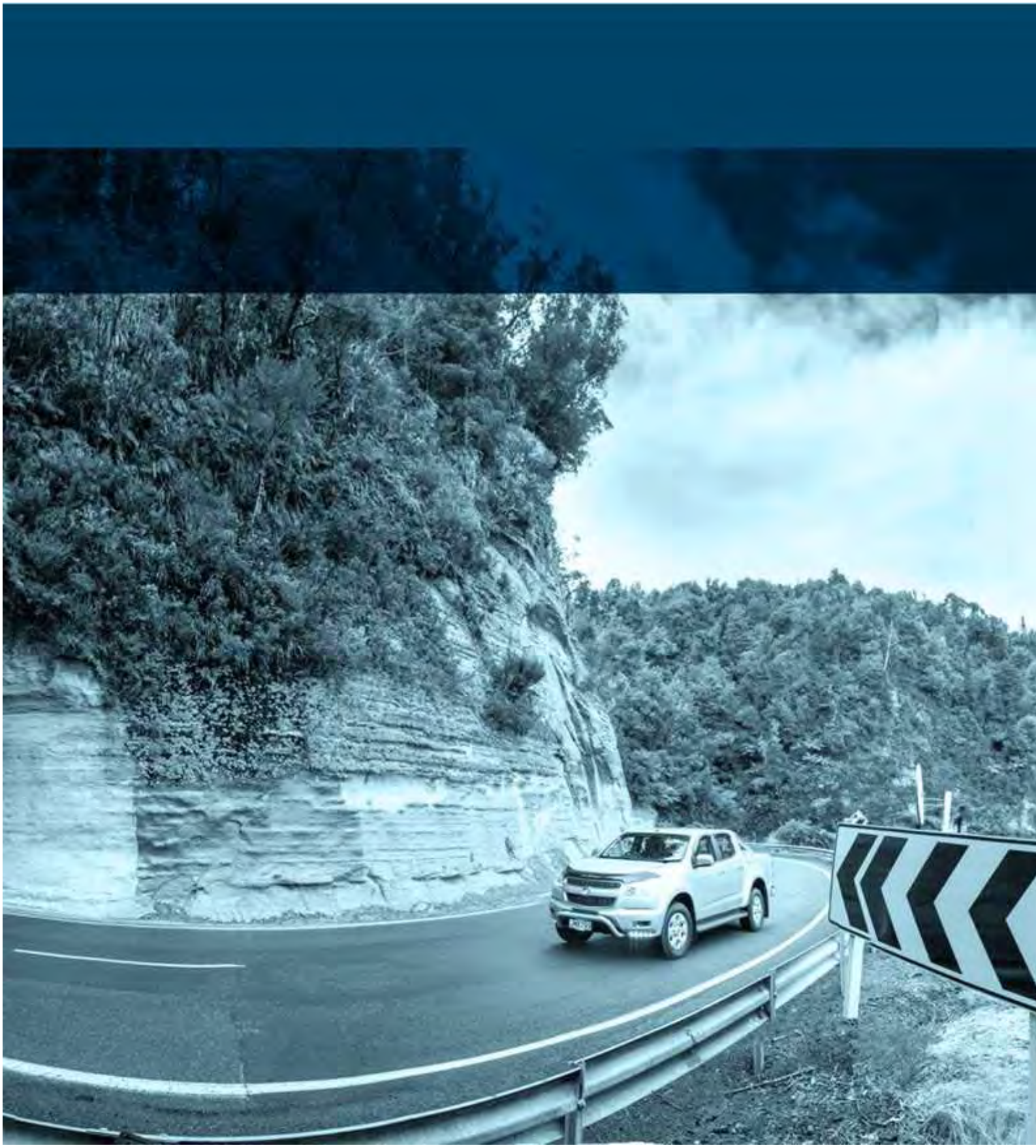
All excavation will be undertaken in accordance with the Alliance's 'permit to dig' system, which ensures sufficient checks have been undertaken to ensure there are no buried services that could be struck. The Alliance will continue to work closely with the relevant service providers to undertake any necessary protection and/or relocation works during construction.

5.21 Hazardous substances

Construction activities and site works include a range of construction machinery and plant, the majority of which will be motorised and require a regular supply of fuel and oils. Plant and machinery will require refuelling on-site, requiring the storage of fuel, oils and lubricants on-site. Other construction materials stored on-site will include items such as flocculants, cleaning products, and adhesives. These products can have adverse environmental effects if not appropriately managed.

The management of hazardous substances, including the transport, storage, handling and disposal will be undertaken in accordance with the Hazardous Substances and New Organisms Act 1996, associated regulations, and industry guidelines. The CWMP addresses the management of non-sediment contaminants (eg concrete), while the CEMP addresses the management of hazardous substances.

Section 6 – Assessment of alternatives



6 Assessment of alternatives

6.1 Introduction

The Transport Agency has carried out a robust and detailed assessment of alternative sites, routes and methods for completing the Project, before arriving at the form of the Project as described in this AEE. This Section summarises the process followed by the Transport Agency in considering alternatives for the Project.

The statutory context for that process is set out below; followed by a high-level summary of the various stages of the assessment of alternative options for the Project.

6.2 Statutory Context

The consideration of alternative sites, routes and methods is relevant to both the NoR and the applications for resource consent for the Project. The relevant requirements are discussed below.

6.2.1 Section 171(1)(b): Notice of Requirement

Section 171(1) of the RMA provides that a District Council, when considering the NoR and any submissions received, must "*subject to Part 2, consider the effects on the environment of allowing the requirement, having particular regard to*" a number of listed matters, including (under s171(1)(b):

> "*whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if –*
>
> *(i) the requiring authority does not have an interest in the land sufficient for undertaking the work; or*
>
> (ii) *it is likely that the work will have a significant adverse effect on the environment*."

As detailed elsewhere in this AEE, the Transport Agency does not at this time have all the property interests necessary to allow it to undertake the work; and accepts it is likely that the Project will have significant adverse effects on the environment (before mitigation and offsets are taken into account). This means the District Council is required to have particular regard to the adequacy of the consideration of alternatives by the Transport Agency.

The alternatives considered by the Transport Agency are those that are within its powers to undertake. They have focussed on bypassing the Mt Messenger section of SH3 (between Ahititi and to the north of Uruti), which is the scope of the Project ("work") being undertaken by the Transport Agency.

6.2.2 Resource consent applications

Schedule 4 of the RMA requires that alternative location or methods of undertaking an activity be described, where the proposed activity is likely to have any significant adverse effects on the environment. The Transport Agency has met this requirement when carrying out its consideration of alternative options for the NoR, as discussed below.

In addition, s105 of the RMA requires decision-makers on applications for discharge permits to have regard to matters including "*any possible alternative methods of discharge, including discharge into any other receiving environment*."

Discharge permits are being sought in respect of stormwater runoff from earthworks; and the discharge of dust during the construction of the Project. Detailed consideration has been given to methods for addressing any potential adverse effects of these discharges, and appropriate methods have been adopted (including through design and construction methods (refer Sections 4 and 5) and construction management plans (refer Section 10)) to ensure effects are appropriately managed. Further details are presented in the Air Quality Assessment (Technical Report 11) and Construction Water Assessment Report (Technical Report 13).

6.3 Project identification and investigation of alternatives

A robust and detailed process of assessing alternative options for the Project was carried out in 2017, including through a two-stage multi-criteria analysis (MCA) process. This followed the initial identification of and investigations into the Project commenced by the Transport Agency in 2016. The 2017 assessment of alternative options for the Project ultimately led to the Project as described in the NoR and resource consent applications and the AEE.

6.3.1 2016 funding announcement and assessment of options

In early 2016 the Minister of Transport announced that the Crown would fund improvements to the Mt Messenger and Awakino Gorge corridor of SH3 as part of the ARRP. A bypass of Mt Messenger was specifically identified as one of the individual projects to be progressed. The ARRP announcement followed initial Transport Agency investigations into the Mt Messenger and Awakino Gorge corridor, including the Mt Messenger section.

Also in 2016, the Transport Agency carried out an investigation into possible options for bypassing the Mt Messenger section of SH3. 19 options were considered through a MCA process, with assessments made of each option in terms of performance against a range of relevant factors, and the then 'draft' Project objectives (2016 MCA). The 2016 MCA identified and considered a range of potential options (both 'online' improvements within the current SH3 designation, and bypass options). Indicative costs for the options were also considered at a high level through the 2016 MCA.

The 2016 options assessment built on earlier options assessment work completed by Transit New Zealand (the Transport Agency's pre-cursor organisation) in 2002, which highlighted a corridor to the west of the existing SH3 alignment as being a preferred bypass option.[30]

[30] Beca 2002 Scheme Assessment. Subsequently the 'Western' corridor alignment land was returned to Ngāti Tama through the Treaty of Waitangi Settlement process.

6.3.2 November 2016 – January 2017 public consultation

As described in Section 7.5.3 of this AEE, the Transport Agency undertook a seven-week period of public consultation on the broader Awakino Gorge to Mt Messenger Programme[31]. This consultation ran from November 2016 to January 2017, and included consultation on three Mt Messenger Bypass route options, following on from the 2016 MCA:

- Improving the existing route by opening up and widening the Mt Messenger Tunnel and making safety improvements to the existing SH3 route (Option 1).
- A 6.4km bypass route running west of the existing highway (Option 2).
- A 5.3km bypass route running further west of the existing highway (Option 3).

In the consultation material, the Transport Agency stated:

> *"At this stage of the investigation work, this option (Option 2) appears to offer the best solution of the three options. It provides a bypass with moderate to significant journey improvements, while impacting less on sensitive ecological areas and costing less than the other bypass option. It also improves the highway's resilience by providing a bypass built to modern safety standards."*

A key outcome from the consultation process was strong support for Option 3. However, concerns about environmental and cultural impacts were raised through the consultation process.[32]

6.3.3 2017 assessment of alternatives for the Project

With the appointment of the Mt Messenger Alliance in March 2017, it was recognised that a further, more detailed assessment of alternative options for the Project was required. Central to that assessment process was a more detailed two-stage MCA process carried out in 2017 (refer Volume 4 of AEE).

6.3.3.1 Introduction to the 2017 MCA process

In deciding to carry out a more in-depth MCA process in 2017, it was recognised that the 2016 MCA was carried out with a lower level of design development, limited availability of site environmental data and without cultural scoring of options.

As part of commencing the 2017 MCA process the design philosophy was updated, existing information reviewed and feedback from the November 2016 – January 2017 consultation received. Importantly, between the 2016 and 2017 MCA processes, Ngāti Tama provided a Cultural Values Assessment in respect of the Project, and agreed to participate directly in the MCA assessment and scoring process.

[31] That followed targeted early engagement from August to November 2016; and a pre-2016 MCA consultation process carried out in 2014 – 2015.

[32] Refer to Section 7.5.3 for more detail on consultation outcomes

6.3.3.2 2017 MCA methodology

The 2017 MCA process was designed, led and co-ordinated by the Mt Messenger Alliance[33], including the detailed analysis of the MCA process findings. Details on the MCA methodology, the options, expert assessments and scoring, and the analysis and findings from the MCA process are presented in Volume 4 of this AEE (refer MCA Longlist report, and MCA Shortlist report).

Key features of the 2017 MCA process are summarised below.

Two-stage process

The intention from the outset was that there would be two stages to the 2017 MCA process:

- an initial assessment of 'longlist' options to develop a shortlist (MCA1); and
- a subsequent assessment of a refined list of 'shortlist' options to support a decision on a preferred option (MCA2).

A range of options were developed by the Alliance for the first longlist stage (MCA1) assessment, as discussed below. The process for selecting and refining shortlisted options, taking into account the results of the MCA1 results, is explained below.

Assessment criteria

A range of assessment criteria were developed in order to assess the options at both the longlist and shortlist stage. The development of criteria took into account:

- key matters for consideration under the RMA and other relevant statutory documents (including Part 2 of the RMA and the policy framework established through the Regional Policy Statement, and Regional and District Plans);
- the four Project objectives;
- likely Project effects identified by previous investigations; and
- criteria used for the 2016 MCA, and MCA processes for other similar projects.

For the MCA1 assessment, nine assessment criteria were used, covering the following key environmental and transport issues:

- Constructability: the difficulty of constructing the option;
- Transport;
- Resilience: major event resilience including instability, earthquake, liquefaction and lateral spread and flood and storm damage;
- Landscape;
- Historic Heritage: focussing on archaeology in particular;
- Community: at the longlist stage, this was a high-level assessment of impacts on known recreational activities in the area and 'way of life' for people directly impacted;
- Property: focussing on the extent and nature of property that would need to be acquired for each option;
- Ecology; and

[33] The process was led by Mr Peter Roan, an expert consultant planner and the Alliance's Planning and Environmental Manager for the Project

- Cultural Heritage: impact on cultural heritage and values as assessed by Ngāti Tama representatives.

As outlined in the MCA Longlist report, a range of other possible criteria were considered but ultimately not included.[34]

For the MCA2 assessment, the same criteria were used, with the following exceptions:

- The ecology criterion from MCA1 was split into two separate criteria: terrestrial ecology and water environment. This was a result of the MCA1 process highlighting that different routes tended to have different levels of effects on the terrestrial and water environment; and also as more information was available on effects on the water environment at the shortlist stage (including specialist erosion and sediment control inputs).
- The community criterion was adjusted to provide for input from recreation, social and noise / vibration assessments. Sub-criteria scores were provided by experts in each of those separate subject matters, with an overall community criterion score then agreed between those experts.

Scoring of options by subject matter experts

The 2017 MCA was designed to rely on, and capture, assessments of the effects of each option by subject-matter experts.

For each criterion, experts were assigned to assess every option against that criterion. Of particular note is that representatives of Ngāti Tama assessed and scored the options against the cultural heritage criterion at both the longlist and shortlist stage. Ngāti Tama also provided valuable insight to the MCA workshops (discussed below) based on their intimate knowledge of the area.

Experts were given the option of developing and scoring sub-criteria if they considered it appropriate to do so, but were instructed ultimately to provide a single overall score for their criterion.

A specific scoring methodology was devised, to be applied based on the expert judgment of the specialists, as follows:

- Options were scored on a 9 point scale (+4 to -4, plus 'fatal flaw') scale based on the level of effects (adverse or positive) of each option for each criterion:
    - 0 was the neutral or baseline score, representing the continued operation of the existing road, with none of the options being constructed. This baseline meant that, for a number of criteria, it was unlikely that positive scores would be assigned for any of the options;
    - Scores assigned were to take into account the application of 'standard' or normally expected mitigation; but not bespoke mitigation or offsetting; and
    - There was also the option of assigning a "fatal flaw" (F) negative score. This score was to be used only where there are unacceptable adverse effects associated with the option, and that there is no reasonable way to appropriately

[34] This includes cost, which was considered to be a matter for the Transport Agency rather than for expert assessment.

avoid, remedy, mitigate or offset those effects (in other words, even bespoke mitigation or offsetting was to be considered before an F score was assigned); and

- Scoring was on an absolute rather than relative basis, with experts instructed not to create artificial distinctions in scores between the options.

Discussion and presentation at workshops

Two-day workshops were held for each of MCA1 and MCA2. The workshops were attended by the experts (including Ngāti Tama representatives) and members of the Alliance design and planning team. The MCA2 workshop was also attended by two Department of Conservation staff in an observer capacity.

At each workshop:

- The options were presented in detail by the designers (including via a 3D digital terrain model showing the options with drone aerial photography overlaid (at MCA2) allowing experts to discuss options with the designers and seek clarifications;
- Each expert presented their assessments, including their scores for each option, and fielded any questions from other attendees; and
- Of particular note, the Ngāti Tama representatives played a full part in the 2017 MCA process, attending the workshops and providing scores for the cultural heritage criterion.

Analysis and weighting of scores

By adding the scores assigned by the experts, an overall total 'raw' score could be determined for each option.

The raw scores were also subjected to three additional weighting systems, which emphasised various criteria.

The three weightings applied were:

- An overall or RMA weighting. This was developed from analysis of the RMA and statutory documents and an eye to the RMA consenting process and the weight likely to be given to relevant statutory provisions. This weighting took particular account of the key matters reflected in the provisions of Part 2 of the RMA, the relevant statutory documents and the Project objectives;
- An 'environmental' sensitivity analysis weighting, which prioritised those criteria that relate most directly to effects on the natural environment, including as represented in effects on cultural heritage values; and
- A 'transport' sensitivity analysis weighting, which prioritised those criteria that relate most directly to the transport performance of the route.

The intention of the weightings was to apply three varying, but realistic perspectives to the relative importance of the various criteria. This provided for further comparative analysis of the performance of the various options.

Provision of expert reports and overall Longlist Report and Shortlist Report

The results of the 2017 MCA processes, including reports and scoring from each of the subject matter experts, were collated and analysed in two overall 2017 MCA reports (contained in Volume 4 of the AEE), being:

- The Longlist Report; and
- The Shortlist Report.

Selection of preferred option

The 2017 MCA process was fundamental to the Transport Agency's robust assessment of alternative options. However, the decision as to what form the Project would take was not made directly through the 2017 MCA process. Rather, the 2017 MCA process and results were utilised by the Transport Agency as an important tool in making decisions as to the nature of the Project. Ultimately, it was the Transport Agency as requiring authority that determined the form of the Project as set out in the NoR and resource consent applications and in this AEE. That decision had due regard to the results of the MCA; however, the Transport Agency as requiring authority was not obliged to choose the "best" performing option from the MCA.

6.3.3.3 Longlist assessment of options

For the 'longlist' stage of the 2017 MCA, 11 'offline' corridors (to bypass the existing Mt Messenger section of SH3) and one 'online' corridor (located largely within the existing Transport Agency SH3 landholding) were developed, to a greater level of detail than for the 2016 MCA. The corridors included a range of options to the west of the existing SH3, as well as an online corridor. This meant that the three options consulted on in the November 2016 – January 2017 process were broadly represented in the 2017 MCA process. Options to the east of the existing SH3 were also included.

For each of the 11 offline corridors, two different options were developed (for the same alignment):

- an 'earthworks' option, which relied on cuts and fills to cross valleys and ridges; and
- a 'structures' option, utilising a combination of bridges and tunnels to avoid or minimise effects on the valleys and ridges.

Four separate options were developed for the online corridor.

The corridors and options were developed using the '12d' geometrics software, a package that allows roads to be designed to meet specified geometric criteria. Each road model was combined with the 3D digital terrain model in Autodesk InfraWorks 360 derived from a Lidar survey.

The location of each longlist corridor is shown on Figure 6.1 below.

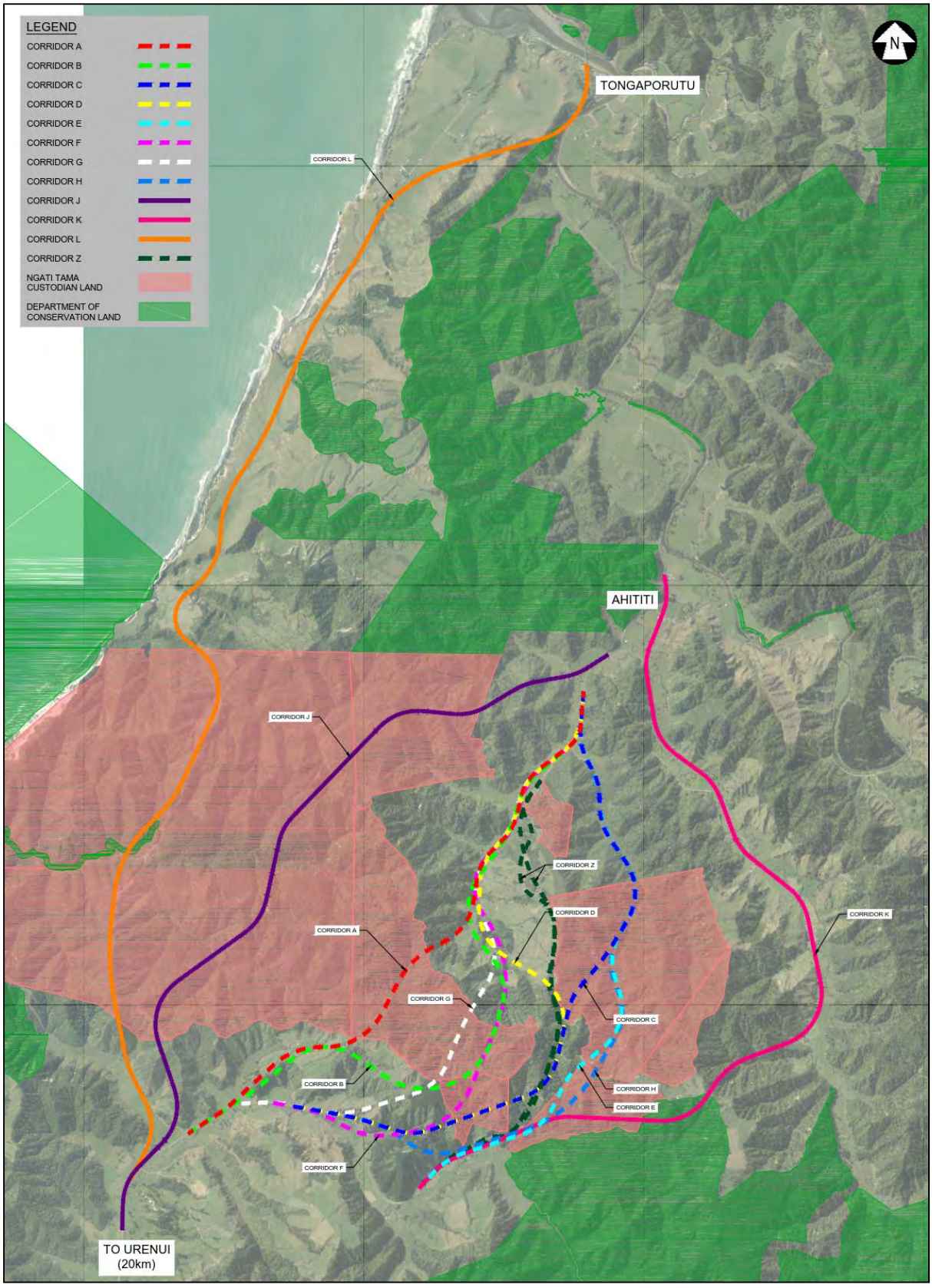


Figure 6.1 – Map of longlist options considered at 2017 MCA1

All offline options and two of the four online options (a total of 24 options) were then assessed through the MCA process.[35]

The scores for each option were tallied and the weightings were applied. The detailed results of the assessment, including all scores assigned to all options, are set out in the overall Longlist Report.

Figure 6.2 below shows the relative rankings of each option when the raw scores for each criterion are added together, alongside the rankings when each of the three weightings are applied. Figure 6.2 also indicates where an option received one or more "fatal flaw" scores.[36]

The Longlist Report contains an analysis of the results of the longlist MCA1 process. Key conclusions included:

- The online options (Z2 and Z4) were the two best performing options overall, providing a strong basis on which to consider at least one online option in the shortlist MCA process.
- A group of offline structures options performed relatively well. A1, C1, D1 and E1 received the 3rd – 6th best sum totals of scores (in some order) under all weightings (and raw scores). These options provided a mix of routes to both the west and east of the existing SH3 corridor, for potential consideration through the shortlist MCA process
- The other offline structures options (B1, F1, G1, H1 and K1) did not score as well. However, as none of those options received a fatal flaw score, it was considered that it would not be unreasonable to take one or more of these options forward to the shortlist.
- At the other end of the spectrum, nine of the options received a fatal flaw score under one or more of the ecology, cultural heritage, and landscape criteria. This included all four of the far western and coastal options (J1, J2, L1, L2), as well as the earthworks options A2, B2, C2, F2, and G2. It was considered appropriate to discard those options based on those unacceptable adverse effects.
- Of the offline earthworks options that did not receive fatal flaw scores, options E2 and H2 performed better than D2 and K2.
- For all corridors, the earthworks options performed more poorly than the structures options, due largely to the higher level of adverse environmental effects the earthworks options would bring.

The Longlist Report also records the rough order cost estimates that were developed for each option (noting that these were not considered as part of the MCA1 assessments). These are reproduced in Figure 6.3 below.

[35] It was considered that it was sufficient to formally assess two of the online options; noting that the two options not assessed had design speeds below 70kph, which was not considered adequate.
[36] Noting that the (C) notation for Option C2 indicates the fatal flaw for that option was for cultural heritage.

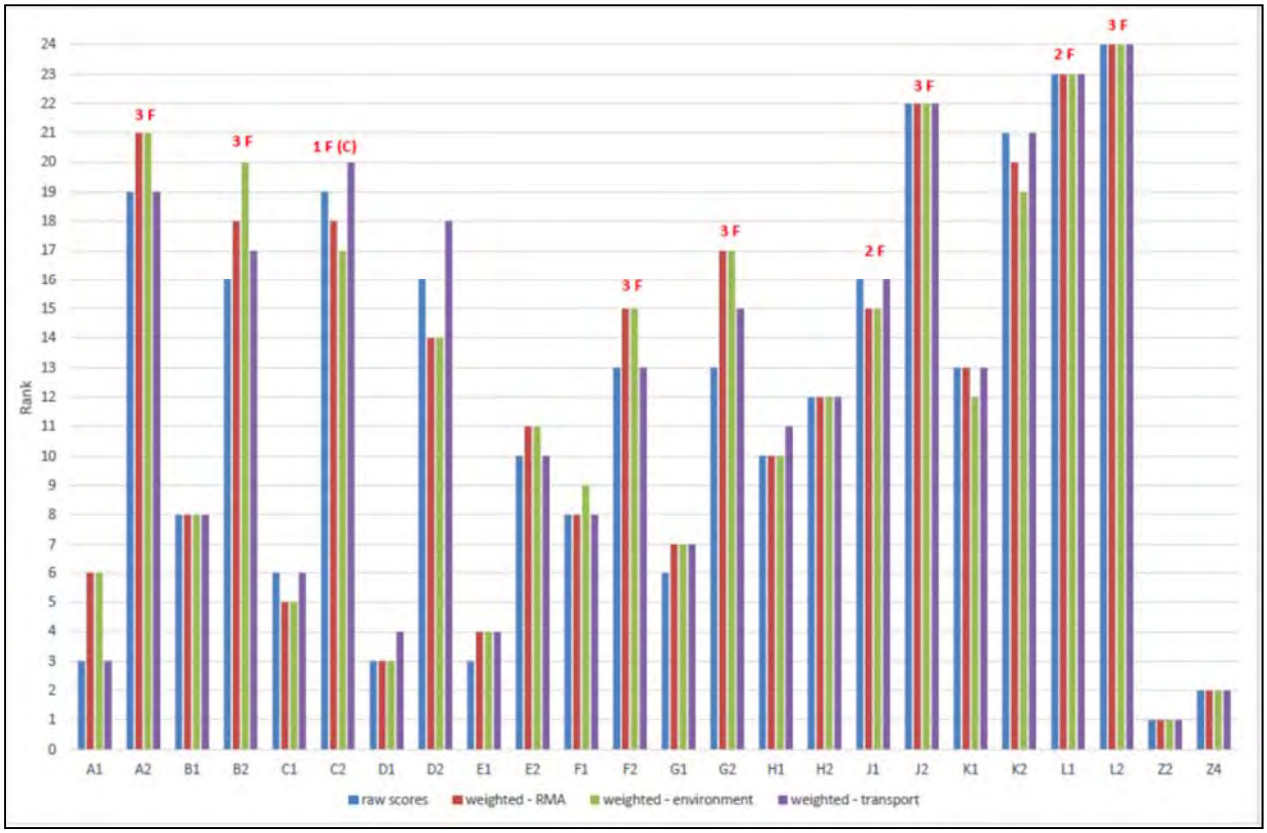


Figure 6.2 – Longlist MCA ranking of the 24 options

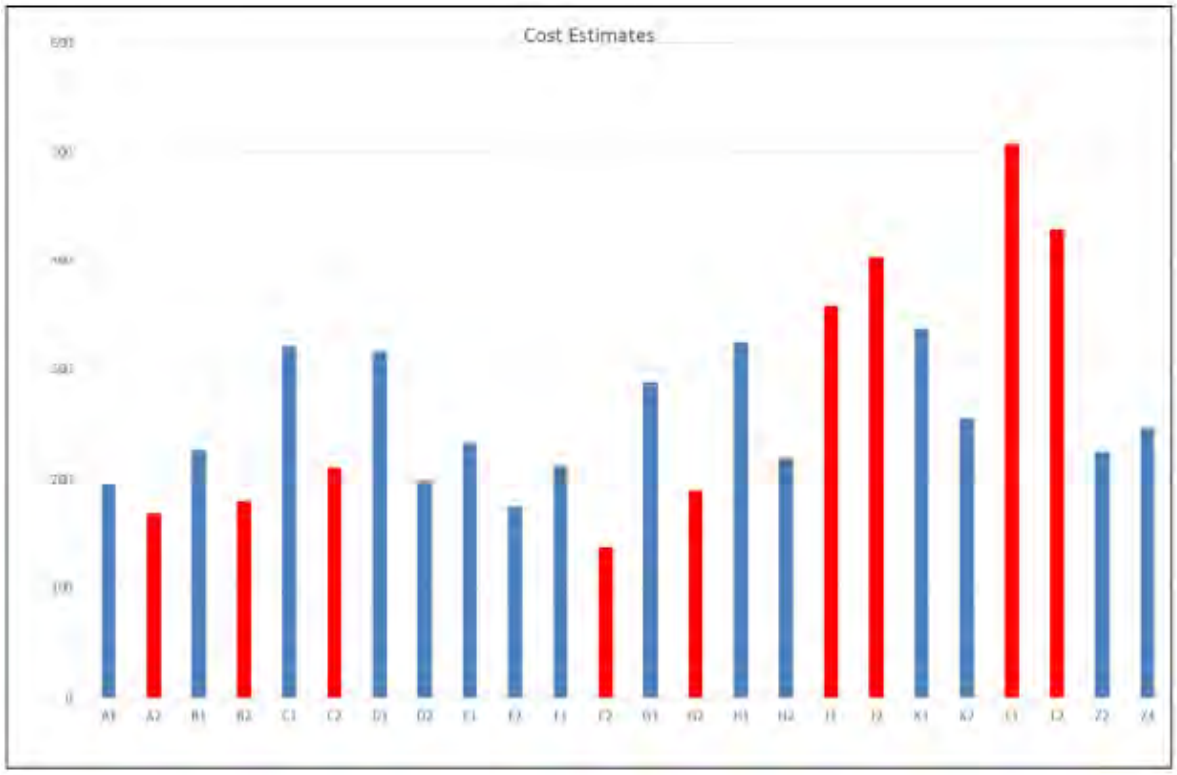


Figure 6.3 – Cost estimates for the longlisted options (red bars – fatal flaw scores)

The outcomes of the MCA1 workshop process were considered, along with cost estimates for each of the longlisted options.

Five options were subsequently identified for further refinement and inclusion in a shortlist:

- Option A1;
- Option E1 / E2;
- Option F1;
- A hybrid option, which focused on a combination of the B, F and G corridors;
- An on-line Option (taking in D1, D2, Z2 and Z4).

During the period between the MCA1 and MCA2 workshop, design investigation and refinement work continued on these identified shortlisted options. By way of brief summary, the five shortlisted options put forward for assessment through the MCA2 process were:

- Option A: was a refined version of longlist Option A1 (which was one of the best performing offline options in MCA1). Between the MCA1 and MCA2 workshops, refinements to this option were carried out, including to take into account constructability (noting a significant area of geotechnical instability was identified) and cost issues.
- Option E: was a refined version of longlist Option E1 (which again was one of the best performing offline options in MCA1). Of particular note is that a bridge structure was added in response to comments from the ecologists, to avoid effects on the high-value Mimi swamp forest. Some of the earthworks (fill) elements of E2 were incorporated in this shortlisted option.
- Option F: was a refined version of longlist Option F1 (which performed relatively well in MCA1). Between the MCA1 and MCA2 workshops, the design team carried out further refinements to this option.
- Option P: the hybrid option, comprising a combination of the B, F and G corridors. It was based primarily on the 'structures' (B1, F1 and G1) rather than 'fill' (B2, F2 and G2) versions of those corridors. These three options performed relatively well in the MCA1 assessment, and traverse similar routes. The indicative alignment of Option P was established after a walk over of the potential route by a Ngāti Tama runanga member (Mr Conrad O'Carroll), followed by an assessment from the Alliance designers. While close to Option F, it avoided a gulley area which would required a difficult sidling fill or curved bridge, and hence was deemed worthy of further consideration. Option P also avoided a stand of podocarps on the southern ridgeline of the western Parininihi land.
- Option Z: was the 'online' option for the shortlist assessment. Option Z2, Z4, and the D corridor (primarily option D1, which was one of the best performing options in MCA1) were represented in the shortlist through this option. Work was carried out to refine this online option during the period between the MCA1 workshop and the MCA2 workshop.

These shortlisted options provided a representative selection of the better performing options from the MCA1 process. The shortlisted options also provided for a geographic

spread of the longlisted options, while omitting the poorly performing western (J, L) and far eastern (K) corridors.

Figure 6.4 below shows the location of the five shortlisted options as considered in the MCA2 process.

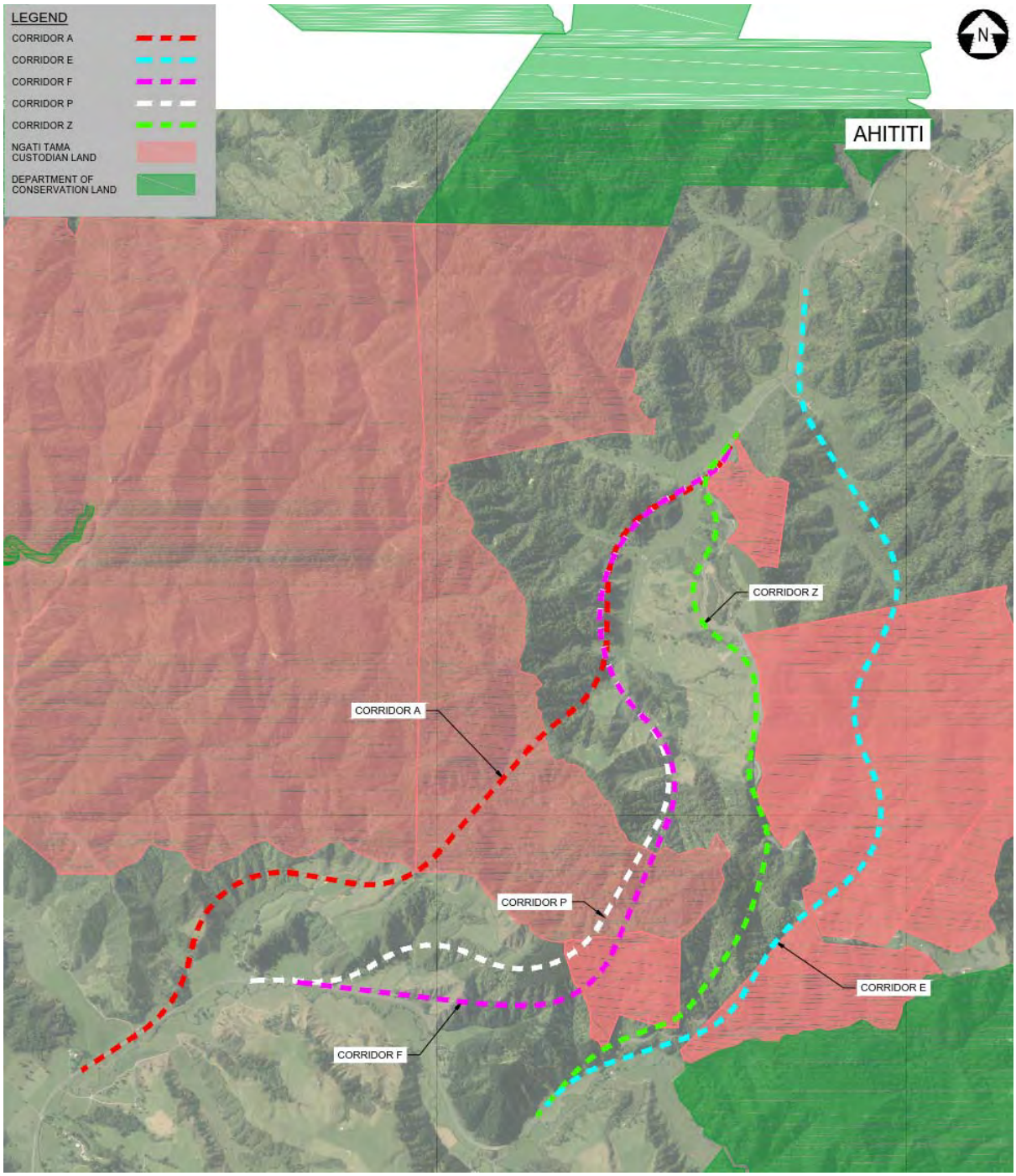


Figure 6.4 – Location of shortlisted options

6.3.3.4 June 2017 consultation on shortlisted options

In June 2017, a public consultation programme was undertaken to gain input from local communities and key stakeholders on the five shortlisted options. That process is described in Section 7.5.4 of this AEE. The key themes from the feedback included:

- A strong focus on travel reliability, safety, and long-term resilience;
- Concern about environmental (particularly native bush and wetlands) and cultural impacts; and
- The economic benefits of a new route.

As noted in Section 7.5.4, public feedback was broadly in favour of Option A, with the general consensus of views being that this option provided the best transport outcome (reliability and travel time savings).

6.3.3.5 MCA2 assessment of the shortlisted options

The shortlisted options were subject to an MCA process (MCA2), which was carried out on a similar basis to the longlist MCA1 process (as described above). The Shortlist Report (refer Volume 4) describes the MCA2 process and results in detail. Expert reports on each criterion were also provided, as for the MCA1 process.

The MCA raw scores for the five shortlisted options are set out in 1 below. Comparative rankings of each of the options when applying total raw scores, and each of the three weightings, are shown in Table 6.2 below.

Table 6.1 - MCA 2 raw scores

Criteria	Option A	Option E	Option F	Option P	Option Z
Constructability	-4	-3	-2	-2	-4
Transport	3	2	2	2	2
Resilience	-3	1	2	2	1
Landscape	-3	-1	-4	-3	-1
Historic heritage	-2	-1	-1	-1	-1
Community	1	1	1	1	0
Property	-3	-3	-3	-3	-2
Terrestrial ecology	-3	-3	-4	-3	-3
Water environment	-3	-3	-3	-3	-2
Cultural heritage	-4	-4	-4	-4	-4
Total Raw Score	-21	-14	-16	-14	-14
Raw Score Rank	5	1	4	1	1

Table 6.2 – Relative option ranking from MCA2 process

Option	Option Rank: Raw score	Option Rank: Overall RMA Weighting	Option Rank: Environmental sensitivity analysis weighting	Option Rank: Transport sensitivity analysis weighting
A	5	5	5	5
E	1=	2	2	2
F	4	4	4	4
P	1=	3	3	1
Z	1=	1	1	3

In respect of the overall performance of the five shortlisted options in MCA2:

- While Option A received the best raw transport score, it was nevertheless the worst performing option overall, ranking last on total raw score and under all three weighting systems.
- Scoring for the other options was relatively close, though there were differences between each option.

All options presented technical and environmental challenges, including in respect of effects on ecological, landscape and cultural values. It is noted that the scores assigned in the MCA2 process did not provide for 'bespoke' mitigation, or offsetting of effects (other than to avoid assigning fatal flaw scores).

6.3.3.6 Further consideration and selection of Project option following shortlist MCA

Following the MCA2 workshop, the scores assigned were analysed, again along with other factors including cost.

Further work was subsequently done to refine Options A, P, E and Z. Option A was retained for comparison purposes rather than on the basis of an expectation it might ultimately be selected as the preferred option. Consultation had identified that Option A was generally the public preference of the five options, and the MCA2 process confirmed it was the best performing option from a transport perspective. However, the MCA2 process identified that Option A was the worst performing option overall, which reflected its relatively poor performance in terms of adverse environmental and cultural effects.

Option F was not subject to further refinement work, on the basis that it was a similar route to Option P, but performed worse in the MCA2 assessment.

The costs of the MCA2 options following that refinement process is presented in Table 6.3.

Table 6.3 – Cost estimates for MCA2 options[37]

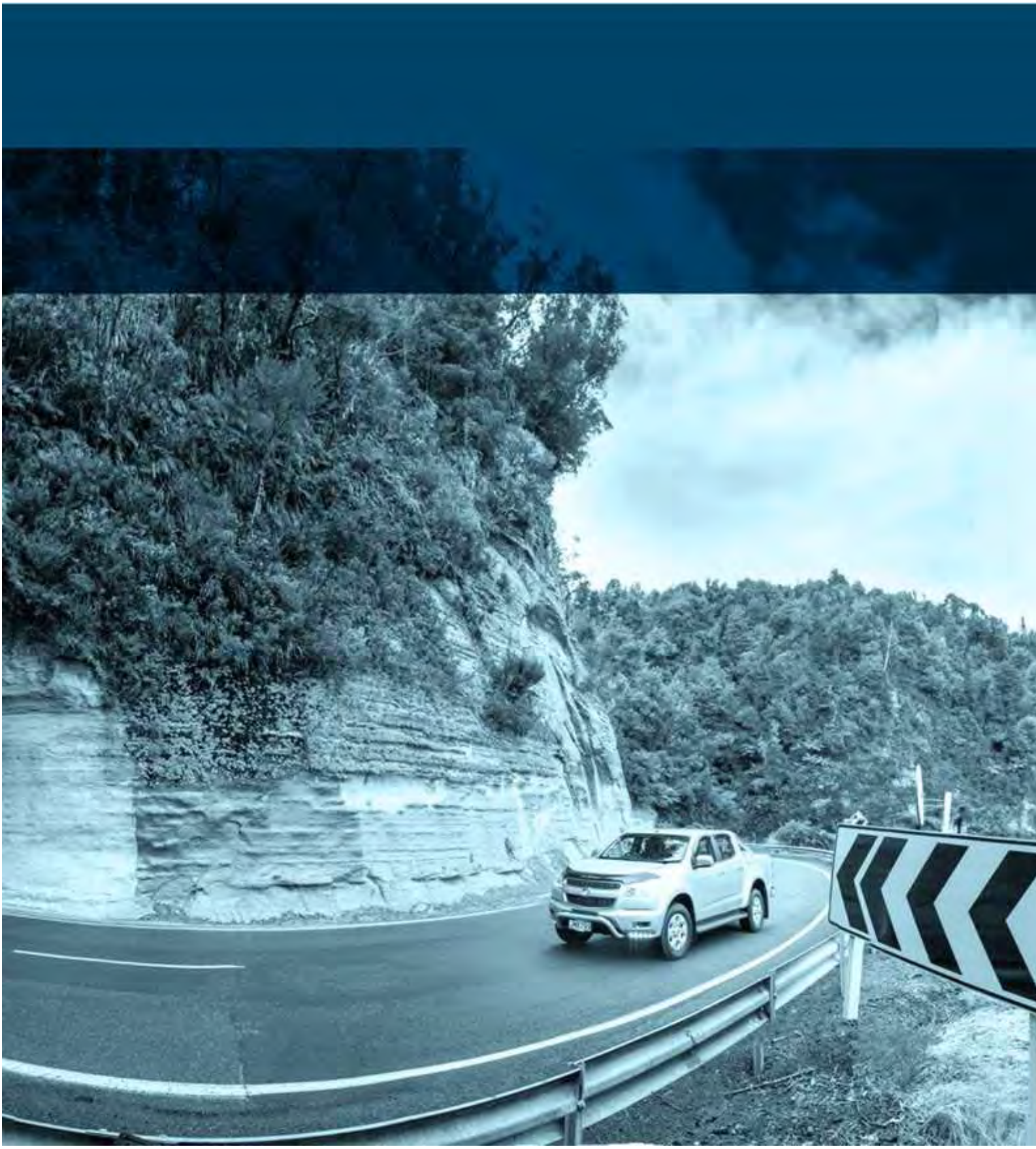
Option	A	E	P	F	Z (online)
Base	$228.0M	$174.5M	$211.4M	$209.1M	$364.4M
Expected	$251.3M	$199.6M	$231.3M	$234.9M	$382.5M
P_{95}	$293.3M	$218.7M	$274.2M	$276.4M	$430.1M

Following the analysis of the results of the MCA2 process and subsequent refinement work, and having regard to cost estimates, the Transport Agency determined that Option E would be taken forward as the preferred option.

This preferred option is reflected in the Project as proposed in the NoR and associated plans and application documents.

[37] Cost estimates prepared in accordance with the Transport Agency 'Cost estimation manual' SM014.
Base = total sum of the elements that make up an estimate but not including a contingency.
Expected = base estimate including an allowance for contingency calculated as per SM014.
P_{95} = The expected estimate plus an allowance for funding risk, calculated as per SM014.

Section 7 - Engagement



7 Engagement

7.1 Introduction

This section outlines the stakeholder engagement undertaken for the Project. It summarises engagement during each phase of the Project, including the tools and activities implemented, the parties engaged and the engagement outcomes. Engagement has been undertaken following the Transport Agency's Public Engagement Guidelines (2016)[38]. Specifically, this section covers:

- Relevant legislation and policy;
- Relevant Transport Agency engagement guidelines ;
- Engagement and communications objectives;
- Key Project stakeholders;
- Engagement phases;
- Engagement methods;
- A summary of engagement and communication undertaken for the Project, including with Ngāti Tama; and
- Ongoing engagement and communications and future considerations.

7.2 Relevant legislation and policy

Public engagement for the Project has been undertaken by the Transport Agency to fulfil its obligations under the RMA and the LTMA. The Transport Agency's guidelines on public engagement (set out in the sections below) uses various terms for different types of engagement. In RMA terms, the Transport Agency has undertaken substantial consultation with potentially affected parties, partners, key stakeholders and the wider community.

This consultation has occurred early in the process and continued throughout, informing the issues identification, options assessment and corridor evaluation, identification of the preferred corridor and design development phases. It has been undertaken with an open mind on behalf of the Transport Agency and has involved the provision of significant levels of information (and resourcing when required). The feedback received through consultation has informed the development of the Project, as outlined below.

7.3 Transport Agency engagement guidelines

7.3.1 Public Engagement Guidelines (2016)

The Transport Agency's *Public Engagement Guidelines* September 2016 have informed the stakeholder engagement and communication approaches for the Project. This approach is consistent with the engagement approach defined by the International Association for Public Participation (IAP2) industry best practice guidelines.

The Engagement Guidelines set out the Transport Agency's engagement policy and provide guidance for deciding when and how to engage with stakeholders and the wider public. The

[38] NZ Transport Agency 2016: Public Engagement Guidelines. ISBN 978-0-478-41967-2

Guidelines identify the different levels of public engagement guided by the IAP2 spectrum of public participation, and outline the steps involved in each of these processes and how they relate to a project lifecycle (refer to Figure 7.1). The IAP2 spectrum acknowledges that there will be different levels of Project interest and outcomes sought from different parties / stakeholders, and across different stages of a Project. Engagement should reflect these different stakeholder and Project aspects.

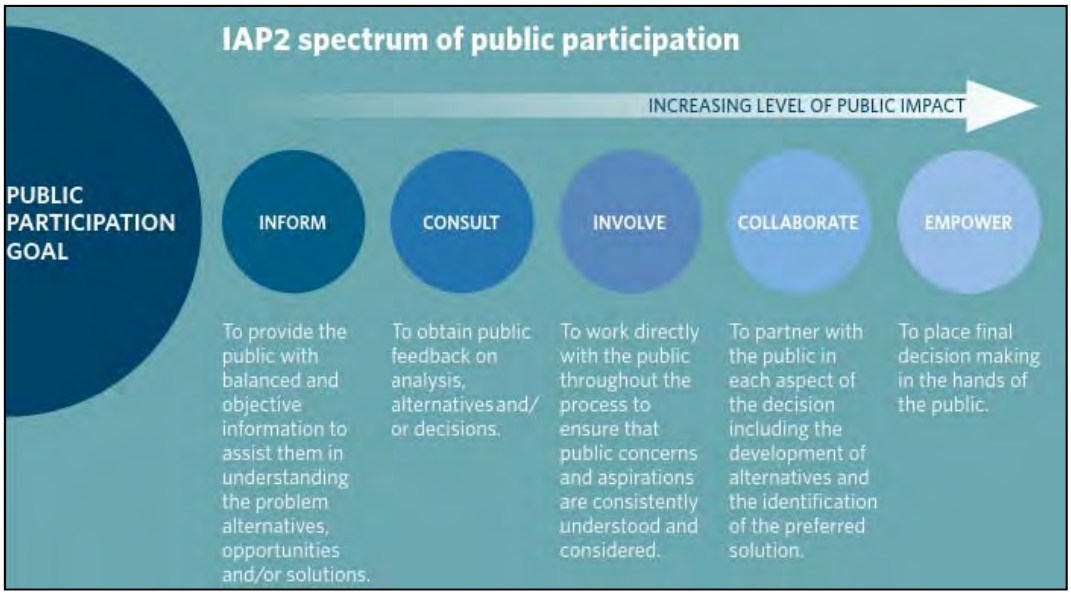


Figure 7.1 – IAP2 Public Participation Spectrum[39]

The Engagement Guidelines include a commitment to best practice public engagement. For the Project the engagement approach has adopted the following principles:

- Encourage stakeholders to have a say on issues that affect or interest them;
- Take the time to get to know stakeholders;
- Listen to stakeholder aspirations, concerns and ideas;
- Be open, honest and clear during engagement;
- Let stakeholders know what's happening as soon as possible; and
- Show how stakeholder feedback and inputs influences what happens on Project.

7.3.2 Māori Engagement Framework, Awakino Gorge to Mt Messenger Programme (2016)

The Transport Agency has had in place a Māori Engagement Framework for the wider SH3 Programme, which covers engagement with Māori on the Project. This framework provides a broad structure for effective and meaningful engagement with Māori. The framework's engagement and consultation objectives include:

[39] The terminology for "consult" in Figure 7.1 does not necessarily match the RMA concept of "consultation". However, the spectrum of public participation / engagement undertaken for the Project, reflected in Figure 7.1, does together cover the RMA concept of consultation.

- Establishing sound relationships with Māori to raise awareness and generate dialogue about the Programme (including the Project);
- Engaging directly with affected Māori landowners and occupiers as required; and
- Engaging with mana whenua, with regard to tribal boundaries.

7.4 Project engagement strategy

In accordance with the Transport Agency's Public Engagement Guidelines, the need for, and scope of stakeholder engagement for the Project has recognised the potential for both positive and adverse social, environmental, economic and cultural effects, and the level of interest in the Project. Feedback and input received through stakeholder engagement is also recognised as being valuable in informing the options assessment, route selection and design development processes.

Stakeholder engagement for the Project has included the following aspects, guided by the IAP2 public participation spectrum:

- **Collaborate** with key stakeholders, which involves working together to progress the Project and achieve mutually beneficial outcomes.
- **Involve** directly affected stakeholders, such as landowners, to ensure their concerns are considered and reflected in the feedback and considered during Project development and finalisation.
- **Consult** with stakeholders to present proposals and gather feedback that combined with other stakeholder information and technical analysis will inform Project development and finalisation.
- **Inform** interested parties about the proposal and invite them to participate in engagement activities, such as drop-in sessions, and provide feedback.

The Project's stakeholder engagement and communications have been coordinated and consistent with the engagement protocols for the wider Awakino Gorge to Mt Messenger Programme.

7.4.1 Engagement Objectives

The engagement objectives have varied as the Project has developed. However, the overarching stakeholder engagement and communications objectives for the Project have been to:

- Raise awareness and inform key stakeholders including the public and road users about the Project, including its benefits and key deliverables.
- Encourage stakeholders to become involved in Project activities.
- Nurture relationships with key influencers/opinion leaders by keeping them informed about the Project and invite their input.
- Ensure consistent and cohesive messaging and approaches to engagement and communications that align with the broader Awakino Gorge to Mt Messenger Programme.
- Identify any communication and engagement risks and respond with appropriate measures to mitigate those risks.

7.4.2 Engagement Principles

The following principles have been adopted to guide the Project's stakeholder engagement:

a **We know why we are engaging and we communicate this clearly** – Everyone understands engagement and can express why we're engaging and how this influences outcomes.

b **We know who to engage** – We are open minded about who we engage with, we understand how to engage with them and at what point.

c **We know the history and background** – We build trusting relationships by understanding the cultural and contextual environment of our customers and reflecting this in our design.

d **We begin early** – We walk in the shoes of our customers with understanding and empathy.

e **We are genuine** – We are sincere, we listen and strive for reciprocal relationships.

f **We are creative, relevant and engaging** – We embrace new ideas and customer insights to grow vibrant communities.

7.5 Public engagement for the Project

Public engagement for the Project has been undertaken in a series of stages, as outlined in Figure 7.2 and described further below.

Figure 7.2 – Project Consultation Phases

Key stakeholders with whom engagement has been undertaken in relation to the Project include:

- Iwi, in particular with Ngāti Tama as mana whenua, along with neighbouring iwi of Ngāti Mutunga (south) and Ngāti Maniapoto (north);
- Affected and potentially affected landowners;
- SH3 Working Party (SH3WP)[40];
- DOC;
- Local communities;
- District Council;
- Regional Council;

[40] Established in 2002 by Regional Council in response to ongoing concerns about the route security, safety and efficiency of SH3 between Taranaki and Waikato. The group comprises the Regional Council, the District Council, Waikato Regional Council, Waitomo District Council, the Automobile Association, RTA, NZ Police and Road Maintenance Contractors

- Freight organisations and industry (including Mainfreight, Port of Taranaki, Fonterra);
- Roading Maintenance Contractors (Downer and Transfield); and
- Road Transport Association (RTA).

Stakeholder engagement for the Project has involved workshops, meetings, drop-in sessions, online engagement, surveys, newsletter updates and public notices. In addition, a dedicated Awakino Gorge to Mt Messenger webpage, email address and freephone number have been established for Project communications that enables stakeholders to contact the Project team directly with enquiries.

Refer to Section 7.6 for further detail on key Project stakeholders, their interests in the Project and a summary of engagement with each stakeholder. Engagement with Ngāti Tama is outlined in Section 7.7.

Section 7.8 provides a summary of the key topics raised during engagement, along with how these have been responded to through selection of the alignment and detailed design.

7.5.1 Phase One: Awakino Gorge to Mt Messenger Corridor Investigation

Phase one consultation commenced in late November 2014 with the main engagement from March to April 2015, associated with the initial Awakino Gorge to Mt Messenger corridor investigation phase. It aimed to create awareness of the Awakino Gorge to Mt Messenger Programme and seek input from the local community and stakeholders around journey experience, safety and resilience of this section of the SH3 network.

The following engagement was undertaken during this period (and is discussed below):

- The Awakino Gorge to Mt Messenger webpage went live – www.nzta.govt.nz/awakino,
- Online survey to capture the public's views on the existing section of SH3; and
- Targeted stakeholder meetings.

7.5.1.1 Public consultation

A webpage was created to raise public awareness of the Awakino Gorge to Mt Messenger Programme. It included:

- An overview of the Awakino Gorge to Mt Messenger Programme, including the three projects making up the Programme, including this Project;
- A map of the Awakino Gorge to Mt Messenger area showing the location of SH3;
- Information on the corridor investigation outcomes– the focus was on improving safety, the resilience of the route, and the number of passing opportunities; and
- A link to an online survey, open for submissions (24 March to 13 April 2015). The survey sought to capture stakeholder's views on:
    - The existing level of safety provided by the SH3 corridor;
    - The factors they considered to affect safety;
    - How road closures impacted on them; and
    - How they perceived the journey through the section of state highway.

The survey was promoted by a media release, the Transport Agency's Facebook page, posters in local businesses/organisations (petrol stations, cafes, rural supply stores,

schools, dairy's etc), advertisements in local papers (Waikato Times, Taranaki Daily News and North Taranaki Mid-Week) and by radio.

Survey Responses:

There were 251 responses to the survey from a range of stakeholders, including the Regional Council and District Council, interest groups (mainly the SH3WP, industry and freight organisations – refer to Section 7.6 for further detail on these stakeholders), and members of the public.

The majority of the respondents were from New Plymouth (71), Hawera (32), Urenui (12), Waitara (11), along with other smaller areas.

Key survey findings:

- A high number of respondents considered the corridor to be either unsafe (113) or very unsafe (64), with the majority of respondents having a negative journey experience (180) along SH3 from Urenui to Awakino Gorge.
- A lack of passing lanes, slips, the road's windy nature surface and width, were cited as factors which influence the safety of the corridor.
- The greatest impacts on users are delays in travel time (98), impacts on businesses (54) and altered travel plans (52).
- A small minority considered the road to be safe (10) or very safe (2), with 17% considering the journey to be either pleasant (33) or okay (27).

7.5.1.2 Stakeholder Meetings

Targeted stakeholder meetings were held with Ngāti Tama, Ngāti Maniapoto, and DOC in April 2015 to discuss the corridor investigation, their journey experience and concerns on the wider section of SH3. Key interests / concerns in relation to the corridor and potential improvements are outlined in Table 7.1.

Table 7.1 – April 20015 Iwi and DOC Engagement

Stakeholder	Engagement Activities
Ngāti Tama Ngāti Maniapoto	• Adverse effects on archaeological sites, water quality and ecology from improvements to the section of SH3 • Safety of the existing route for road users
DOC	• Environmental effects associated with works to SH3, including: • Effects on DOC land and other land covered by the Wildlife Act 1953 • Adverse effects on freshwater fisheries (including whitebait habitat) • Adverse effects on native forest, birds and bats • Spreading weeds along SH3 • Inhibiting people dumping rubbish on the side of SH3

7.5.2 Phase Two: Targeted Early Engagement

Phase two occurred during August and early November 2016. It involved targeted stakeholder engagement to set the scene for the wider public consultation undertaken in phase three. Engagement included:

- The Transport Agency emailed key stakeholders, including local and regional councils, the Taranaki and Waikato Regional Transport Committees and the SH3WP to provide an update on the Awakino Gorge to Mt Messenger Programme, future investigations and formal consultation on options. A Programme newsletter update was also provided.
- The Programme website was updated (https://www.nzta.govt.nz/projects/awakino-gorge-to-mt-messenger-programme) with a specific page established for the Mt Messenger Bypass Project (https://www.nzta.govt.nz/projects/awakino-gorge-to-mt-messenger-programme/mt-messenger/). A mail drop of the Programme newsletter to communities from Urenui to Te Kuiti was undertaken and community members and interested parties were invited to join the mailing list for future communications.
- Meetings with DOC and iwi to advise them of the phase three consultation and invite them to participate.
- Potentially affected landowners were contacted by the Programme team to advise them of the phase three consultation and arrange face-to-face meetings to brief them on the options to be consulted on for the Programme, including the Mt Messenger Bypass.

7.5.3 Phase Three: Awakino Gorge to Mt Messenger Corridor options

Consultation phase three occurred over a seven week period from November 2016 – January 2017. It focused on gauging the viewpoints and preferences of stakeholders on proposed options for the three projects making up the Awakino Gorge to Mt Messenger Programme.

This phase included broad public engagement on three route options for the Project (refer to Table 7.3). The options were presented on the Transport Agency website for the Project[41].

[41] https://www.nzta.govt.nz/assets/projects/awakino-gorge-to-mt-messenger-programme/Community-Consultation-on-Options.pdf

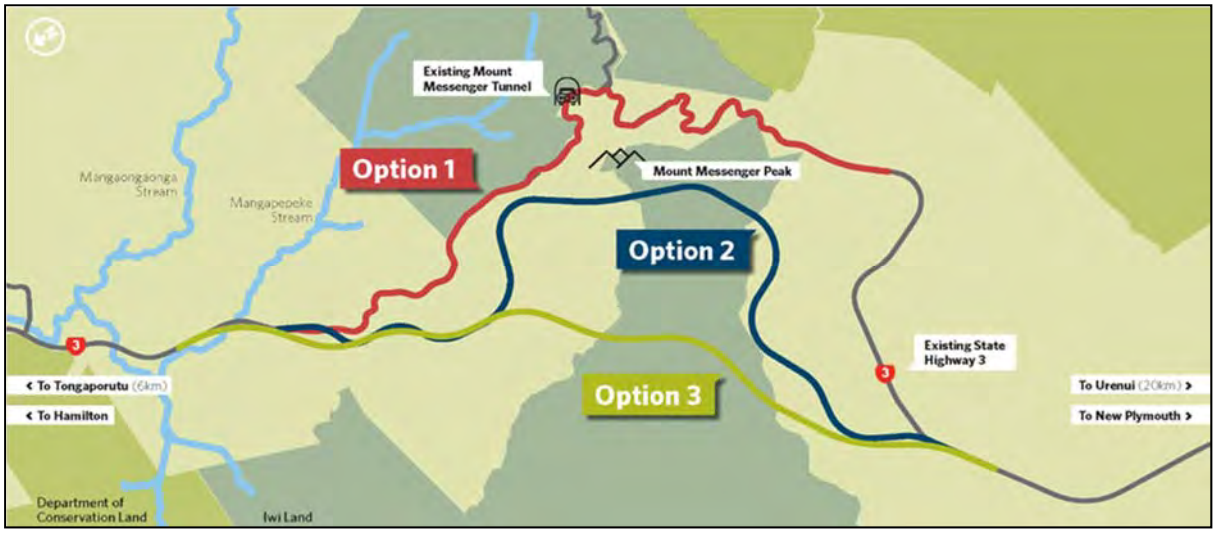


Figure 7.3 – Mt Messenger Bypass Route Options – Consultation Phase Three

7.5.3.1 Engagement activities

Engagement activities included the following (as outlined in Table 7.2):

- Meetings with key stakeholders;
- Drop in sessions hosted by the Project team;
- Online engagement with information provided on the Programme website and social media;
- Distribution of a newsletter update on the Programme; and
- Feedback form (online and hard copy) used to capture the public's views on the proposed route options.

Table 7.2 – Phase Three Engagement Activities

Engagement	Engagement Activities
Meetings	• Individual meetings with potentially affected landowners (including Ngāti Tama and DOC) were prioritised over the first week of consultation. This timing allowed potentially affected landowners to consider and provide feedback on the proposed options. • Meetings were also held with key stakeholders, including the SH3WP.
Drop-in sessions	• Four drop-in sessions, hosted by the Project team, were held in early December 2016. Display boards provided information relating to each project, including the background to the Programme, details of the three projects – options under consideration, benefits and next steps. Technical experts were on hand to answer questions and summary booklets and feedback forms were available. • The sessions were held in New Plymouth (80 attendees), Urenui (70 attendees), Mokau (60 attendees) and Te Kuiti (25 attendees), with a total of 235 attendees.

Engagement	Engagement Activities
Programme newsletter/ update	• A newsletter update was distributed to stakeholders in November 2016 to inform them of the options and the consultation. It outlined key proposals for each project and details about the drop-in sessions. Distribution was as follows: • Electronic copies were emailed to key stakeholders. • 5700 hardcopies were distributed to more than 3700 households from Urenui to Te Kuiti as well as local libraries and council offices. • Newsletters were also available at the drop-in sessions.
Advertisements in local newspapers	• Public notice advertisements promoting the engagement and the drop in sessions were placed in the following local newspapers. • Taranaki Daily News (readership 71,000) on 23 November and 3 December 2016. • North Taranaki Midweek (readership 56,000) on 23 and 30 November 2016 23 and 30. • Waitomo News on 22, 23 & 29 November 2016.
News media coverage	• A media release on the engagement was made available to news outlets accompanied by images of the proposed options. • 27 media ran stories about the consultation from 21 November to 19 December 2016, of which the Taranaki Daily News, Stuff and Radio New Zealand ran multiple stories. Some coverage included images of route options and details about drop-in sessions and Programme website.
Website information	Consultation information, including details on the options was provided on the Programme website, along with: • Display boards and Community Consultation on Options booklet (summary) ; https://www.nzta.govt.nz/assets/projects/awakino-gorge-to-mt-messenger-programme/Community-Consultation-on-Options.pdf- • Frequently Asked Questions; https://www.nzta.govt.nz/assets/projects/awakino-gorge-to-mt-messenger-programme/a2mm-faqs2.pdf • Dates, times and venues for the community drop-in sessions; • Ways to provide feedback (electronic feedback form, email, post); • The next steps in the process; and • During the consultation period there were more than 4700 page views of the web page, of which 3722 were unique visitors.
Social media	• A social media campaign encouraged stakeholders to participate in the consultation and drop-in session. The Transport Agency Waikato/Bay of Plenty Facebook page (with up to 10,000 likes) was used to reach broader communities, along with Twitter (2013 followers).

Engagement	Engagement Activities
	• In December 2016 Venture Taranaki, the region's development agency, posted links on their Facebook page and Twitter (5430 followers) to the consultation page of the Programme's website. • Some media outlets posted links to some of their stories about the consultation on their Facebook pages, including Waikato Times (42,000 likes) Taranaki Daily News (26,652 likes) and RNZ (46,048 likes).

7.5.3.2 Survey findings and issues identified

A total of 303 feedback forms were received as part of the public engagement in Phase 3. These included:

- 280 feedback forms:
  - 131 hard copy feedback forms filled in at the drop-in sessions.
  - 149 electronic forms from the Consultation website.
- 23 email and mail submissions were sent to the Programme Team.

The key consultation findings are summarised below, with further detail provided in the Consultation on Options Report 2017 – https://www.nzta.govt.nz/assets/projects/awakino-gorge-to-mt-messenger-programme/AG2MM-Consultation-on-Options-Report-2017.pdf.

The feedback supported the option referred to as 'Option 3' (west of the existing SH3 corridor as shown in Figure 7.3 (Option A in the Phase Four engagement)), however, concerns about various environmental and cultural impacts were raised.

7.5.4 Phase Four: Update on route options

In March 2017, the Transport Agency engaged the Mt Messenger Alliance to progress the Project, including supporting the ongoing public engagement process. As part of the Phase four engagement, the Transport Agency continued engagement with key stakeholders, including Ngāti Tama, other private landowners and DOC through individual meetings. As part of this process, Ngāti Tama participated in workshops to assess route options.

In May 2017, the Minister of Transport attended an event in Mokau to promote the Awakino Gorge to Mt Messenger Programme. A Programme update newsletter was distributed to households from Urenui to Te Kuiti at that time.

In June 2017, a public consultation programme was undertaken to establish views and input from local communities and key stakeholders on five updated route options for the Mt Messenger Bypass (refer Figure 7.4). These options were developed as part of the process of assessing alternatives, as described in Section 6 of the AEE.

The options were developed reflecting feedback received from consultation with stakeholders; along with further assessment of the environmental effects of a range of

possible options for the Project through a Multi-Criteria Analysis (MCA) process, and design development.[42]

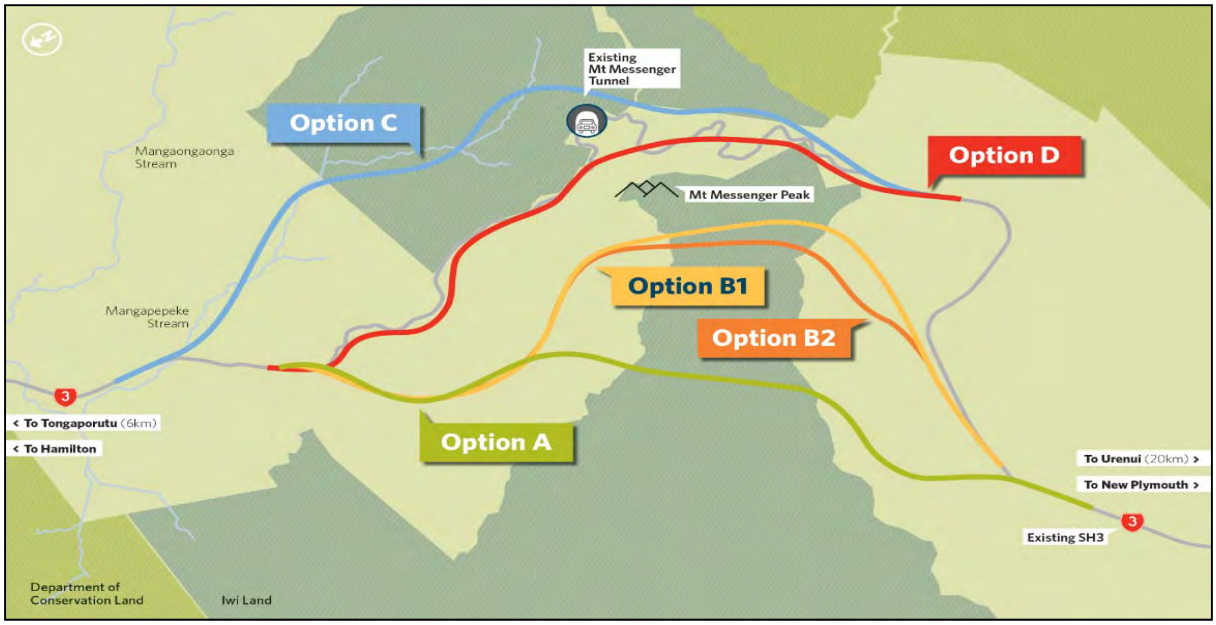


Figure 7.4 – Mt Messenger Bypass Route Options – Consultation Phase Four

7.5.4.1 Engagement activities

Engagement activities included the following (as outlined in Table 7.3):

- Targeted meetings with key stakeholders;
- Drop-in sessions hosted by the Project team;
- Online engagement with information provided on the Programme website and social media;
- Distribution of a newsletter update on the Programme; and
- Feedback form (online and hard copy) used to capture the public's views on the proposed route options.

[42] The Consultation Phase Four options represent the 'shortlisted' MCA options. See section 6.3.3 of this AEE for a detailed summary of the process for arriving at the shortlisted options. The Consultation used different labelling lettering (A – D) than the MCA shortlist process.

Table 7.3 - Phase Four Engagement Activities

Engagement	Engagement Activities
Meetings	Before the public engagement events began, the Project team held face-to-face meetings with potentially affected landowners including Ngāti Tama and DOC. Meetings with some of the key transport users and with the SH3WP were also held.
Drop-in sessions and Meetings	• Three drop-in sessions were held in New Plymouth (15 June) (200 attendees), Urenui and Mokau (16 June) (60 and 40 attendees respectively). • A hui with Ngāti Tama and Ngāti Mutunga iwi at the Ngāti Tama marae (16 June). • A lunch with 25 business representatives from emergency services, government bodies, local businesses and freight/ transport organisations in New Plymouth (15 June). The lunch was promoted through Venture Taranaki's newsletter (1900 subscribers) and through the Project's stakeholder database. The updated route options were presented on display boards with supporting Project information, along with an animated 3D video of each route. Project staff were present to respond to questions. Feedback forms were distributed at the sessions. An estimated 335 – 350 people attended the drop-in sessions, hui and lunch over the two days.
Flyer mail drop	Approximately 4000 flyers were distributed to households from Urenui to Te Kuiti promoting the drop-in sessions.
Advertisements in local newspapers	Public notice advertisements promoting the consultation and drop-in sessions were placed in: • Taranaki Daily News on Saturday 10 June, Tuesday 13 June and Wednesday 14 June; and • North Taranaki Midweek on Wednesday 14 June.
News media	• A media release on the updated options accompanied by an image of the routes was made available to news outlets. • Five media stories were published about the drop-in sessions and updated options covered by the Taranaki Daily News, Waitomo News and RNZ.
Website information	• The Programme webpages were updated on 15 July to provide information on the drop-in sessions, the route options, FAQs, a feedback form and media release.
Social media	• A social media campaign via the Transport Agency Bay of Plenty Facebook and Twitter pages encouraged stakeholders to attend a drop-in session or access information online. • The initial post reached 17,525 people, received approximately 51 likes and 25 shares on Facebook, with 26 people commenting under the post. Facebook users also tagged their friends in the post.

7.5.4.2 Engagement findings and issues identified

A total of 95 feedback forms (79 hardcopy and 16 electronic responses) were received during this phase of engagement.

Feedback was sought on the proposed route options, specifically:

- The main things that should be taken into account when selecting a preferred route (for example improving safety and reliability, and effects on the environment and cultural values);
- How a new route would affect respondents travel patterns and the way they do things (e.g. reduced business costs); and
- What respondents liked and disliked about each option.

The main themes from the feedback are summarised below.

- **Travel reliability and safety –** Travel reliability (70 respondents) and safety (69 respondents) featured heavily in the feedback with respondents wanting a safe and reliable route through Mt Messenger. Despite this, some respondents noted that they enjoy the existing road, but that a safer, more reliable road is necessary.
- **Desire for a long term solution** – There was a strong desire for the preferred option to be a long-term solution. The durability and future proofing of the route should not be compromised with participants highlighting the need for the road to withstand weather conditions and interference from Mt Messenger's terrain, such as rock falls, slips and flooding.
- **Environmental and cultural concerns** – While the vast majority of respondents acknowledged the need for a new route, there were concerns over potential impacts on the area's environmental and cultural value, with almost half of the respondents commenting on the environment. The impact on wildlife and Mt Messenger's native bush and wetlands were cited as particular areas of concerns. Concerns about effects on iwi land were also raised.
- **Economic benefits** – Respondents noted the financial benefits of a new route to communities and businesses within the Taranaki region, through increasing accessibility and reducing business cost. The economic value of a route with lesser gradient for the transport industry was also acknowledged. The route would also provide opportunities for an increase in tourism.

Overall, as it did during the Phase 3 engagement, the public feedback supported Option A.

In addition to feedback from the drop-in days, specific feedback was also received from key stakeholders. Ngāti Tama expressed their feedback through participation in the route options assessment process, and provided the Transport Agency with a draft Cultural Impact Assessment (refer Section 8.4.1), highlighting a preference to avoid cultural impacts. Feedback from DOC highlighted the importance of the biodiversity values of the western Parininihi land and a preference for an option that avoided adverse environmental and cultural outcomes on these values. Feedback from transport users highlighted that route resilience and minimising operational costs as being key interests for route selection.

In selecting a preferred option, the Transport Agency took this feedback into account, primarily through selecting an option that avoided the western Parininihi land and its higher environmental and cultural values, and achieved good transport outcomes.

7.5.5 Phase Five – Preferred Alignment and Consenting

Phase five of the engagement process has focussed on engagement regarding the preferred alignment and development of the Project designs and construction. This engagement has focused on Ngāti Tama, affected landowners, route neighbours, DOC and other key stakeholders, along with the wider community.

An announcement on the selection of the preferred options was made by the Transport Minister on 31 August 2017[43], via a press release from the Minister's Office. A small event in Waitoitoi Hall was also organised by the Minister's office, where the Minister announced the Mt Messenger Bypass.
Face to face meetings with directly affected landowners were undertaken to discuss the Project. Meetings discussed the alignment, property impacts, future site investigations and the upcoming designation and consenting process.

The Transport Agency has worked constructively with Ngāti Tama in developing the Project. Ongoing engagement with Ngāti Tama will occur as the Project progresses to ensure that Ngāti Tama's cultural values and aspirations are incorporated into the Project development and into designs and on through construction and operation.

Ongoing engagement with DOC will also continue regarding environmental assessments, mitigation measures and future site investigations in relation to freshwater and terrestrial ecology.

The Transport Agency has also met with the SH3WP, road user organisations and industry bodies, local business and community groups in relation to the preferred alignment.

This engagement will continue through the consenting process.

7.6 Engagement with key stakeholders

As described above, through Phases one to five there has been ongoing liaison with key stakeholders during the route selection and design development process. Table 7.4 outlines the consultation undertaken with these stakeholders, their interests and issues, along with the main engagement approaches.

[43] https://www.beehive.govt.nz/release/mount-messenger-bypass-option-selected

Table 7.4 – Project stakeholders – their interests, issues and engagement approaches

Stakeholder	Interest	Engagement
Te Runanga o Ngāti Tama	• Impacts of the Project on their land to the west of SH3 through which the alignment passes. • Impacts of the Project on the land's cultural values and sites of cultural significance. • Focus on avoiding or mitigating effects on land with high cultural, landscape and ecological values. • Potential impacts on the kōkako relocation project.	• Regular (fortnightly / monthly) hui with the Runanga in Taranaki, initially monthly then fortnightly in 2017, to keep them informed of the Project and provide opportunities to input into development of the Project. • Emails and phone calls as required. • Notification of consultation phases and Project development • Participant in the route options assessment process • Design development meetings with Alliance specialists, including ecologists, landscape specialists, constructors and designers to discuss the Project, opportunities to incorporate cultural values into the Project, or where necessary, how any effects on cultural values could be avoided, remedied or mitigated.
Ngāti Maniapoto **Ngāti Mutunga**	• Impact on cultural values and route options.	• Notification of consultation phases and Project development. • Specific meetings to discuss development of the Project. • A hui was held with Ngāti Mutunga in Urenui on 15 June 2017 to update them on bypass options. • A meeting with Ngāti Maniapoto on 4 October 2017 to discuss the consenting process.
Directly affected landowners	• Impact on property access / operations. • Effects associated with the construction and operation of the Project on their land.	• Meetings at landowner properties typically once per month throughout investigation phases (May 2016 to August 2017) • Prior to, and during key Project engagement events, such as the Consultation on Options (Nov 2016 – Jan 2017) and Update on Options (June 2017), meetings were held with landowners to discuss property impacts and the consenting process. • Since the announcement of the preferred alignment, weekly meetings have been held to discuss property acquisition, construction and operational effects of the Project. • Newsletter updates advising of consultation and Project development (route options and preferred alignment)

Stakeholder	Interest	Engagement
Landowners adjacent to the route	• The impact of construction on their property, including noise, any disruption to property access, landscape and visual effects, dust effects. • Impacts associated with operation of the bypass on their property, including noise, landscape and visual effects.	• Meetings at landowner properties throughout investigation phases (May 2016 to August 2017), with additional meetings coinciding with key Project events e.g. public consultation. • Meeting prior to consultation on options, update on options, announce the preferred alignment and to discuss property impacts and the consenting process. • Subsequent meetings as required to ensure landowners are aware of the Project's progress. • Newsletter updates advising of consultation, Project development (route options and preferred alignment).
Parties with cultural interest in local area: • Nga Hapu o Poutama	• Impact on cultural values and route options.	• Notification of consultation phases and Project development. • Meetings to discuss development of the Project.
Regional Council *Regulatory team, Council heads* *Chair, chief executive, and councillors*	• Consenting authority – responsible for processing the resource consent application and subsequently monitoring the implementation of the consents. Interested in route alignment, environmental effects, including erosion and sediment control, water quality, ecological matters. • Transport and tourism benefits between regions, and economic benefits to the region.	• Regular meetings with a working group of the Regional Council (and District Council officials) to keep them informed of Project progress, including meetings prior to key Project events e.g. public consultation. • Regular meetings with regulatory team to discuss the consent applications • Site walkover with regulatory team on 19 September 2017 and their specialists to discuss the alignment, environmental effects and management. • Emails and newsletter updates to advise of consultation and Project development.
District Council *Regulatory team, Council heads*	• Consenting authority – responsible for processing the NoR and subsequently monitoring the designation conditions. Interested in route alignment,	• Regular meetings with a working group of the Regional Council (and District Council officials) to keep them informed of Project progress, including meetings prior to key Project events e.g. public consultation. • Regular meetings with regulatory team to discuss the consent applications.

Stakeholder	Interest	Engagement
Mayor, chief executive, and councillors	environmental effects, including landscape, construction traffic, noise and vibration, social impacts. • Local road management (represented on the Regional Transport Committees) – SH3 is a significant route being the only direct connection between Taranaki and Waikato. • Transport, tourism and economic benefits to district.	• Site walkover with regulatory team on 19 September 2017 and their specialists to discuss the alignment, environmental effects and management. • Emails and newsletter updates to advise of consultation and Project development.
SH3 Working Party *Representatives from the Regional Council, the District Council, Waikato Regional Council, Waitomo District Council, Transport Agency, Automobile Association, RTA, NZ Police, Roading Maintenance Contractors (Transfield and Downers)*	• High interest in all aspects of the Awakino Gorge to Mt Messenger Programme, including the Mt Messenger Bypass as key advocates for the improvements. • Interest in freight movement, route safety, travel time reliability and network resilience.	• Meetings to provide Programme and individual Project updates, typically every three months. Meetings include: o 14 April 2016 o 8 September 2016 o 3 May 2017 • A question and answer session was held with members of the SH3WP on 27 July 2017. • Notifications in advance of engagement phases and provision of details shortly before information is made public. • The SH3WP also receives the Project's Newsletter.
Taranaki Regional Transport Committee	• Interest in the route alignment, along with design and construction details.	• Taranaki RTC quarterly meetings were attended on 9 March, 1 June, 7 September and 7 December in 2016 and on 8 March, 14 June, 6 September in 2017.
Waikato Regional Transport Committee	• Interest in the route alignment, along with design and construction details.	• Waikato RTC meetings were attended on 7 March, 2 May, 4 July and 5 September 2016 and on 13 February, 6 March, 3 April, 1 May, 3 July, 5 September and 2 October 2017.

Stakeholder	Interest	Engagement
DOC	• Overarching Memorandum of Understanding between the Transport Agency and DOC requesting early engagement on the wider Programme. • Interested in impacts on biodiversity and conservation values and on Ngāti Tama land subject to the covenant and the avoidance, remediation and mitigation of effects.	• Working group established with DOC with fortnightly meetings / workshops to provide DOC with an understanding of the Project, the options assessment and preferred alignment, potential environmental effects and measures to avoid, remedy, mitigate or offset adverse effects. Meetings have also discussed conservation and biodiversity outcomes of the Project and future ecological investigations. • DOC specialists observed the route options assessment (June 2017). • Site walkover with Alliance ecologists and DOC specialists in August 2017 to discuss the Project, corridors being considered, ecological effects and mitigation. • Newsletter updates advising of consultation, Project development (route options and preferred alignment).
Freight organisations *Including Mainfreight, Fonterra, Port of Taranaki*	• Resilience of route to provide for the transport of freight between regional and locally. • Reducing / minimising operational costs. • Route and driver safety, travel time reliability. • Impact of delays on perishable goods being transported.	• Meetings held with organisations to discuss the Project development • Some organisation representatives attended the New Plymouth business lunch presentation on 15 June 2017, where the Alliance provided an update on the route options. • In July, meeting invitations were sent to organisations who were either unable to attend the business lunch or may like to discuss the options further. • Meeting with Heavy Haulage on 20 October 2017 to discuss the consenting process. • Newsletter updates advising of consultation, Project development (route options and preferred alignment).
Fish & Game NZ	• Environmental interests, access to rivers and waterways.	• Meetings held in December 2016 and June 2017 discuss the Project development. • Newsletter updates advising of consultation, Project development (route options and preferred alignment).
Forest and Bird	• Environmental interests especially ecology and habitats.	• Meetings with the Taranaki Branch and national Forest and Bird representative in December 2016, June and September 2017 to discuss the Project, including options assessment, the alignment environmental effects and how these can be avoided, remedied and mitigated.

Stakeholder	Interest	Engagement
		• Newsletter updates advising of consultation, Project development (route options and preferred alignment).
Venture Taranaki	• Interest in what is being planned and benefits for the region, tourism and other businesses.	• Ongoing meetings, including some joint meetings with council representatives and other organisations. • Venture Taranaki supported the Alliance's business lunch presentation on June 15, 2017. The luncheon involved a presentation about the Mt Messenger route options. • Newsletter updates advising of consultation, Project development (route options and preferred alignment).
Local businesses	• Interested in what is being planned and impact on business.	• Some attended the attended the New Plymouth business lunch presentation on 15 June 2017 where the Alliance provided an update on the route options. • Meetings as required to discuss specific Project aspects. • Newsletter updates advising of consultation, Project development (route options and preferred alignment).
Emergency services – NZ Police, St John Ambulance and the Fire Service *NZ Police are a member of the SH3WP.*	• Interested in construction work, in particular any disruptions to the SH3 network that may cause delays in responding to an emergency.	• Representatives attended the consultation on options and New Plymouth business lunch presentation on 15 June 2017, where the Alliance provided an update on the route options. • Meetings as required to discuss specific Project aspects. • Newsletter updates advising of consultation, Project development (route options and preferred alignment).
Interested groups Local schools and communities	• Interested in what is being planned and impact and how it will impact on their daily lives.	• Newsletter updates advising of consultation, Project development (route options and preferred alignment). • Invited to participate in the consultation and update on options. • Meetings as required to discuss specific Project aspects. • Meetings held with Principals of schools within the surrounding area in July and August to understand their interest in participating in a community project –

Stakeholder	Interest	Engagement
		Urenui School and Mokau School were met on 6 July 2017. Mimi, Uruti and Ahititi schools were met on 2 August 2017. • Three schools – Mimi, Uruti and Mokau, have signed up to the first stage of the community project 'Connecting Communities', running from October until late November/ early December 2017[44].
General public	• Key interests in travel time/disruption and safety.	• Promotion of major phases of engagement encourages the public to participate and they are invited to join the database and receive electronic updates and other information about the Project. • Invited to participate in the consultation and update on options: o Four drop-in sessions were held as part of the consultation on options on 5 -6 December 2016 in New Plymouth Urenui, Mokau and Te Kuiti. o Three drop-in sessions, for an update on options on 15-16 June 2017 in New Plymouth, Urenui and Mokau.

[44] Connecting Communities aims to introduce young learners, their families and school staff to the Project while building relationships with them that continue and go beyond the Project's lifetime

7.7 Engagement with Ngāti Tama

Ngāti Tama is a key stakeholder. Ngāti Tama are mana whenua for this area and also own a significant proportion of the land through which the alignment will be constructed. The cultural values and significance of this area to Ngāti Tama are highlighted in Sections 8.4.1 and 9.7. The Project (and most previously considered Project options) traverses land returned to Ngāti Tama by the Crown through the Treaty of Waitangi settlement process.

Te Runanga o Ngāti Tama is the post settlement governance entity established under the Ngāti Tama Deed of Settlement (2003). Te Runanga o Ngāti Tama represents and is accountable to all the members of Ngāti Tama.

Ngāti Tama have played a crucial role through the process of developing the Project, including options consideration and making design refinements. In accordance with the importance of Ngāti Tama to the Project, a series of hui, informal meetings, and workshops have been held through 2016 and 2017 between the Transport Agency and Te Runanga o Ngāti Tama to discuss Project development and detailed design. Ngāti Tama also played a central role in the MCA process for assessing alternative route options for the Project (refer Section 6.3.3).

Key aspects of the engagement between the Transport Agency and Ngāti Tama in respect of the Project have included:

- Regular meetings and exchanges of information.
- Collaboration in the development of the Project's design philosophy, namely "treading lightly on the land".
- Providing the Mt Messenger Alliance team with the name 'Te Ara o Te Ata'. Te Ata is a local taniwha which manifests on the coast of Parininihi and is of cultural significance to Ngāti Tama.
- Formal expression of Ngāti Tama cultural values and impacts associated with the Project, through the Cultural Values Assessment and Cultural Impact Assessment.
- Attendance and participation in MCA processes, including providing the scoring of all options against the 'cultural heritage' criterion.
- Numerous site visits with Te Runanga o Ngāti Tama trustees and Project team specialists to observe and discuss the various alignment options and implications on ecology, landscape and cultural values.
- Joint meetings with the Te Runanga o Ngāti Tama, the Transport Agency, Kōkako Specialist Group (KSG) and DOC, to consider impacts on the re-introduced kōkako and other species and habitats in the Project area.
- Attendance and monitoring by Ngāti Tama trustees during field investigations (including geotechnical testing) to observe investigations.

In-depth engagement with Ngāti Tama will continue through the final design and construction of the Project. For example, Ngāti Tama are expected to be key to the processes for finalising landscape design details for the key components of the Project, in line with the LEDF. This applies in particular to opportunities for cultural narrative and

expression in structural design aspects and the proposed ecological and landscape mitigation and biodiversity offset package.

For more detail in respect of the effects of the Project on cultural values, and in particular Ngāti Tama cultural values, refer to Sections 8.4.1 and 9.7.

7.8 Consultation outcomes

Feedback and inputs from the Project stakeholder engagement and communications, along with specialist technical information, has informed the options assessment and Project development process. The key topic areas and issues raised during stakeholder engagement for the Project are set out in Table 7.5, along with the Alliance's design and/or construction response to these topics. In most instances, the issues and measures covered in the table are addressed in more detail in the relevant section of this AEE and in the Technical Reports in Volume 3.

Table 7.5 - Engagement Feedback and Project Response

Topic	Issue	Response
Environment	Concern around impact of a road on biodiversity values of western Parininihi land (irreversible environmental impacts, segmentation of forest, impacts on wildlife, pest and predator impacts)	Recognising, and seeking to avoid adverse effects on the ecological values associated with the Parininihi land west of SH3 was at the core of the options assessment undertaken for the Project. The location of the Project to the east of SH3 avoids higher biodiversity value areas and adverse effects on the natural environment values to the west of SH3. While the Project traverses forest in the Ngāti Tama land to the east of SH3, this land has not had consistent pest management and consequently, the ecological condition and biodiversity value of this area is lower. Vegetation communities are more modified and have been affected by stock grazing, browser pressure, fire and logging. A significant mitigation and biodiversity offset package will be implemented as part of the Project, focused on achieving a net gain in biodiversity in the medium term following the completion of construction. The package comprises: • Intensive, multi-species pest management over 560ha. • Restoration planting of 6ha of swamp forest. • Planting of 200 seedlings of the same species for every significant tree felled for the Project. • Riparian planting and livestock exclusion of approximately 8.9km of existing stream. • Restoration planting
	Protection of the remaining small area of Taranaki coastal forest	
	Protection of significant wetlands	The Project includes a bridge over a tributary of the Mimi River and ecologically significant wetland in order to minimise impacts on wetland. Construction of the bridge will be undertaken to avoid works in the valley below as outlined in Section 5.
	Protection of the Parininihi Reserve and the reintroduction of the kōkako	As outlined above, the location of the alignment, to the east of the existing SH3 will avoid impacts on the western Parininihi land, where kōkako have been released. The mitigation and biodiversity offset package for the programme will address potential effects on birds including kōkako.
	Destruction of kiwi habitat	The location of the Project, to the east of the existing SH3, avoids impacts on the western Parininihi land. Construction will be undertaken in accordance with the Project's ELMP, which will include specific protocols to minimise adverse impacts on kiwi (refer to Section 9.8 for further detail).

Topic	Issue	Response
	Concern around large cuts and retaining walls requiring large areas of bush to be cleared.	The Project has been designed to minimise the extent of cuts and fills depths/heights as far as practicable and hence, minimise the extent of vegetation clearance and habitat impacts. The tunnel under the ridgeline to the east of the existing SH3 will avoid the requirement for a significant cut in this location.
	Improving the existing road would be most beneficial and avoid impacts on conservation efforts	Upgrading the existing SH3 route was considered as part of the options assessment undertaken for the Project, as described in Section 6.3.3.
Safety, travel time and experience	Provide passing opportunities in both directions through passing lanes and slow vehicle bays	The alignment design, which provides for improved forward visibility, wider (1.5m) shoulders than the existing section of SH3, relatively flatter grades and improved road geometry, will enable greater opportunity for informal passing opportunities.
	Provide safer pull over areas	The need for pull over areas along the route will be assessed at the detailed design stage.
	Encourage better driving and slower speeds, including making sure new road does not cause motorists to speed	The alignment has been designed at a higher standard than the existing section of SH3 and to a 100km/h design speed. As such, it can be driven safely at that speed, noting that heavy vehicles are expected to travel at slower speeds on steeper sections of the route. The existing section of SH3 is very steep across much of Mt Messenger, with grades of up to 12% in some locations. In addition, there are a number of tight corners which need to be negotiated. By comparison, the curves along the new alignment will be very much eased, with maximum grades of 7.5% southbound and 7.0% northbound. The alignment will increase the safety Star Rating from 2 to 3.
	Concern around a new road with a 60/70km/h speed, which is low compared to other new roads	
	The straightest option will be the safest	
	Concern around lack of sun, freezing temperatures and wet conditions at Mt Messenger resulting in road closures and safety concerns	The Project alignment has a lower elevation than the existing route and a slightly better north / south alignment, so there is either little change / slightly more favourable conditions for snow, ice, or issues with lack of sun compared to the existing SH3.

Topic	Issue	Response
	Concerns around sightlines for drivers when approaching and departing the Mt Messenger tunnel	The new alignment is located to the east of the existing Mt Messenger Tunnel and serves as a bypass to the existing section of SH3 and the tunnel. The alignment provides significantly improved forward visibility and can be driven safely at 100kph throughout.
	Eliminate out-of-context or slow-speed curves.	Concerns around slow speed curves have been addressed in the design of the Project. The existing section of SH3 is very steep across much of Mt Messenger, with grades of up to 12% in some locations. In addition, there are a number of tight corners which need to be negotiated. By comparison, the curves along the new alignment will be very much eased, with maximum grades of 7.5% southbound and 7.0% northbound.
Construction	Disruption to traffic while the road is being constructed	The Project will largely be constructed offline of SH3. Minor works will be required at the northern and southern extents of the Project where it will connect with the existing SH3. Some SAPs to enable access to the construction area will be via SH3. Any works within the SH3 corridor will be appropriately managed to minimise road user disruption.
	Build high quality, low maintenance road surface	These requirements are intrinsic in the design of the Project.
	Large trucks and a windy road will result in high maintenance requirements	The Project will require less maintenance due to the higher standard of design than the existing section of SH3, lower grades and eased curves.
Resilience	The existing road should be retained in event of the new road being closed and used in emergencies	The future of the existing SH3 alignment will be determine in consultation with the District Council and landowners, including Ngāti Tama.
	Mt Messenger geology will cause many slips and washouts on the road	Detailed mapping and ground investigations have been undertaken to inform the route selection and detailed design processes for the Project. The design of the alignment responds to the geological conditions along the route. The new route to the east of SH3 will provide improved network resilience and journey reliability compared to the existing section of SH3.

Topic	Issue	Response
	A long term approach needs to be taken so that the new road is suitable for future growth	The road has been designed to provide sufficient capacity for forecast future traffic growth.
	Provide telecommunications coverage and radio site development as part of the Project	Telecommunication coverage is managed by the respective network utility providers and does not form part of the Project.
Economic	Avoid disruption to, and loss of productive land	While there will be some productive land impacted by the alignment; impacts have been minimised as practicable.
	The more undulating the road, the greater the transport operating costs	The Project has a significantly lower overall climb and will result in lower operating costs than the existing SH3.
Recreation	Improvements should incorporate a cycle/walkway between Mokau and Awakino to encourage use of bikes and visitors to the area	The carriageway width of the new route will be suitable for pedestrians and cyclists, with 1.5m shoulders provided next to the traffic lanes along the alignment, and 1.2m in the tunnel. The increased width of the paved shoulders will provide cyclists with greater space and improved cycling conditions in comparison to the existing section of SH3. Improvements along other sections of SH3 will be assessed as part of the wider SH3 Improvements Project.
	Concerns over impacts on recreation opportunities, such as tramping, through the western Parininihi land	The Project will provide safer conditions for users of the Mt Messenger and Kiwi Road walking tracks. A new stopping area will be established for this purpose at a suitable location adjacent to the existing SH3 carriageway. This will provide an improvement on the existing configuration where informal parking areas on the side of the road lack any safe connection to the start of the track and lack safe entry and exits. The Kiwi Road track will also be re-routed under the new bridge to enable safe passage across the new road.
Cultural considerations	Impact on Ngāti Tama land	While the alignment extends through land owned by Ngāti Tama, significant engagement has been undertaken with Ngāti Tama in relation to the route selection process and detailed design development as outlined in above and in Section 9.7. The Transport Agency will continue engagement with Ngāti Tama throughout the Project.

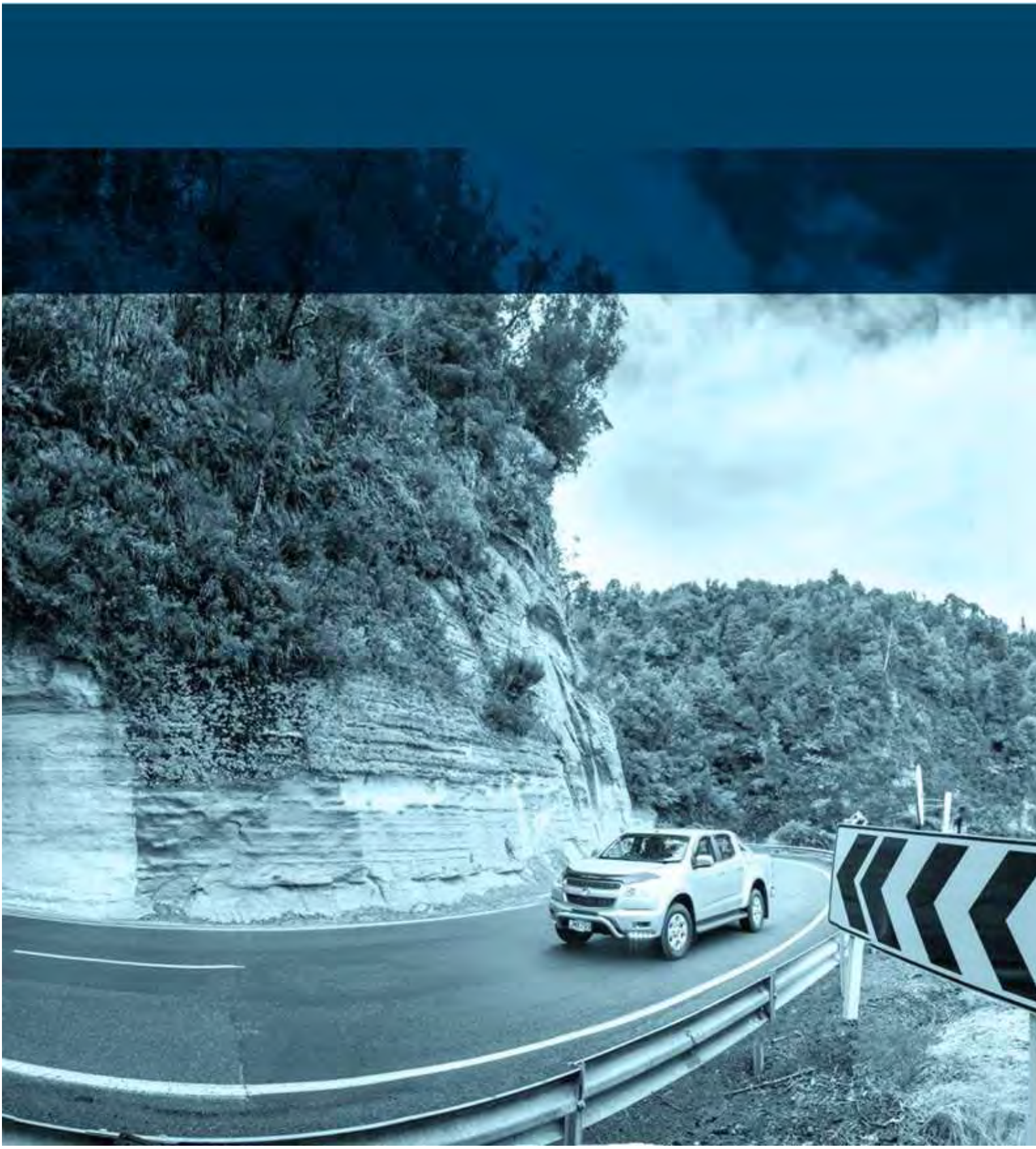
Topic	Issue	Response
Landscape and Visual	Large cuts and hard engineering will be ugly features in the landscape.	The alignment has been designed to minimise the extent and scale of cuts and fills as practicable. Works will be undertaken in accordance with the LEDF and ELMP, which outline the landscape and rehabilitation treatments, such as cut and fill slopes in order to minimise adverse landscape and visual effects.

7.9 Ongoing communication

The Transport Agency will continue to communicate with the local community and stakeholders for the duration of construction of the Project, as outlined in the CEMP (refer to Volume 5). This will include:

- Ongoing contact with directly affected landowners including in respect of progress with construction.
- Project updates during construction.
- Information stands about the Project at local public event(s). The Project team will be available to interact with the public.
- A drop-in space with visual displays related to the Project and construction works.
- Regular newsletter updates (hardcopy and electronic) regularly to keep stakeholders informed about the Project.
- Shareable posts on social media, namely Facebook and Twitter about Project activities and outcomes.

Section 8 – Existing Environment



8 Existing Environment

8.1 Introduction

This section provides an overview of the natural environment (including the topography and catchments, the geology, ecological values, landscapes and soil quality) and the human environment (including cultural values, recreational uses and communities) of the Project footprint and the wider Project area. Regional context is also provided where relevant.

More detail on the existing environment is included in the Technical Reports included in Volume 3 of the AEE.

8.2 Location

The Project is located in North Taranaki, approximately 57km north of New Plymouth (See Figure 8.1 below). The Project alignment is to the east of existing SH3, between the settlements of Uruti and Ahititi, approximately 20km south of the boundary between the Taranaki and Waikato regions. Hamilton is approximately 184km to the north of the site.

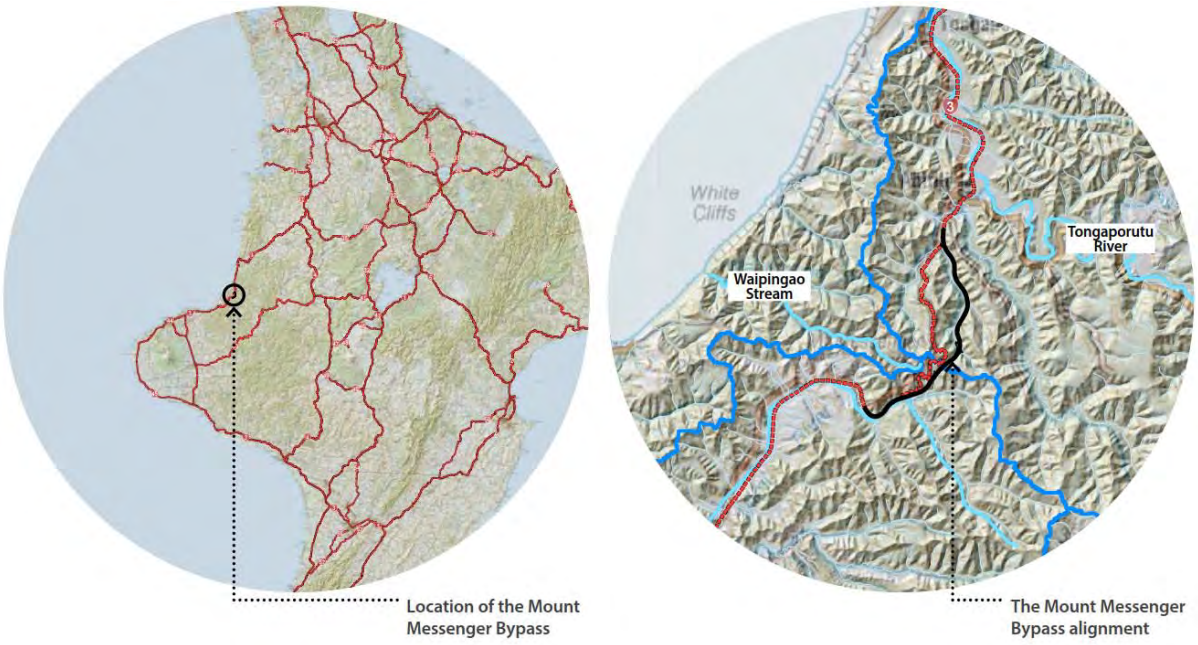


Figure 8.1 – Location plan

8.3 Natural environment

8.3.1 Topography and catchments

The existing SH3 corridor north and south of Mt Messenger follows relatively open rural valleys. These lowland areas are separated by very steep, topographically complex hill country. The landscape context of the wider Project area includes the steep to very steep hill country from the coastal terraces south of the Tongaporutu River; south to the pastoral flats of the Mimi Valley; west to the coast and the Parininihi Cliffs; and east to the Mt

Messenger Forest. In general terms, the wider Project area is predominantly steep to very steep hill country.

The Project alignment is contained within two valley systems, being the Mangapepeke Valley in the north (3.4km of the 6km route), and the south facing slopes of the upper Mimi Valley in the south (2.4km of the route). The Mangapepeke Stream flows north-west to the Mangaongaonga Stream and the Tongaporutu River, which enters the coast at Tongaporutu, about 7km north of the Project footprint. The Mimi River flows south-west to enter the coast between Waiiti and Urenui. (Refer to Figure 8.2).

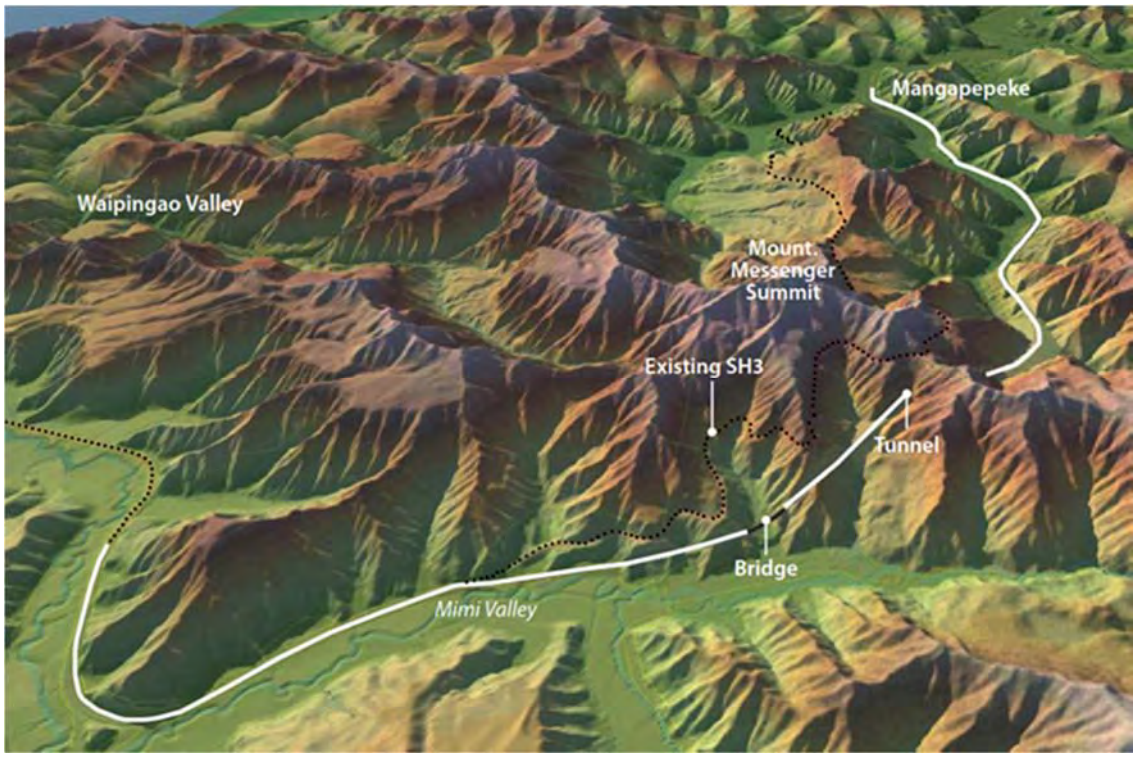


Figure 8.2 – Topography of area (Project alignment shown in white)

8.3.2 Climate

Taranaki generally has a temperate climate, with relatively high sunshine hours and rainfall distributed relatively evenly throughout the year. The prevailing wind direction in the Taranaki Region is from the southwest, and this aligns with what has been measured locally at the Uruti climate data station – a mean wind direction of 198 degrees (or SSW), (Taranaki Regional Council data from August 2016 – July 2017).

Median annual rainfall in the vicinity of the wider Project area is approximately 1,800mm to 2000mm per annum: higher than the average across New Zealand.[45] Monthly average rainfall for Urenui ranges from approximately 75-100mm (in November, and January-March) to 115-155mm for the other months.[46]

[45] Compared with approximately 600mm – 1,600mm in most regions, according to NIWA data.
[46] Based on data from January 2003 to December 2016.

More detail on the meteorology, wind conditions and rainfall in the wider Project area is set out in Section 4 of the Air Quality Assessment (Technical Report 11, Volume 3 of the AEE).

8.3.3 Geology

The Project is located within the Taranaki Basin, within a wider geological region comprising Late Tertiary (Miocene-age) sediments of the Wai-iti Group. In the area of the Project alignment, the surface geology is dominated by the Mt Messenger Formation (Mim). This formation comprises marine turbidite sands and muds deposited in outer shelf to basin floor settings in the Taranaki Basin during the Late Miocene period. These typically soft rocks include a continuum of silty, fine-grained sandstones to silty mudstones. Volcanic ash from Mt Taranaki has mantled the landscape and remains as a component of soil in the area.

The geology of the wider Project area is shown in more detail in Figure 8.3 and described in the Geotechnical Appraisal Report (Technical Report 14, Volume 3 of the AEE). The Project alignment crosses recent alluvial deposits within both the Mimi and Mangapepeke catchments. These deposits range in depth from relatively shallow in the higher gullies (3-5m), to deeper adjacent to the lower gradient streams (such as 5-10m in the Mimi Valley). Preliminary investigations in the Mangapepeke Stream catchment indicate very soft to soft (becoming firm) soils to depths in excess of 30m in some locations.

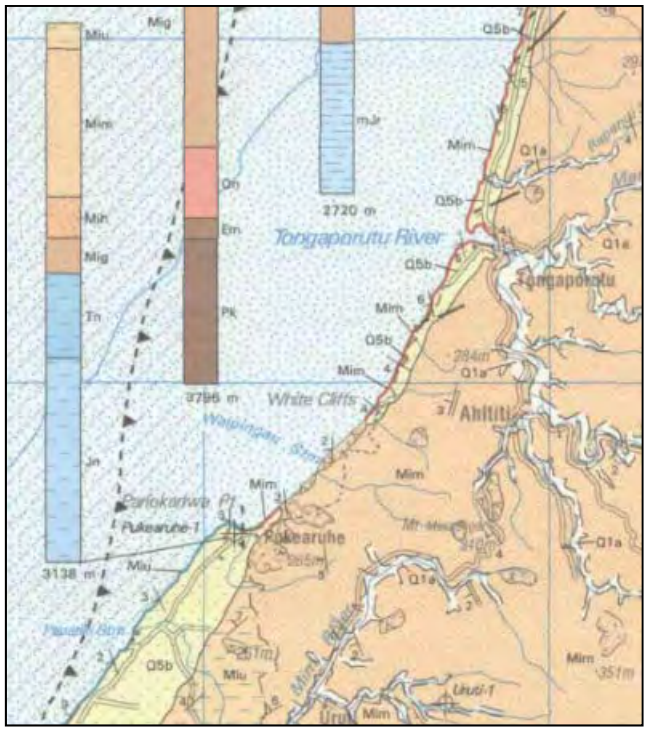


Figure 8.3 - Geology of the wider Project area (Copyright GNS 2005)

8.3.4 Ecology

8.3.4.1 Overview of ecology and terrestrial vegetation

The ecological values of the wider Project area and the Project footprint are described in detail in Technical Reports 7a-7g, in Volume 3 of the AEE.

The Project footprint sits within a wider area of forested indigenous native vegetation running from the coastal margins inland to the lowland mountains. This area includes the Parininihi land and the Mt Messenger forest, which combined are in the order of 4,430ha in size, (Figure 8.4). This area is located in the North Taranaki Ecological District and straddles an ecological boundary between two broad forest classes with podocarp, broadleaved forest largely in the Mimi catchment and the upper Mangapepeke Valley, and podocarp, broadleaved, beech forest within the lower Mangapepeke Catchment and northwards.

The Parininihi land to the west of SH3, previously known as "Whitecliffs Conservation Area", is a tract of mainly primary forest approximately 1332ha in size and centred on the Waipingao Stream catchment. This area, which will not be affected by the Project, encompasses a rare continuous forest sequence through coastal, semi-coastal and lowland bioclimatic zones. As such, the area is regarded as being ecologically significant, and is described as the best example of primary coastal hardwood-podocarp forest on the west coast of the North Island (refer Technical Report 7a).

Pest management on the Parininihi land west of SH3 was started in the early 1990s by the DOC, and involved possum and goat pest control activities. Since the land was returned to Ngāti Tama in 2003, intensive management of these pests has continued, and control of rodents, mustelids and feral cats has also been carried out. The vegetation in the area is now healthy and ecologically functioning, with vulnerable browse-sensitive plants regenerating.

The dominant forest on the Ngāti Tama block to the east of SH3, through which the Project alignment traverses, would have originally been very similar to the Parininihi land to the west, however it has not had consistent pest control. Consequently, the ecological condition of this area is diminished. The forest composition along the Project alignment is now dominated by canopy trees of lower palatability such as tawa (*Beilschmiedia tawa*), rewarewa (*Knightia excelsa*), nikau (*Rhopalostylis sapida*) and tree-ferns.

Within the Mangapepeke Stream catchment, vegetation communities have been affected by long-term stock grazing, fire and logging, with the result being a transition to large open and grazed rushlands and poor quality pastureland further down the valley towards SH3. This in turn means the quality of the habitats in this area for birds, bats, herpetofauna, invertebrates and fish is much lower than the surrounding forest. This valley bottom would once have been covered by dense swamp forest.

There are several large, emergent trees either within or immediately adjacent to the Project alignment, and larger numbers across the wider area, with rimu (*Dacrydium cupressinum*) and miro (*Prumnopitys ferruginea*) being most common, as well as large northern rata and thin-barked totara which support a diverse range of epiphytes. These large, old trees play a significant ecological role in the forest ecosystem and provide important habitat for wildlife (e.g. roosting and nesting sites for bats and birds).

Of greatest ecological significance in immediate proximity to the Project alignment is the area of swamp forest and non-forest wetland in the valley floor of the northern Mimi River catchment (Mimi swamp forest) (refer Figure 8.4). The valley floor sequence within the northern tributary of the Mimi River represents a full range of swamp forest, scrub and non-forest wetland communities that would once have been more common throughout this area. The Project alignment sits immediately to the west of this wetland, and has been aligned to avoid physical impact. The bridge structure has been specifically developed to avoid impact on the valley floor and wetland.

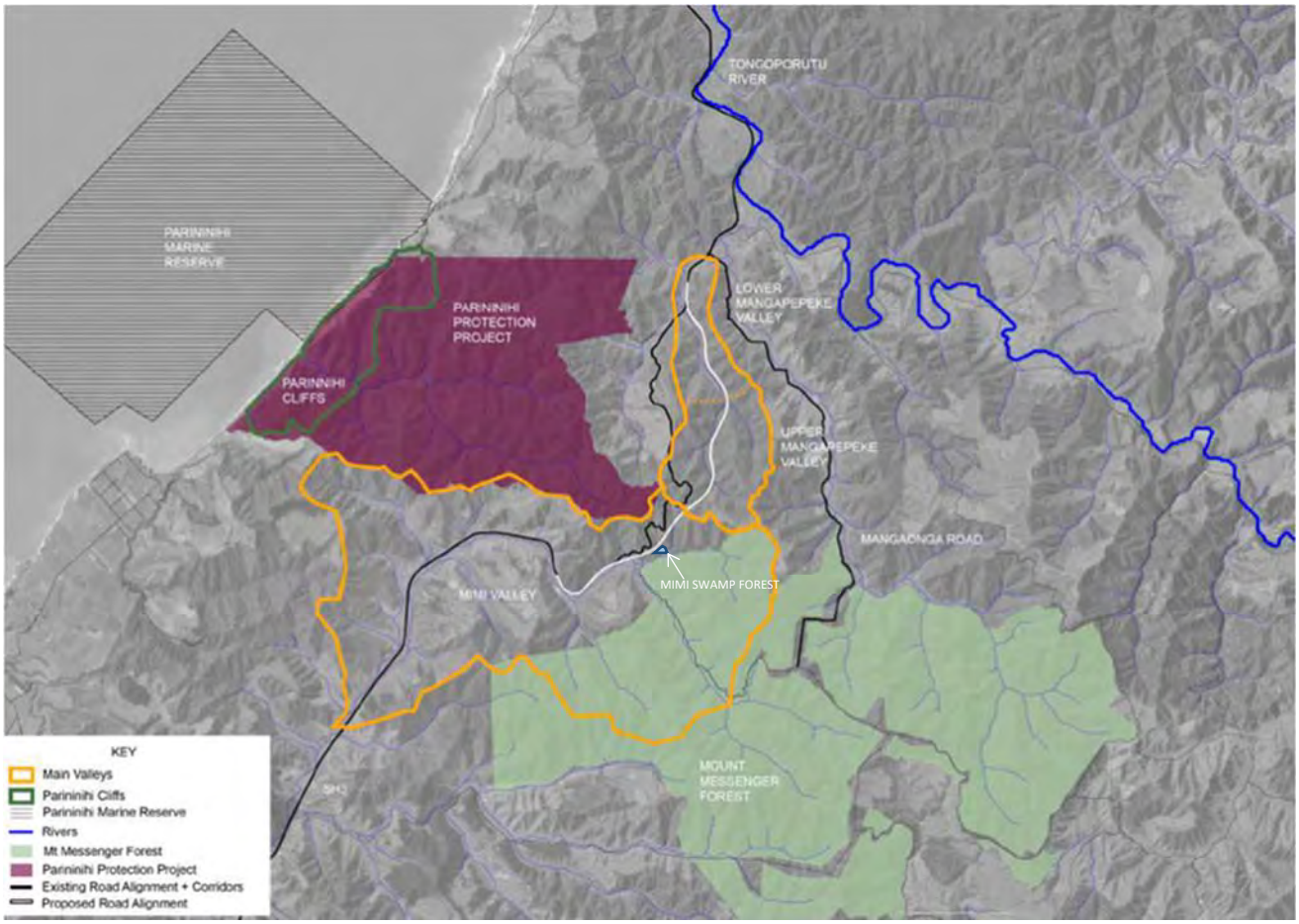


Figure 8.4 – Project footprint and wider Project area (the Project alignment shown as white line)

8.3.4.2 Terrestrial fauna

Given the dominance of indigenous vegetation within and adjacent to the Project alignment, the area provides habitat for a range of largely indigenous terrestrial fauna. These include terrestrial invertebrates, herpetofauna (frogs and lizards), birds and bats.

The quality of the habitat varies along the alignment. The ecological values of the Project alignment for terrestrial fauna are summarised below (refer Technical Reports 7c – 7f in Volume 3 of the AEE for detail).

(a) Terrestrial invertebrates

The invertebrate fauna in the wider Project area (refer Technical Report 7c (Volume 3 of the AEE) is expected to be 'typical' of communities inhabiting native forests of in the southern North Island and northern South Island. Invertebrate fauna in the wider Project area include earthworms, coleoptera (beetles, including the seldom seen *Blosyropus spinosus*), butterflies and cicada.

Reflecting the diminished ecological condition of vegetation along the Project alignment, invertebrate habitats have also been degraded due to the absence of consistent pest control and stock access.

There are no species on the 'Threatened' list that are known to inhabit the wider Project area. There are records of the forest ringlet (*Dodonidia helmsii*), one of New Zealand's rarest butterflies, recorded at Waitaanga (approximately 17km northwest of Mt Messenger) and at Uruti (approximately 6km south of Mt Messenger). Mt Messenger may be an important site for *Cyrtorhinus cumberi*, an endemic plant bug only known from a few populations. Two beetles recorded in the Mt Messenger area are only known from eight populations in the North Island (*Parabaris lesagei* and *Selenochilus omalleyi*).

(b) Herpetofauna

Based on available records, up to 13 species of herpetofauna including skinks, gecko and frogs could potentially be present within the wider Project area and in the vicinity of the Project alignment (refer Technical Report 7d, Volume 3 of the AEE). This includes the 'Threatened' Archey's frog (*Leiopelma archeyi*) and a number of 'At Risk' species. Given a range of factors, including habitat suitability, known species ranges, distances from historical records and predator effects, it is unlikely that all of these species will be present within the Project footprint.

(c) Birds

The habitats along the Project alignment support a range of bird species (refer Technical Report 7e, Volume 3 of the AEE). Some 38 species are recorded in the wider Project area, 23 of which were indigenous. Of these, nine are listed as 'At Risk', including fernbird, spotless crake, New Zealand Falcon, North Island brown kiwi, North Island robin, long-tailed cuckoo, whitehead and black shag.

20 North Island kōkako were released into the Parininihi land to the west of SH3 in winter 2017. It is currently unclear to what extent these kōkako will disperse, and ongoing monitoring is being carried out to assess this. Although the release occurred some distance from the Project footprint, there is a possibility that kōkako will disperse into the forests to the east of SH3 over time.

(d) Bats

There are two native bat species in New Zealand: long-tailed and short-tailed bats (refer Technical Report 7f, Volume 3 of the AEE). Surveys carried out along the Project footprint and in the wider Project area indicate the presence of 'Nationally Vulnerable' long-tailed bats. The distribution and levels of long-tailed bat activity recorded indicate that a population is present in the wider Project area, and that long-tailed bats are found within the Project footprint. There were no short-tailed bats recorded during surveys, and they are unlikely to be located in the vicinity of the Project footprint.

8.3.4.3 Freshwater ecology

As noted above, the Project alignment is located within two catchments, the Mangapepeke and Mimi catchments. A summary of the existing freshwater ecological values in the affected watercourses is set out below (refer to Technical Report 7b Volume 3 of the AEE for detail).

(a) Mangapepeke Stream

The Mangapepeke Stream drains north-west to the Mangaongaonga Stream and the Tongaporutu River, which enters the coast at Tongaporutu, about 7km north of the Project footprint.

The northern section of the Mangapepeke Stream (near the current SH3) is a small low gradient stream about 1.4m wide and 0.4m deep. Substrates are silty, with occasional woody debris becoming more common further up the catchment. Aquatic macrophytes common in the stream include watercress (*Nasturtium officinale*), starwort (*Callitriche stagnalis*) and native charophyte (stonewort) Chara sp. The lower section of the Mangapepeke Stream has moderate habitat values, with the aquatic macroinvertebrate community indicating good water quality and habitat (MCI score 106 – 111) with a good diversity of fish present. Adult inanga are present as well as longfin eel, common bully, redfin bully, freshwater crayfish (koura) and Paratya shrimp. Stock have direct access to the stream in this lower reach, and there are signs of physical habitat degradation, such as pugging, bank erosion and sedimentation.

The upper section of the Mangapepeke Stream tributary is narrow and shallow (0.3 to 0.7m wide). The main stem of the stream has high habitat scores, and aquatic macroinvertebrate communities indicative of excellent water quality and habitat (MCI score 120). Waterfalls in the headwaters form natural fish barriers, so abundance of fish in these reaches is low.

The Tongaporutu River, which the Mangapepeke Stream discharges into, is listed in Appendix 1A of the Freshwater Plan as a river and stream catchment with high natural, ecological and amenity values. The Freshwater Plan notes that the waterways in the catchment have a good diversity of native aquatic fauna including eels, inanga, bullies and torrent fish.

(b) Mimi River

The Mimi catchment includes steeper, narrower tributaries in the upper Mimi River catchment (including some crossed by the Project) and meandering, low gradient stream near the existing SH3, approximately 2.1m wide and approximately 0.5m deep. The Mimi swamp forest is located in close proximity to the alignment.

Fish species found in the lower reaches of the Mimi River include: longfin eel, adult inanga, redfin bully, giant kōkopu and banded kōkopu. Paratya shrimp, kōura and freshwater mussel (kākahi) are also common. Steeper sites tend to have banded kōkopu, and kōura.

In steeper gullies of the Mimi tributaries, cattle have been excluded and these sections have moderate to high habitat values and the macroinvertebrate community indicates good to excellent habitat/water quality (MCI = 119 to 135). There are some natural fish barriers and the headwater streams are relatively narrow. No fish were observed during the surveys but kōura were observed.

The Mimi River is listed in Appendix 1A (Rivers and stream catchments with high natural, ecological and amenity values) of the Freshwater Plan due to the presence of inanga, as well as diverse other fauna such as eels, bullies and torrent fish.

8.3.4.4 Marine ecology

An assessment of the marine ecology values of the local coastal environment is set out in the Assessment of Ecological Effects – Marine Ecology (Technical Report 7g). The key marine ecological features identified for the coastal environment between Urenui and the Tongaporutu estuary (the relevant study area for the Project) include:

- Estuarine habitat;
- Intertidal habitat;
- Subtidal reef habitat in the Parininihi Marine Reserve;
- Subtidal soft sediment habitat;
- Marine mammals, including the Threatened Māui's and Hector's dolphins;
- Fishery resources, including commercial fisheries, and protected great white shark;
- Kaimoana; and
- Seabirds, including At Risk wading species and blue penguins.

The Parininihi Marine Reserve is noted for its extensive offshore reef system with internationally imported sponge gardens, a high diversity of fish species and important habitat for crayfish and pāua.

8.3.5 Landscape and natural character

The landscape and natural character values of the areas associated with the Project alignment are described in Technical Report 8a (refer Volume 3 of the AEE). As noted above, the Project alignment is contained within two valley systems, being the Mangapepeke Valley in the north, and the upper Mimi Valley in the south.

The Mangapepeke Valley is characterised by rough pastoral land on the flats in the north (lower Mangapepeke) transitioning into steeper hill country in the upper valley. The lower pastoral flats have a relatively low elevation, gentle topography, and modified landscape character. The steeper slopes at the head of the valley have higher naturalness characteristics.

The Mimi Valley similarly includes bush on the steeper slopes of a tributary of the Mimi River, transitioning to a modified pastoral rural landscape on the lower valley flats that include the existing SH3 corridor. The steeper slopes have higher naturalness

characteristics, particularly the Mimi swamp forest, whereas the lower topography in the southern part of the valley represents a modified landscape character.

The lower Mangapepeke Valley is considered to have moderate – low landscape and natural character value. The upper Mangapepeke Valley is considered to have moderate – high landscape and natural character. The area of the Mimi Valley affected by the Project, which is the northern part of the upper catchment, overall is of moderate landscape and natural character value, particularly given the modified nature of the adjoining valley flats and the presence of SH3 on the flanking hills to the west.

The Parininihi landscape to the west of the existing SH3, away from the Project alignment, is scheduled in the District Plan as a regionally significant landscape. This area, is made up of the peak of Mt Messenger adjacent to SH3, with ridgelines running in a westward direction towards the coast.

8.3.6 Ground contamination

A Preliminary Site Investigation (PSI) of the Project alignment has been undertaken in general accordance with the NES Soil (refer Technical Report 12, Volume 3 of the AEE).

The PSI identifies one activity on the Ministry for the Environment's (MfE) Hazardous Activities and Industries List (HAIL) that has potentially been carried out within the alignment. This was waste disposal to land associated with potential farm dumps at the northern and southern ends of the alignment. Fly tipping has also occured along parts of the existing SH3.

8.4 Human environment

8.4.1 Cultural values

8.4.1.1 Ngāti Tama

Section 0 identifies the cultural significance of the Mt Messenger area to Ngāti Tama. Ngāti Tama exercise mana whenua for this part of Taranaki.

The history of Ngāti Tama's settlement in their rohe is detailed in the Ngāti Tama Deed of Settlement (dated 2003)[47]. Ngāti Tama have provided a Cultural Impact Assessment (CIA) to the Transport Agency, which highlights cultural values in relation to the wider Parininihi area and the Project alignment. This CIA may be updated as the Project progresses and as Ngāti Tama's cultural aspirations are addressed in the Project designs.

[47] Settling Ngāti Tama's pre-1992 claims in respect of breaches of the Treaty of Waitangi by the Crown.

The CIA highlights the cultural significance of Parininihi to Ngāti Tama. Ngāti Tama have highlighted this significance through consultation with the Transport Agency and during their participation in the options evaluation process.

1. AREA

The area to which this Deed of Recognition applies is the area referred to in the Deed of Settlement as Part of the Mount Messenger Conservation Area in the Area of Interest (the, "Area"), the general location of which is indicated on SO 14706.I

2. CULTURAL, SPIRITUAL, HISTORIC AND TRADITIONAL ASSOCIATION WITH THE AREA

2.1 This is an important area containing Ngati Tama pa sites and mahinga kai sources of birds and fish.

2.2 The once great Katikatiaka Pa was located here, inhabited by the descendants of Uerata who were among the fighting elite of Ngati Tama. It was an important vantage point, built in two divisions, and extending to the seaward clifftops. Tihi Manuka, a refuge pa, also situated in the area, was directly connected to an important inland track.

2.3 Kiwi, kahurangi, kereru, eels, inanga and the paua slug were traditional resources found here. Papa clay types found here were used for dyeing muka. A range of temperate zone flora was also available to Ngati Tama from this area including beech, rata, rimu, and a variety of ferns. Important mahinga kai streams include Te Horo, Ruataniwha, Waipingao and Waikaramarama.

The deed of recognition for the Mt Messenger Conservation Area (Parininihi) is recorded in the Deed of Settlement (Schedule 2 – Cultural Redress Schedule) as follows:

An extensive number of places of significance for Ngāti Tama are illustrated by the following account of their rohe by reference to sites around the perimeter:

Mai Te Titoki ki Pukehinau
No Pukehinau ki Puau
No Paua ki Wairarawa
No Wairarawa ki Pukekuri
No Pukekuri ki Mokino
No Mokino ki Tapuitautu
No Tapuitautu ki Mangatitoko
No Mangatitoki ki Waitara
No Waitara ki Makarakia
No Makarakia ki Te Ahu
No Te Ahu ki Rereua
No Rereua ki Potaka
No Potaka ki Kahikatoa a Tute
No Kahikatoa a Tute ki Tieketangiroa
No Tieketangiroa ki Te Pou Atakirau
No Te Pou Atakirau ki Haumapu Kahu ki te Whakarua
No Haumapu ki Takoraparoa
No Takaraparoa ki Pou Arohutu
No Pou Arohutu ki Nehunui
No Nehunui ki Tepora
No Te pora ki Te Pou Whakairo
No Te Pou Wakairoa ki Tiritirimatangi
No Tiritirimatangi ki Kaihapuku

No Kaihapuku ki Matukumaitua
No Matukumaitai ki Panirau a Kahu Whaka te Ngutu o Mokau
No Panirau ki Pukeruru a Tawariki
No Tawariki ki Te Totara
No Totara ki Tauwhare
No Tauwhare ki Haumapu
No Haumapu ki Te Ranginga
No Te Ranginga ki Oturi
Konei te rohe o Ngāti Tama

In the interior of the rohe Ngāti Tama also prize the ngahere (forests), awa (rivers) and maunga (mountains and ridgelines) and there is a series of important tracks providing connections between the coastal area and the important mahinga kai and other inland resources.

Places of particular significance include:

- **Pukearuhe** – Ngāti Tama's primary southern pā site.
- **Pukukarirua** – Ngāti Tama's northern pā site, located on a prominent hill above the coastal flats around 1.5km south of Mokau. North of Pukukarirua on the south bank of the Mokau River was the hill known as Pukekahu, where Ngāti Tama would light a fire warning of the coming of hostile forces from the north. This could be seen as far south as Pukearuhe.
- **Katikati-aka** – a pā on the cliffs three and a half miles from Pukearuhe, which helped reinforce Ngāti Tama's control of the area.
- **Tongapōrutu** and **Mōhakatino** – settlements and landing places of the Tokomaru waka.
- **Mount Messenger** – the tihi or peak has particular cultural significance to Ngāti Tama as the source of the mauri and important waterways which flow to the coast. Ngāti Tama considers the peak and surrounding flora and fauna to be taonga.
- **Treaty settlement sites** – the sites transferred and otherwise recognised in the Ngāti Tama Treaty settlement were identified for Treaty settlement because of their significance, but have become more significant because they symbolise the commitment of the Crown and Ngāti Tama to put the breaches of the past behind them and forge a new future in partnership together. The largest transfer sites were part of the Whitecliffs Conservation Area (1308ha) that was originally confiscated, as well as the Mt Messenger Scenic Reserve and part of the Mt Messenger Conservation Area (295ha).

Ngāti Tama note that these sites, along with its awa and maunga, are of cultural and spiritual importance to Ngāti Tama. The Parininihi lands returned to Ngāti Tama provide the base for restoring sustenance and connection to the whenua, awa and moana. They provide the opportunity for customary practices and modern activities to reconnect Ngāti Tama to this whenua. The area affected by the Project has been and remains an area of major importance to Ngāti Tama as an important part of their rohe, traditions, customs and identity.

The Project presents a number of unique design opportunities to recognise Ngāti Tama's culture and relationship to the land and the environment, and for Ngāti Tama to express their mana whenua and kaitiakitanga. Ongoing engagement with Ngāti Tama will occur as

the Project progresses to ensure that Ngāti Tama's aspirations are incorporated into the Project development and into designs and will continue through construction and operation.

8.4.1.2 Other iwi

The Transport Agency has also consulted with iwi located to the north and south of Ngāti Tama, including Ngāti Maniapoto and Ngāti Mutunga.

Ngāti Maniapoto claims ongoing interests into the northern part of the Ngāti Tama rohe, including the Project area, but have deferred to Ngāti Tama in relation to this Project.

The northern boundary of the Ngāti Mutunga rohe is Waiiti. In the Ngāti Mutunga historical Treaty of Waitangi settlement, the Crown issued a statutory acknowledgment in favour of Ngāti Mutunga over the southern part of the Mt Messenger Conservation area, within the Ngāti Mutunga rohe. This area is adjacent to, but outside the Project area.

Consultation with these two iwi will continue as the Project progresses.

8.4.1.3 Others with cultural interest

Another group called Poutama claim interests through the Ngāti Tama rohe. Ngāti Tama, other Taranaki iwi and Ngāti Maniapoto consider there is no separate Poutama iwi grouping, but that those who describe themselves as Poutama are in the main, members of Ngāti Tama iwi. Nevertheless the Transport Agency has engaged with the representatives of the Poutama group separately, as a group who claim a cultural interest in the Project Area.

8.4.2 Historic heritage

An assessment of the historic heritage of the Project area has been completed and is presented in Technical Report 9 (in Volume 3 of the AEE). That assessment reports that Māori arrived in Taranaki during the 13th and 14th centuries. The area offered a wealth of both marine and land resources. The coastal plains of Taranaki were particularly suitable for habitation and the majority of settlement was focused along the coast.

Māori trails through the Taranaki region were foot-tracks along the beaches and coastal flats, and into the inland forests using canoe navigable rivers and valleys. In the vicinity of the Project, only the Tongaporutu River enabled canoe-access into the interior. The Tongaporutu River leads into the Mangaongaonga Stream valley east of Mt Messenger and links up with the Tihi-Manuka Māori track from the coast inland.

The NZ Archaeological Association site record database (ArchSite), shows approximately 20 recorded archaeological sites within a 7km radius of Mt Messenger and the Project alignment. Almost all of these sites are located on or close to the west coast. These sites consist of pā, middens, pits and terraces, ovens, a stock tunnel, Māori cultivations, a track and artefact findspots (Figure 8.5).

Figure 8.5 – Archaeological sites within the wider vicinity of Mt Messenger and the existing SH3 (source: ArchSite)

No archaeological or other historic heritage features were identified within the footprint of the Project alignment, either through historical information, previous investigations, or field surveys completed for this AEE. Near to the southern end of the Project alignment in the Mimi River valley there is a recorded pā site, Maukuku Pā (archaeological site Q18/74) and related cultivations on a relatively flat spur overlooking the Mimi River valley. A site recorded as 'old clearing' ('Nga oko oko') was also identified from early survey plans adjacent to Maukuku Pā, indicative of the type of location that favoured Māori settlement in these inland locations. The steep inland bush country around Mt Messenger would generally have been unsuitable for Māori settlement, which was focused along the coastal plains, but would have provided a source of raw materials.

There is unlikely to have been any significant occupation of the Mangapepeke Valley because of its frequent flooding and steep inaccessible valley sides, although the valley may have been used by Māori to access inland areas, travelling up from the lower reaches of the Tongaporutu River. Where the Tongaporutu River meets the coast, there are numerous sites relating to earlier Māori occupation. The Tihi-Manuka Māori trail, south of Ahititi and Mt Messenger, leads into the Tongaporutu Valley and is a more likely inland route.

The first Europeans to live in Taranaki landed at Ngamotu (present-day New Plymouth) in the late 1820s, where a trading station was established. The majority of these men were transient whalers and traders. The hilly and densely forested terrain of north Taranaki was extremely difficult to navigate, and was a significant barrier for European settlers. Around

1890, the Government bought land at Pukearuhe and opened it up for settlement and made a new road over Mt Messenger.

The Main North Road (SH3), particularly the section over Mt Messenger, was muddy, narrow, winding, steep and difficult to negotiate and a concern for locals and travellers (Photo 8.1). Around the turn of the century the worst parts of the road were metalled. In 1935 the Main Highways Board designated the route a State Highway.

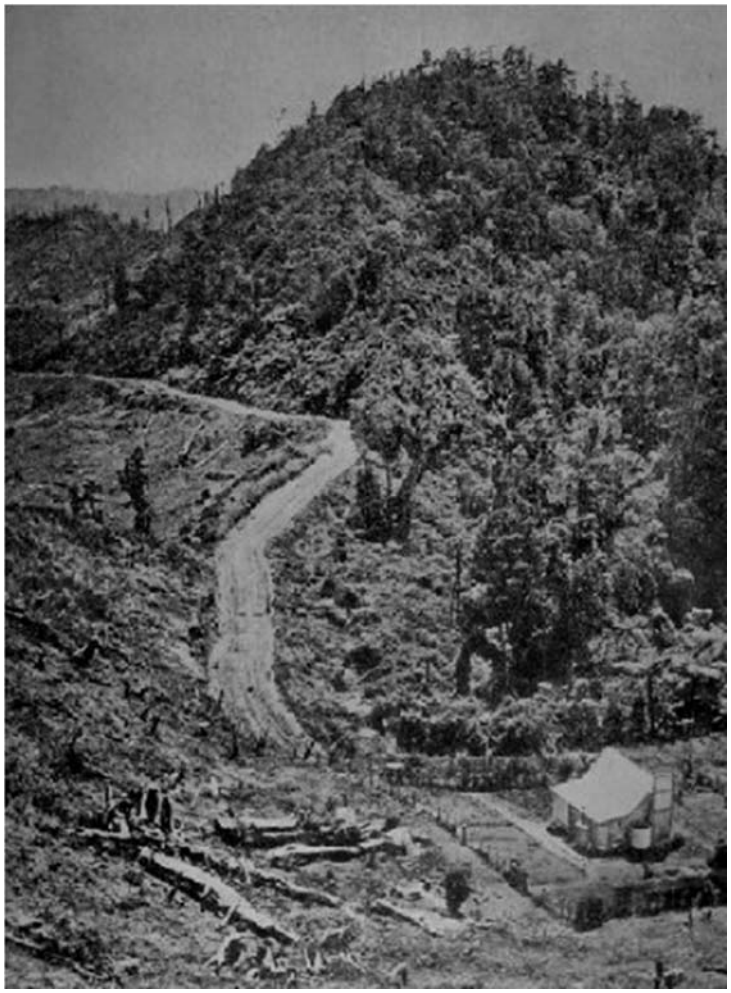


Photo 8.1 – The northern ascent of Mt Messenger c.1921 (source: Puke Ariki Ref PHO2007-244)

8.4.3 Community

8.4.3.1 Local community

SH3 at Mt Messenger is remote, being some 57km north of New Plymouth and 184km south of Hamilton. The nearest towns are Te Kuiti to the north and Waitara to the south, 150km apart.

The nearest settlement to the south of the Project is Uruti, located approximately 11km south of the SH3 summit of Mt Messenger. Uruti is a small farming service settlement which has a school and a number of houses close to its centre. Mimi and Urenui are located further south along SH3, 21km and 27km from the SH3 summit of Mt Messenger

respectively. To the north, the settlements of Ahititi and Tongaporutu are 5km and 11km from the SH3 summit respectively.

Community facilities within the local area include:

- Ahititi and Uruti Primary Schools. Both have a decile 4 rating and an average roll of 20 and 13 students respectively.
- Uruti Hall and Community Centre.
- At Urenui there is a small number of shops, a motor camp and a motel. There is a volunteer fire brigade with one fire appliance which has vehicle rescue equipment.
- The nearest medical practice is at Waitara and nearest after hours facility is in New Plymouth.
- Sports facilities are located at the Urenui Sportsfield and Community Centre.
- At Mokau, north of Tongaporutu, there is a St Johns Ambulance Station and rural fire team.

The area is served by the Clifton Community Board, which covers the area from just north of Waitara to New Plymouth District Council's northern boundary (just south of Mokau).

8.4.3.2 Properties within proposed designation

Table 8.1 below lists the properties affected by the proposed extension to the designation, indicating the areas of each property within the proposed designation footprint (refer also drawing MMA-DES-PRP-C0-DRG-1000 in Volume 2). These include eight privately owned rural farms, and the 'cultural redress land' to the east of SH3 owned by Ngāti Tama.

Table 8.1 - Properties within the Project footprint

Owners	Appellation	Title reference	Parcel area (ha)	Designation area (ha)
Gordon Andrew Thomas Keighley, Joy Keighley, Keighley Nominees Limited	Section 38 Block VIII Mimi Survey District	G3/168	0.0535	0.0161
Gordon Andrew Thomas Keighley, Joy Keighley, Keighley Nominees Limited	Section 50 Block VIII Mimi SD	G3/168	41.324	0.3675
Rodney John Barlow	Section 55 Block VIII Mimi SD	J1/249	38.2106	1.5677
Debbie Ann Pascoe, Tony James Sofus Pascoe	Section 51, Blk VII Mimi SD	H1/1387	22.1389	0.2708
Debbie Ann Pascoe, Tony James Sofus Pascoe	Section 9 SO 457513	627642	155.6634	31.7031
Ngāti Tama Custodial Trustee Limited	Section 1 Survey Office Plan 313242	149437	182.74	31.0128
Kevin George Beard	Lot 1 Deposited Plan 5816	145/198	23.9726	0.0474
Ngāti Tama Custodial Trustee Limited	Section 1 Survey Office Plan 313243	149437	44.2683	5.7017

Owners	Appellation	Title reference	Parcel area (ha)	Designation area (ha)
Allan George Robin Thomson	Part Section 13 Block XII Mimi Survey District	G2/1020	80.3375	2.4518
Allan George Robin Thomson	Section 16 Block XII Mimi Survey District	G2/1393	0.0141	0.0141
Allan George Robin Thomson	Section 17 Block XII Mimi Survey District	G2/1394	0.2744	0.0948
Allan George Robin Thomson	Section 18 Block XII Mimi Survey District	G3/57	0.0603	0.0603
Allan George Robin Thomson	Section 19 Block XII Mimi Survey District	G2/1395	0.1995	0.1995
Russell Alister Gordon	Section 35 Block VIII Mimi Survey District	G1/238	52.6303	3.2465
J R B Anglesey, W A Anglesey	Section 20 Block XII Mimi SD	G2/1181	60.1	0.2209
C J Scott, T C Scott	Lot 1, DP 16494	H4/333	82.8796	0.2028
Total private land within proposed designation				**77.1778ha**

8.4.4 Recreation

The Project sits in an area with relatively low levels of recreation activity. An assessment of recreation values (Technical Report 6, Volume 3 of the AEE) identifies uses including tramping in the Whitecliffs area, and tramping and hunting in the Parininihi and Mt Messenger Conservation Area forests, along with whitebaiting in the local streams.

The Whitecliffs – Mt Messenger track adjoins SH3 on the southern approach to Mt Messenger, and links on to the Kiwi Road track which provides access into the Mt Messenger Conservation Area forests in a general south-easterly direction (refer Figure 8.6).

There are no waterways in the Mimi or Tongaporutu catchments identified as trout fisheries in the Fish & Game Council national angler surveys[48]. The Taranaki Regional Council identifies the Tongaporutu River as having significant whitebait fishery values, as well as canoeing values.

[48] Unwin, M. 2009. *Angler usage of lake and river fisheries managed by Fish & Game New Zealand: results from the 2007/08 National Angling Survey*. Niwa client report.

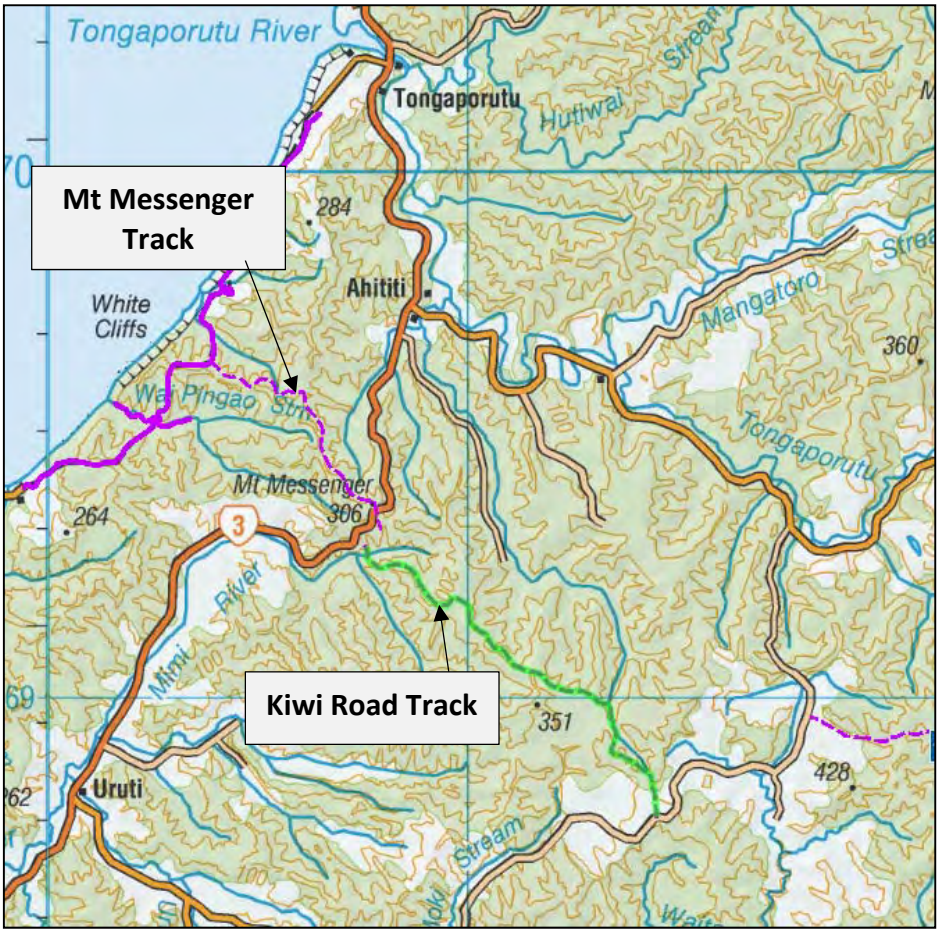
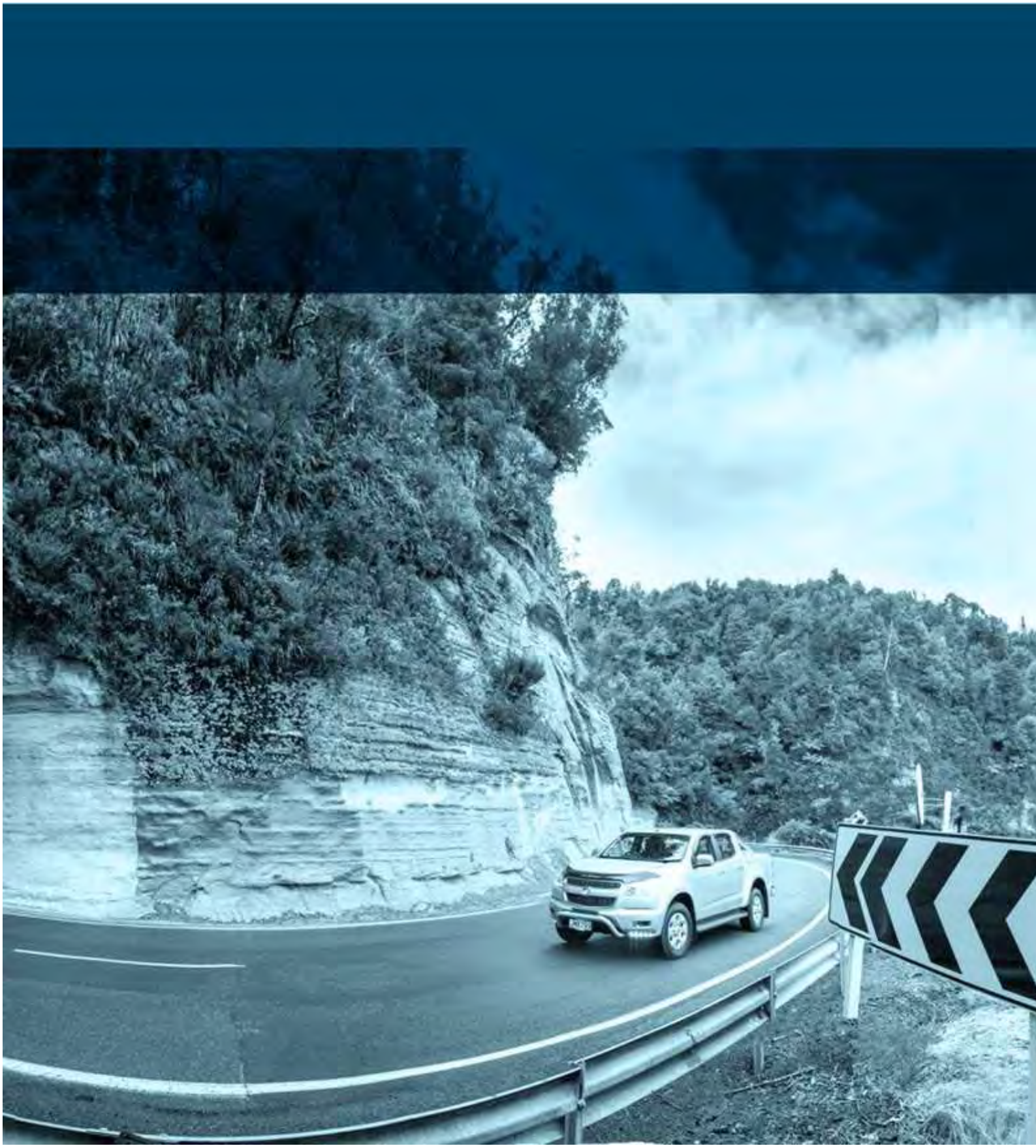


Figure 8.6 – Recreational Walking Tracks (DOC website)

Section 9 – Assessment of Environmental Effects



9 Assessment of Environmental Effects

9.1 Summary of environmental effects

9.1.1 Overview

SH3 has the key purpose of connecting the Taranaki region through to the Waikato region, and then on to key economic and transportation hubs at Hamilton, Tauranga and Auckland. Although most of the 240km length of SH3 between New Plymouth and Hamilton traverses open country, with average travel speeds between 75 and 85km/h, the Mt Messenger section of SH3 is of a markedly lower standard. The operational characteristics of the existing Mt Messenger section of SH3 include:

- steep grades, a tortuous alignment and restricted forward visibility;
- significant lengths with no or only limited shoulders;
- a narrow tunnel at the summit; and
- a vulnerability to interruption of service by breakdowns, crashes, landslips and rockfalls. When service is interrupted, alternative route options are limited, and require significantly longer travel times (especially for freight).

These constraints translate to problems with safety, route resilience (road closures with no suitable alternatives), poor road geometry and low speeds. These factors combined mean the road, built in 1896, is no longer fit for purpose and will not provide a safe and efficient future roading corridor reflecting the Regional Route classification of SH3. Section 3.3 of this AEE, along with Technical Reports 1 – 4 (refer Volume 3 of the AEE) describes these problems in detail.

The Project will establish a new section of SH3 that will remedy the existing operational problems at Mt Messenger. The Project and its construction are described in detail in Sections 4 and 5, and shown on the drawings in Volume 2.

As described in Section 3.5 and in Technical Reports 1 – 3, the Project will address the known problems along the existing corridor, and will provide a number of transport benefits in relation to safety, resilience, and journey times/reliability. The new road will contribute to a long-term transport solution connecting the Taranaki Region to the north. In particular, the Project alone, and combined with other roading improvements (some nearing completion, others being consented), will significantly improve the connectivity of freight to and from the region, appropriately reflecting the Regional Route classification of SH3.

These positive effects will in turn contribute to positive local and regional economic growth and productivity effects (refer Technical Report 4). The Project will also deliver significant positive social and community effects to Taranaki's way of life, growth and development, and wellbeing (refer Technical Report 5).

The Project traverses an area with high cultural and natural environment values. These values are described in Section 8, in the CIA provided by Ngāti Tama, and in Technical Reports 7 (7a – 7g) – 9. Ngāti Tama have had extensive input into the Project to date, including direct participation in the options assessment process (which avoided the western Parininihi land) and input into design development. The process of identifying methods for

mitigating the cultural effects of the Project will be iterative, involving ongoing consultation and collaboration between Ngāti Tama and the Transport Agency, and will incorporate input and discussions on land acquisition, design development, the mitigation package, construction and operation as set out in the effects assessment below.

The Project will have adverse effects on the existing ecological values within the Project footprint, which is a consequence of the nature of the environment near the Mt Messenger section of SH3. The Transport Agency has proactively addressed these effects, including by engaging a group of expert ecologists to be closely involved in route selection and design processes, assess the effects of the Project on ecological values, and subsequently to design an appropriate and comprehensive mitigation and biodiversity offset package.

This package is a core part of the Project. It is designed to address all residual ecological effects and to ensure that in a 10 – 15 year timeframe, there will be no overall net loss in biodiversity values as a result of the Project. It includes a range of measures to enhance the existing environment over a substantially larger area than the Project footprint, as follows:

- pest management in perpetuity (or until technological advances mean pest management is no longer required) over a 560ha area of native forest;
- 6ha of swamp forest and wetland restoration planting;
- restoration planting and fencing of 8.9km of riparian margin; and
- Restoration planting of some 9ha of vegetation disturbed during construction.

The package will achieve significantly positive biodiversity outcomes that will continue on into the future. These benefits are described in detail in Technical Report 7h.

The mitigation and biodiversity offset package will ultimately deliver significant ecological benefits, and an overall net positive result in terms of biodiversity values. It will also enhance the landscape and natural character values of the Project environment.

During construction there will be temporary adverse effects, including effects on cultural values, ecology, landscape, and on the traffic environment.

Active avoidance of adverse effects has been a key principle adopted during the Project's options assessment and design stages. Where avoidance has not been possible, measures have been proposed to either remedy effects or provide mitigation. These measures are described in more detail in Section 10 and have been reflected in the draft Consent Conditions proposed for the Project (refer Appendix D of Volume 1).

9.1.2 Structure of the assessment

The structure of this section of the AEE, and the relevant supporting Technical Reports (contained in Volume 3), is set out in Table 9.1 below.

Table 9.1 – Structure of this section

Section	Topic	Relevant Technical Report
9.2	Summary of Effects	
9.3	Transport and Traffic effects	Technical Report 1:Strategic Transport Assessment Technical Report 2:Traffic and Transport Assessment
9.3.3.3	Resilience effects	Technical Report 3:Resilience Assessment
9.4	Economic effects	Technical Report 4:Economics Assessment
9.5	Social effects	Technical Report 5:Social Impact Assessment
9.6	Recreation effects	Technical Report 6:Recreation Assessment
9.7	Cultural values	CIA prepared by Ngāti Tama
9.8	Ecology effects	Technical Report 7a:Vegetation Technical Report 7b:Freshwater Ecology Technical Report 7c:Invertebrates Technical Report 7d:Herpetofauna Technical Report 7e:Avifauna Technical Report 7f:Bats Technical Report 7g:Marine Ecology Technical Report 7h:Ecological Mitigation and Offset
9.9	Landscape and visual effects	Technical Report 8a:Landscape, Natural Character and Visual Assessment
9.10	Historic heritage effects	Technical Report 9:Historic Heritage Assessment
9.11	Operational Stormwater effects	Section 4.16 of AEE
9.12	Effects of instream structures	Section 4.16 of AEE
9.13	Operational air quality effects	Technical Report 11:Air Quality Assessment
9.14	Operational noise effects	Technical Report 10:Environmental Noise & Vibration Assessment
9.15.1	Construction traffic effects	Technical Report 2:Traffic and Transport Assessment
9.15.2	Construction air quality effects	Technical Report 11:Air Quality Assessment
9.15.3	Construction noise & vibration effects	Technical Report 10:Environmental Noise & Vibration Assessment
9.15.4	Management of contaminated land effects	Technical Report 12:Contaminated Land Assessment
9.15.5	Construction water effects	Technical Report 13:Construction Water Assessment Report
9.15.6	Construction effects on groundwater	Technical Report 14:Geotechnical Appraisal

9.2 Summary of effects on the environment

The actual and potential effects of the construction and operation of the Project are summarised in Table 9.2, which includes both positive and adverse effects of the Project, and identifies the level of each effect and whether the effect has been mitigated or offset (for adverse effects).

Table 9.2 – Summary of Project effects

Actual or potential effect	Positive	Adverse	Effect more than minor	Adverse effect mitigated or offset
Permanent effects				
Traffic and transport				
The Project enhances the security and operational reliability of SH3, a vital strategic link connecting Taranaki to the north.	Yes		Yes	
The Project will result in significant improvement in safety and a reduction in the frequency of crashes.	Yes		Yes	
Travel time reductions and improved journey reliability for vehicles, including freight, between Taranaki and Waikato.	Yes		Yes	
Improved travel time reliability will result in: • Improved certainty around travel times in the corridor for all road users; • More efficient freight movement and associated economic benefits.	Yes		Yes	
Increased average speeds.	Yes		Yes	
Enhanced conditions for cyclists, tourists, and users of local walking tracks.	Yes		Yes	
Resilience				
The Project will significantly enhance route security and the resilience of the state highway network.	Yes		Yes	
Reduced risk of landslips or rockfall.	Yes		Yes	
Modern stormwater conveyance and reduced risk of carriageway flooding.	Yes		Yes	
Designed to reduce risk of earthquake damage.	Yes		Yes	
Higher safety standards resulting in fewer crashes.	Yes		Yes	
Economic				
Direct economic benefits from construction activity.	Yes		Yes	
Improvements in travel time and journey time reliability will benefit all road users.	Yes		Yes	

Actual or potential effect	Positive	Adverse	Effect more than minor	Adverse effect mitigated or offset
Fewer road closures will facilitate increases in freight along SH3.	Yes		Yes	
Wider economic benefits, including economic growth, generated traffic, travel benefits.	Yes		Yes	
Social				
Improved accessibility, connectivity, and mobility for people and communities.	Yes		Yes	
Enhanced conditions for economic growth, employment and benefits for people and communities.	Yes		Yes	
Wellbeing benefits for people and communities from improved safety conditions.	Yes		Yes	
Recreation				
Safer access to local walking tracks.	Yes		Yes	
Enhanced access for tourist travellers.	Yes		Yes	
Local disruption during construction to use of walking tracks.	Yes		Yes	
Cultural values				
Effects on culturally important Parininihi whenua.		Yes	Yes	Ongoing consultation with Ngāti Tama
Potential effects on mana of Ngāti Tama.		Yes	Yes	Ongoing consultation with Ngāti Tama
Opportunities to enhance mana and kaitiaki responsibilities of Ngāti Tama.	Yes		Yes	Ongoing consultation with Ngāti Tama
Ecology				
The construction of the Project will result in the removal of approximately 44.4ha of native vegetation.		Yes	Yes	Yes
The construction of the Project will result in disturbance, loss and fragmentation of habitats.		Yes	Yes	Yes
Loss of 15 significant old emergent forest trees.		Yes	Yes	Yes

Actual or potential effect	Positive	Adverse	Effect more than minor	Adverse effect mitigated or offset
The construction of the Project will result in direct impacts on fauna associated with lost habitats, including birds, lizards and bats.		Yes	Yes	Yes
Potential effects on threatened species, including kiwi, bats and plants.		Yes	Yes	Yes
Loss of 3.47km of stream habitats.		Yes	Yes	Yes
Works in streams could adversely affect fish species.		Yes	Yes	Yes
Discharges from earthworks and open construction areas could result in increased sediment discharge to streams.		Yes	No	Yes
There is potential for fish passage to be adversely affected.		Yes	Yes	Yes
Significant pest management programme over 560ha, providing benefits to forests and to all associated flora and fauna.	Yes		Yes	
Restoration planting of 6ha of swamp forest.	Yes		Yes	
Plantings of seedlings to replace significant old trees.	Yes		Yes	
Replanting of 9ha of vegetation lost during construction.	Yes		Yes	
Stream bank plantings of 8.9km of riparian margins.	Yes		Yes	
Landscape and visual				
Physical landscape and character change due to road in remote natural landscape.		Yes	Yes	Partially
Natural character effects on watercourses.		Yes	Yes	Partially
Enhanced amenity values for road-users.	Yes		Yes	
Restoration of swamp forest habitat and streams.	Yes		Yes	
Operational Stormwater				
Discharge of stormwater from highway.		Yes	No	
Increased quantity of stormwater runoff.		Yes	No	
Operational air quality				
Vehicle emission discharge effects on 3 residential receptors.		Yes	No	
Operational noise				
Vehicle noise effects on 3 residential receptors.		Yes	No	

Actual or potential effect	Positive	Adverse	Effect more than minor	Adverse effect mitigated or offset
Temporary construction effects				
Local social effects				
Localised disruption to small number of properties due to construction activities such changes in access, noise, and dust.		Yes	No	Yes
Historic heritage				
Potential for discovery of archaeological remains during construction.		Yes	No	Yes
Temporary construction traffic				
Traffic management at site access locations off SH3.		Yes	No	Yes
Traffic delays on SH3 during tie-in works.		Yes	No	Yes
Construction air quality				
Nuisance dust effects on 3 residential receptors.		Yes	No	Yes
Construction noise and vibration				
Construction noise disturbance to 3 residential receptors.		Yes	No	Yes
Construction vibration effects to 3 residential receptors.		No	No	
Contaminated land				
Discharges from contaminated land during construction.		Yes	No	Yes
Land disturbance and construction water discharges				
Discharges of sediment from disturbed areas during construction.		Yes	No	Yes
Discharges from concreting activities.		Yes	No	Yes
Groundwater				
Effects on groundwater levels or land settlement.		No	No	

9.3 Transport and traffic effects

9.3.1 Introduction

This section summarises the findings of assessments undertaken to establish the actual and potential effects of the Project on road safety, route resilience and journey time reliability. Detailed analyses are set out in the Strategic Transport Assessment (Technical Report 1) and the Traffic and Transport Assessment (Technical Report 2).

9.3.2 Existing transport environment of SH3 at Mt Messenger

The existing operational environment of SH3 at Mt Messenger is described in Section 3.3. . In simple terms, the road is inadequate for serving its important, inter-regional transport function. The key operational constraints of the Mt Messenger section of SH3 are summarised as follows:

- steep grades, a tortuous alignment, and restricted forward visibility;
- significant lengths with no or only limited shoulders;
- a narrow tunnel at the summit; and
- a vulnerability to interruption of service by breakdowns, crashes, landslips and rockfalls, with very limited and significantly longer (particularly for freight) alternative routes.

These constraints translate to problems with safety, route resilience (road closures with no suitable alternatives), poor road geometry and low speeds.

The current road alignment means that the road environment is unforgiving, with driver mistakes leading to crashes, and subsequently deaths and serious injuries, as well as road closures. Over the five year period from 2012 to 2016, there have been no reported fatal crashes, 6 serious injury crashes, 8 minor crashes and 18 damage only crashes. Extended out to the last 10 years, the record includes 1 fatal crash. While the road through Mt Messenger should achieve a 3 star safety rating on the Transport Agency's SafetyNet system, it only meets the 2 star rating standard.

Road closure records show that, during the period 2011 to 2017, SH3 over Mt Messenger has been closed seven times. Causes include crashes (4 occasions), slips (2 occasions), and a tanker rollover (1 occasion) on a sharp curve. Assessed against the Transport Agency's expected level of performance for the national highway network, closures of the Mt Messenger section of SH3 are of an unacceptable frequency and duration for a Regional Arterial road. Under normal conditions, travel via SH3 between Hamilton and New Plymouth takes approximately 3 hours 10 minutes. If the road is closed along any portion of this route, there are few alternative routes that can be used, and all add significant time to the overall journey (at least 1 hours 45 minutes for SH43 which is the shortest detour, and 3 hours 9 minutes for heavy vehicles which cannot use SH43 and must instead use SH4 via Whanganui).

The geometric deficiencies in the existing alignment over Mt Messenger restrict the speed of vehicles using the route, with both light and heavy vehicles being significantly affected. The existing average speed for the route is 56km/h, which is well below the average travel speeds on SH3 between New Plymouth and Hamilton of between 75 and 85 km/h.

9.3.3 Operational transport and traffic effects

9.3.3.1 Effects of Project on SH3 transportation outcomes

SH3 serves the key strategic purpose of connecting the Taranaki region through to the Waikato region and on to key economic and transportation hubs at Hamilton, Tauranga and Auckland. The route connects Taranaki's oil and gas, agricultural, forestry and engineering sectors to suppliers and markets in the north, and provides vital tourism linkages and access to health, cultural and other services. This connectivity is essential for the people and communities of Taranaki to provide for their social, economic, and cultural well-being.

The Project is recognised as a key regional and inter-regional priority in the Regional Land Transport Plan (RLTP) 2015/16 – 2020/21 and supports the strategic vision for the future outlined in the RLTP. As the only direct arterial highway connection to and from the north, enhancing the safety, resilience and journey time reliability of travel on SH3 will benefit the whole of Taranaki, and in particular the growing proportion of heavy traffic carrying freight to and from key economic and transportation hubs. The Project will match the form of the road to its modern-day function and ensure that SH3 can accommodate future growth.

Overall, the strategic benefits that the Project provides to the future security and operational capacity of SH3 represent significant and positive transportation effects.

9.3.3.2 Effects on road safety

The Project will provide a significantly higher standard of road alignment relative to the existing corridor, and will result in significantly enhances safety conditions. This is reflected in the 3 star safety rating the Project is designed to achieve, which is in line with the Transport Agency's national standard for a road of this type.

SH3 across much of Mt Messenger is currently very steep, with grades of up to 12% in some locations. In addition, there are numerous tight bends which need to be negotiated. By comparison, the new road will have a much more forgiving geometry, with gentler curves and maximum grades of 7.5% southbound and 7.0% northbound. There is a combined two way length of 1600m at grades of greater than 6%, which is very much reduced over the existing configuration. Overall, the improved grades will result in improves opportunity for safer passing.

1.5m shoulders will be provided throughout the alignment (narrowed through the tunnel to 1.2m). This will enhance opportunity for safer vehicle pull-over / stopping, and also for passing of slower or stationary vehicles.

The significantly improved forward visibility to a 100km/hr design standard will improve the opportunities for safer passing across the full length of the Mt Messenger crossing.

The Project will also provide safer conditions for users of the Mt Messenger and Kiwi Road walking tracks to pull over and park. A new stopping area will be established for this purpose at a suitable location adjacent to the existing SH3 carriageway, which will have very low traffic volumes when the new bypass is operational.

The positive effects of the Project on road safety are summarised in Table 9.3 below.

Table 9.3 – Summary of Project effects

Positive safety effects	Measure
Improved Geometry	• Eased curves with no curves requiring reduced speed advisory signs. • Flatter grades: o Existing max 12%, Average 8% (4.8km above 6%) o Future: max 7.5% (1.6km above 6% for new route) • Wider shoulders (current 0.5–1.5m, new 1.5m throughout (1.2m in tunnel)) • Wider lanes from 3.4m (in localised places narrower) currently, to 3.5m throughout for the new road • Side barriers provided throughout for the new road
Improved Safety Star rating	• Increase in safety Star Rating from 2 to 3
Improved forward visibility	• New road design provides visibility suitable for 100km/hr operating speed throughout
Passing opportunities	• Improved forward visibility, increased passing opportunities throughout full length of Project
Reduced exposure	• Reduced length (7.4km to 6km)
Reduce Driver Frustration	• Safer geometry, which is in context with adjoining sections of SH3, with increased passing opportunities
Safer connections to recreational walking tracks	• Improvements to existing unsafe accesses to the walking tracks (they currently provide insufficient limited deceleration/acceleration opportunities)

Overall, the effects of the Project on road safety will be significant and positive.

9.3.3.3 Effects on resilience

The effects of the Project on route resilience is considered in Technical Report 3 (Resilience Assessment) and in Technical Reports 1 and 2 (Strategic Transport Assessment and Traffic and Transport Assessment). As described in Section 3.5.2 of the AEE, resilience is a measure of the ability of systems to resist, absorb, and recover from disruption within a tolerable timeframe.

As noted above in Section 9.3.2, SH3 at Mt Messenger is subject to regular road closures and does not currently meet the reliability standards expected for a Regional Road.[49] The reliability expectations for SH3 at Mt Messenger are such that a 2 to 4 hour closure would be acceptable no more than once in every two years, a 5–12 hour closure no more than once in 20 years, and a 13 hour to five day closure no more than once in forty years.

The closure rates being experienced in the 5 – 12 hours and 13 hours – 2 day categories of performance within this Mt Messenger length of SH3 have been up to twelve times greater than should be delivered by way of the dependability performance expected for a national

[49] NZTA, Customer Levels of Service Assessment, June 2017

route classed as a Regional Arterial. This poor level of reliability experienced over recent years is unacceptable for SH3.

The Project will deliver a new road alignment that is more resistant to disruption:

- **Safety: gradients, wider shoulders, and safety barriers**: all making for an easier, safer driving environment. The safety star rating will increase to 3. As a consequence of the improved safety environment the likelihood of disruption due to crashes will decrease, crashes are less likely to result in a prolonged closure of the road and traffic is likely to be able to continue to flow around such an accident.
- **Reduce the risk of landslips**: Earthworks designs, including cuts and embankments, will be to modern standards, with the risk of failure being significantly reduced (refer Geotechnical Appraisal, Technical Report 14). For steep cuts, the design provides for any slip material to be captured in the verge and not fall onto the road carriageway, should failures occur. As a consequence, the likelihood of disruption due to land slips will decrease.
- **Flooding/storms**: The carriageway has been designed to a level above the design storm flood level. All drainage features have been designed to convey stormwater runoff to reduce the potential for localised flooding, with conveyance capacity designed to the required modern highway design standards (refer Section 4.16). This analysis includes an allowance for future climate change and will mean a decrease in the likelihood of disruption due to flooding.
- **Earthquake**: Technical Report 3 notes there is a low to moderate risk of earthquakes affecting the North Taranaki region. The Project will benefit from modern design, and lessons learned from recent experiences in Canterbury and Kaikoura. The design will limit the exposure of the alignment to liquefaction and lateral spreading in the alluvial valleys (lower Mihi and lower Mangapepeke).
- **Landslip / landslide**: There are no mapped large scale landslide features on the Project alignment, by contrast to the existing route, which crosses a large landslide feature. Small to moderate failures, such as rockfall and overslips following significant earthquake shaking, will likely be able to be cleaned up quickly to restore service. As a consequence, the likelihood of disruption due to earthquakes will decrease.
- **Weather**: Weather related conditions such as fog and frost occur seasonally and snowfall is infrequent. The Project alignment has a lower elevation than the existing route so is considered less susceptible to snow (although there are no reports of road closures due to snow on Mt Messenger in any event). Fog conditions on the existing SH3 alignment are reported to occur from time to time to the north of the site where the highway follows the Tongaporutu River flats. Fog conditions may occur infrequently along the Project alignment but as this risk already exists there is little change expected to the likely effects and risks. Analysis of risk due to frost / icing has been undertaken considering sun angles and shading. The Project alignment generally follows a north – south arrangement and so receives sun through the day, regardless of season. Records from the Transport Agency's maintenance contractor report that grit use for ice conditions has not been necessary at Mt Messenger in

recent times. As the Project alignment will receive good levels of sun through the day, there is little change expected to the existing ice risks on SH3.

In addition to improved resilience to natural hazards (set out in Technical Report 3), the Project will have a number of benefits in relation to operational resilience which are summarised in Table 9.4 below. These benefits relate to the ability to avoid road closures or disruptions as a result of crashes, break downs and maintenance, and to recover to full service following any such closures or disruptions.

Table 9.4 - Operational resilience benefits

Benefit	Measure
Fewer closures	Current SH3 has suffered 6 closures >2hrs in the last 5 years at a level more frequent than acceptable by the ONRC guidelines. The new road, with its wider lanes and shoulders and better design, will avoid these closures. The new road will require less maintenance requirements due to its modern design. When works are required provision for offline maintenance areas and measures will reduce closures and traffic restrictions.
Faster recovery	The current road has poor geometry, narrow shoulders and carriageway. The new road will enable vehicles to greater opportunity to pass a vehicle which has crashed/broken down. Shorter/faster route will enable emergency services to attend events more quickly.
Improved journey time reliability	As a result of fewer planned (maintenance) and unplanned (crashes) closures. Improved drainage/stormwater will reduce the amount of closures. For Freight (in connection with wider programme of work), there will be an improved network from Taranaki through to Ports of Auckland and Tauranga
Reduced driver frustration	Greater certainty over the road remaining open.

The Project will provide a robust road corridor which is designed to withstand disruptive events and improve the resilience of SH3. Overall, the effects of the Project on route resilience will be significant and positive.

9.3.3.4 Effects on journey time reliability

Section 9.3.2 and Technical Reports 1 and 2 identify that road closures and the lack of alternative routes results in poor journey time reliability for users of SH3. Alternative routes add significant time to an overall journey (at least 1 hour 45 minutes for SH43 which is the shortest detour, and 3 hours 9 minutes for heavy vehicles which cannot use SH43 and must instead use SH4 via Whanganui).

Transport benefits relating to journey times are detailed in the Transport and Traffic Assessment (Technical Report 2) and summarised in Table 9.5 below.

Table 9.5 – Journey time reliability

Benefit	Measure
Reduced journey times (Local)	• Reduced length: 7.4km to 6km; • Increasing travel time for Do Minimum (Existing route 8.45 minutes, Year 20 = 9.14 minutes for all vehicles); • Option reduces travel times: (average all vehicles); Opening year = 4.21 minutes; Year 20 = 4.16 minutes; • Option reduces free-flow travel times: (Light Vehicles @ 100km/hr); Opening year = 3 hours 36 minutes (saving 4.5minutes); Option reduces free-flow travel times: (Heavy Vehicles); 6:28min (saving 6:40 minutes).
Reduced Journey Times (Closures)	If SH3 is closed: • Alternative New Plymouth to Hamilton routes are significantly longer; • Alternative route via SH43 4 hour 30 minutes: 1 hour 45 minutes longer (95km), not suitable for HPMV (unsealed in places and narrow, winding route alignment) • Alternative route SH4 6 hours 20 minutes: 3 hours 9 minutes longer (243km) • Alternative route SH1 6hr 55min: 3hr 45min longer (286km) Improved road reduced risk/number of closures (see resilience outcomes above) Alternative routes add significant time to journeys: HV drivers have 5 hours 30 minutes max drive time (before a break) and 13 hours total/day. One way journey cannot be completed on detour routes without a break. It is difficult to complete a return journey in a day with one driver. The nature of the existing road means that the Mount Messenger section requires regular maintenance, ie on curves where tyres rut the pavement.
Reduced Journey Times (Over Dimension loads)	SH3 is not currently suitable for Over Dimension loads due to constraints (including the Mt Messenger and Awakino tunnels). The new road, associated with other planned SH3 upgrades, will enable the route to accommodate Over Dimension loads. The current Over Dimension route using SH1 adds 6 hours 55 minutes to the journey from Hamilton to New Plymouth (3 hours 45 minutes longer).
Reduced driver frustration	Improved travel times and average speed. • Existing average: 56kph; • Year 1: Average speed 77.6kph, light vehicle free flow speed 100kph, heavy vehicle operating speed 45km/hr;

Benefit	Measure
	Year 20: Average speed 63kph, light vehicle free flow speed 100kph, heavy vehicle operating speed 45km/hr.[50]

The technical assessments conclude that enhanced resilience of the route over Mt Messenger will lead to significant improvements in journey time reliability for road users of SH3. The reliability of the transport network is an important factor underpinning economic performance.

Overall, the effects of the Project on journey time reliability will be significant and positive.

9.3.3.5 Effects on travel times

The existing average travel time on SH3 over Mt Messenger is 8 minutes 45 seconds (point to point in either direction) [51].

The Project has been designed to a 100km/hr operating speed (for light vehicles). Heavy vehicles are expected to travel at slower speeds on steeper sections of the route.

Allowing for the improved geometric design and grades of the new alignment, as well as the expected vehicle composition and volumes, average operating speeds will improve as indicated in Table 9.6.

Table 9.6 – Operating Speeds (averaged for all vehicles)

Operating Speeds (km/hr)	Existing road (7.4km length)	New road (6km length)
SH3 at Mt Messenger	56km/h	77.6km/h

The predicted travel time savings on the new alignment are significant, amounting to a saving of more than half the current travel time for the current Mt Messenger section, as follows:

- **Light vehicles** – light vehicles travelling at 100km/hr on the new alignment will average a travel time of 3:36 minutes point to point. This represents a travel time saving of approximately 4:05 minutes (i.e. the local travel time point to point is more than halved).
- **Heavy vehicles** – heavy vehicles travelling on the new alignment will average a travel time of 6:05 minutes point to point. Heavy vehicles currently take over 13 minutes point to point to travel over Mt Messenger. Overall, travel times for heavy vehicles will be more than halved.

These predictions assume that there are no passing opportunities along the length of the new road, and as such all light vehicles on the route will be slowed by the presence of slower moving heavy vehicles (up and down grade). In practice, however, the improved geometry and greater forward visibility on the new alignment will provide increased safe passing opportunities for drivers. Allowing for day to day variability, and the presence of

[50] Assumes conservatively no increase to HV performance

[51] Obtained from google traffic application API platform, where travel times across the Project area were observed for a week-long period.

heavy vehicles (or not), the typical vehicle journey on this route can be expected to save on average four to five minutes' travel time when compared to the existing route.

Travel times for over-dimension loads will also be significantly improved by the Project. Currently, the Mt Messenger tunnel is not passable by over dimension loads, which need to travel to and from New Plymouth via SH1. This adds adds 3 hours 45 minutes to the journey from Hamilton to New Plymouth. The tunnel on the new alignment will be designed for over dimension vehicles. Once the Project and the bypass work at Awakino Tunnel are completed, over dimension loads will be able to travel safely along SH3 between Hamilton and New Plymouth.

Overall, the effects of the Project on travel times for all road users will be significant and positive.

9.3.3.6 Effects of Project on other transportation modes

The current route along SH3 at Mt Messenger is not commonly used by cyclists due to the distance between major townships. As such, the majority of cyclists along SH3 are multi-day touring groups, familiar with a range of road conditions. The Project will result in significantly improved characteristics for cyclists (and any pedestrians), including improved lane and shoulder width, and improved grades. Safe passage through the tunnel will be possible either cycling in the shoulder or via walking through the safety egress passage.

As noted above, the Project will also provide safer conditions for users of the Mt Messenger and Kiwi Road walking tracks to pull over and park. This access will represent an improvement on the existing configuration where informal parking areas on the side of the road lack any safe connection to the start of the track and lack safe entry and exits.

Overall, the effects of the Project on alternative modes of transport, including for tourist vehicles, cyclists and pedestrians, will be positive.

9.4 Economic effects

9.4.1 Introduction

This section presents the findings of investigations undertaken to determine the actual and potential economic effects from the construction and operation of the Project.

As described in Section 3.2.3 of the AEE and in Technical Reports 1 and 4, SH3 is critical for supporting the Taranaki economy and its ongoing growth and development. SH3 serves the key strategic purpose of connecting Taranaki's oil and gas, agricultural, forestry and engineering sectors to suppliers and markets in the north, and provides vital tourism linkages and access to health, cultural and other services.

9.4.2 Direct economic effects during construction

The Economics Assessment (Technical Report 4) concludes that during the three year construction programme, the Project will bring direct economic benefits, including construction related expenditure, employment and income for Taranaki businesses and residents.

Construction is expected to provide 74 additional jobs, $5.5 million per annum in additional wages and salaries and $33.1 million per annum in additional expenditure on goods and services purchased from local Taranaki businesses.

The direct benefits to the Taranaki Region during construction are expected to be $115.8 million. Local firms will be engaged to provide goods and services to the Project, local residents will be engaged to work on the Project, and local firms will in turn provide goods and services to these employees.

Overall, the direct economic effects to the Taranaki Region of the construction of the Project will be significant and positive.

9.4.3 Road user economic effects of the Project

The Economics Assessment concludes the Project will lead to reduced vehicle operating costs, travel time and road accident costs and to improvements in route resilience, benefitting local residents and businesses and visitors to the Taranaki Region. The Project is estimated to lead to:

- travel time savings of $44.8 million;
- vehicle operating cost savings of $19.9 million;
- accident cost savings of $11.3 million;
- road resilience benefits of $13.7 million;
- carbon dioxide emission reduction benefits of $1.0 million; and
- a reduction in road maintenance costs of $1.4 million.

It is expected that nearly all of these road user benefits will accrue to the Taranaki Region, as most traffic using SH3 north of New Plymouth will have an origin or destination within Taranaki.

For businesses, road user benefits result in increased productivity and improvements in business competitiveness. For residents, these benefits will produce cost savings, improve personal safety and enable the freeing up of time for other productive or leisure activities.

Overall, the road user economic effects of the Project will be significant and positive.

9.4.4 Wider economic effects of the Project

The wider economic effects of the Project are described in Technical Report 4 and include:

- *Additional journey time reliability benefits* – increased travel time reliability translates into economic benefits as reliability allows motorists to utilise otherwise wasted time on productive activities.
- *Increased economic growth potential* – the Project will increase the attractiveness of the New Plymouth District and the wider Taranaki Region for business and residential development, as well as improve accessibility for visitors, resulting in increased levels of economic activity.
- *Generated traffic* – greater route resilience and journey time reliability in particular will improve the competitiveness of Taranaki based businesses, enhance tourist related travel and generate additional traffic. This will increase the Project's road user benefits

and additional economic benefits from higher levels of economic growth and economic activity within the region.

- *Potential Travel Benefits* – economic benefits arise when road users know a trip can be reliably made. This reduces isolation from facilities in other regions, such as travel to Waikato Hospital or to Auckland Airport, and through more reliable road access to goods and services from other centres.

Overall, the wider economic effects of the Project will be positive.

9.4.5 Potential economic costs of the Project

There are a number of potential economic costs of the Project, outside the financial cost, such as:

- *Loss of productive land* – there will be some very limited loss of productive land from within the Project designation. This economic cost will be borne by the Transport Agency through the land acquisition process.
- *Property value effects* – Given the remoteness of the Project and separation from existing landowners, any resulting effect is likely to be small and for most local properties, already taken into account through the presence of the existing SH3 highway. For the very small number of landowners where this effect is more significant (i.e. Pascoe and Ngāti Tama Trustee Ltd), this effect will be taken into account through the Public Works Act process.

Overall, any potential economic costs of the Project are expected to be no more than minor.

9.5 Social effects

9.5.1 Introduction

A Social Impact Assessment (SIA) for the Project has been undertaken (refer Technical Report 5, Volume 3 of the AEE). The SIA assesses the responses of people and communities to changes that will arise from the Project, both positive and negative, on a local and regional scale. The assessment has taken into account the Transport Agency's *Social Impact Guide* (2016) and considers effects on:

- **Way of life** – Effects on accessibility, connectivity, patterns of living and mobility – the benefits of an improved route and connectivity including the difference the Project would make to daily life (regional and local effects).
- **Economic growth and development** – the benefits that may be realised as part of the Project and the ability to lever off changes in access (regional and local effects).
- **Wellbeing** – changes to wellbeing and safety (regional and local effects).
- **Quality of the environment** – the effects on people from construction and operation of the Project eg noise (local effects).
- **Community –** Impacts on people's property and 'neighbourhoods'; educational facilities; community areas and sites; community plans and aspirations; and on accessibility to services (local effects).

The existing social environment is described in Section 8 of the AEE and in detail in the SIA.

9.5.2 Regional social effects

The SIA identifies that the Project will have significant regional social benefits on

- **Way of life and wellbeing**: Interviews conducted for the SIA found that people feel vulnerable and uncomfortable using the existing SH3 route over Mt Messenger. Improved road safety, resilience and journey time reliability resulting from the Project will improve the accessibility, connectivity, patterns of living and mobility of people, communities and businesses.
- **Growth and development**: As described in Section 9.4, the Project will enhance local and regional economic growth and productivity. Social benefits can be expected from the economic benefits of the Project, such as enhanced employment opportunities, retention of regional populations leading to further maintenance and upgrades of social infrastructure, and increased liveability in the region. The 'multiplier' expenditure during construction will benefit local businesses through increased demand for goods and services.

On a regional scale, the overall social effects of the Project will be significant and positive.

9.5.3 Local social effects

The SIA identifies that the Project could result in negative social effects on a local scale during construction, encompassing properties in the immediate vicinity of the Project and the small settlements to the north and south of the Project:

- **Way of life and wellbeing**: During the construction phase, disruption to local land owners and local road users may result due to construction traffic and associated traffic management measures. The existing road will remain open during construction, and a construction TMP is proposed, so any such disruptions will be minimal.
- **Quality of the environment**: Localised effects during construction due to dust and construction noise and vibration could reduce environmental quality for local residents. These effects will appropriately managed by a DMP and CNMP.
- **Community**: There are no community facilities in the vicinity of the Project which will be adversely affected by the Project.

The SIA concludes that these local social effects during construction are minor and can be mitigated by appropriate management measures. The CEMP (in Volume 5 of this AEE) provides measures to avoid, remedy or mitigate these potential social effects, including:

- Traffic management measures in the TMP;
- Dust management measures in the DMP;
- Noise and vibration management measures in the CNMP;
- Limiting working hours near residential dwellings; and
- Communication protocols to ensure the local community is kept informed of construction activities.

On a local scale, the social effects of the Project during construction will be negative, but no more than minor. Over the longer term, the local effects are expected to be positive and mirror the regional effects.

9.6 Recreation effects

9.6.1 Introduction

This section presents a summary of the recreation effects associated with the construction and operation of the Project, based on the Recreation Effects Assessment (Technical Report 6, Volume 3 of the AEE).

Recreational values of the local area are described in Section 0, and include tramping in the Whitecliffs area, tramping and hunting in the Parininihi and Mt Messenger Conservation Area forests, and whitebaiting in the local streams.

9.6.2 Recreation effects of the Project

The Project will provide safer conditions for users of the Mt Messenger and Kiwi Road walking tracks to pull over and park. This will be an improvement on the existing configuration, where informal parking areas on the side of SH3 lack any safe connection to the start of the track and lack safe entry and exits for vehicles. The Kiwi Road track will also be re-routed under the new bridge to enable safe passage across the new road.

During construction, some access restrictions to the Kiwi Road track may be necessary to address public safety during bridge construction. However, these restrictions would be short term and well signposted.

Once completed, the Project will support enhanced access to and from Taranaki for tourists and the new road will better cater for campervans, tourist buses and motorhomes. Similarly, improved shoulders, lane widths and grades will provide safer and easier conditions for cyclists.

The Recreation Assessment concludes the overall recreation effects of the Project are positive.

9.7 Effects on cultural values

9.7.1 Introduction

In developing the Project, the Transport Agency has engaged in detailed consultation with Ngāti Tama. In doing so, the Transport Agency recognises that Ngāti Tama exercises mana whenua for this part of Taranaki, and that the Project is located in Ngāti Tama's rohe.

The Transport Agency recognises Ngāti Tama's cultural values and concerns in respect of the Project. A key aim of discussions with Ngāti Tama has been to seek to minimise effects on Ngāti Tama's cultural values. A description of Ngāti Tama cultural values is presented in Section 8.4.1, which is based on a CIA provided to the Transport Agency by Ngāti Tama.

The Transport Agency has also consulted with iwi to the north and south of Ngāti Tama, including Ngāti Maniapoto and Ngāti Mutunga. Consultation with iwi will continue as the Project progresses.

9.7.2 Consideration of cultural effects of the Project

Ngāti Tama's CIA identifies that the area affected by the Project includes Treaty Settlement land and areas of major importance to Ngāti Tama. The Parininihi land was returned to Ngāti Tama through the Treaty Settlement process, and Ngāti Tama consider this process

would be undermined by the Transport Agency acquiring the land for the purpose of the Project. Further, Ngāti Tama consider acquisition of the land would undermine their mana and kaitiaki responsibilities. They highlight that the Project would therefore have major and ongoing cultural effects.

Parininihi has been referred to as 'Te Matua Kanohi o Ngāti Tama Whanui' (The parent face of Ngāti Tama).

The CIA notes the Parininihi lands provide the base for restoring Ngāti Tama's sustenance and connection to the whenua, awa and moana. They provide the opportunity for customary practices and modern activities to reconnect Ngāti Tama to this whenua. The Project would sever the land and have major impacts on the land's potential for Ngāti Tama.

Ngāti Tama have also highlighted the importance of the Parininihi Protection Project and their role as kaitiaki over the land.

The Tiaki Te Mauri o Parininihi Trust has responsibility for the Protection Project. The name 'Tiaki Te Mauri o Parininihi' itself is poignant, meaning 'to care for the mauri of Parininihi'. An important part of that project has been the re-introduction of kōkako to the west of the existing SH3 alignment, which occurred during the winter of 2017.

In developing the Project, the Transport Agency recognises the special relationship of Ngāti Tama with their lands, culture and traditions. Furthermore, the Transport Agency recognises the Treaty Settlement process provides important context to the Project. The Ngāti Tama settlement acknowledged the importance of the relationship of Ngāti Tama to Parininihi.

The Transport Agency has consulted directly and worked constructively with Ngāti Tama through the process of developing the Project. This has included through the options evaluation process and in developing the designs. Ongoing consultation with Ngāti Tama will occur as the Project progresses to ensure Ngāti Tama's aspirations are incorporated into the development of designs, and through construction and operation. As described in Section 9.7.3.4 to 9.7.3.7 below, a series of measures have been developed that seek to acknowledge Ngāti Tama's mana and enable them to act as kaitiaki for their land and in relation to the development, construction and operation of the Project.

While Ngāti Tama highlight in the CIA the significance of the Parininihi land and the ongoing cultural effects that the Project will have, Ngāti Tama also highlight that they have no complaint about the consultation undertaken by the Transport Agency and the ability this has provided for Ngāti Tama to provide input and cultural views on the Project. Ngāti Tama have agreed to continue dialogue with the Transport Agency to explore proposals that might address cultural impacts. As the Project progresses it is expected the CIA will be updated to reflect the outcomes of ongoing consultation.

9.7.3 Mitigation of cultural effects

The Transport Agency acknowledges that Ngāti Tama's cultural and spiritual values will be affected both during construction and in the operation of the Project. The process of identifying methods for mitigating the cultural effects of the Project will be iterative, involving ongoing consultation and collaboration between Ngāti Tama and the Transport Agency.

Protocols will be developed with Ngāti Tama to reflect and provide a basis for implementing the mitigation described below.

9.7.3.1 Consultation with Ngāti Tama

Section 7.7 of the AEE outlines the extensive consultation that has occurred with Ngāti Tama. This consultation has been undertaken in a positive, constructive and meaningful fashion, providing opportunity for the Transport Agency to hear from Ngāti Tama and develop an understanding of their values, and also for Ngāti Tama to develop an understanding of the Project and participate in its development. A Memorandum of Understanding (MOU) has been established, which acknowledges the basis and spirit of consultation and reflects the positive relationship between Ngāti Tama and the Transport Agency.

9.7.3.2 Options assessment process

As discussed in Section 6.3.3, Ngāti Tama were central to the MCA process to understand and provide their cultural input into the options assessment process. Representatives from Te Runanga o Ngāti Tama attended the MCA workshops and provided the cultural heritage scores (with explanations) for the options. Their input to the workshops was invaluable more generally, particularly in terms of ecology, given Ngāti Tama's intimate knowledge of the natural environment of the area and leading role in pest management and kokako reintroduction.

In the shortlist MCA process, Ngāti Tama assigned all options a -4 score, reflecting their position that all shortlisted options would have had very significant cultural effects, particularly as all options would require Ngāti Tama land to be acquired.

The CIA confirms the option preferred by Ngāti Tama through the MCA process was the "online" option, which remained largely within the existing SH3 land corridor.[52] It involved the smallest amount of Ngāti Tama land and avoided areas of higher value bush and streams. The CIA records that the option for which consent is being sought (the Project described in this AEE) was considered by Ngāti Tama to have less cultural concern (putting aside the issue of the land take) than options that impacted the area being actively managed by Ngāti Tama to reduce pests, being the Parininihi land to the west of SH3. The other three shortlisted options (other than the online option and the selected option) would all impact land to the west of SH3. Avoiding that actively managed land was factor in the selection of the Project route, to the east of the existing SH3.

9.7.3.3 Land acquisition

The Transport Agency is consulting with Ngāti Tama on its requirements for land to facilitate construction of the Project. At the time of lodging the NoR and resource consent applications, an agreement for land acquisition has not been reached with Ngāti Tama.

The Transport Agency recognises the important status of the land as Treaty Settlement land and the potential for the acquisition of the land to undermine Ngāti Tama's mana and kaitiaki responsibilities. While the Transport Agency relies on the Public Works Act to acquire land, it also recognises the potential effects of the acquisition process on Ngāti

[52]There were online options considered at both the longlist and shortlist stage of the MCA process.

Tama and it will not use the compulsory acquisition provisions of the Public Works Act to acquire Ngāti Tama's land. Mitigation for loss of control over land will be achieved through mutual agreement with Ngāti Tama on the land acquisition process.

9.7.3.4 Design development

Detailed construction level designs will be required to facilitate Project construction and the design development process will go on for some time and continue as construction is progressed. A process has been established for Ngāti Tama to provide input to the detailed Project designs. Design workshops have occurred and will continue through design development.

Areas of interest to date have focussed on the bridge and tunnel and on incorporating cultural themes into landscape designs. Broadly speaking, this process is identified in the LEDF (refer Technical Report 8b in Volume 3) and will involve the Alliance team working together with Ngāti Tama to:

- Agree objectives for cultural design inputs;
- Agree those elements of the design that can be informed by cultural inputs;
- Provide Ngāti Tama and their advisors with engineering design information and with a base of understanding on engineering design principles, standards and constraints;
- Provide the design team with information on cultural values and cultural inputs for incorporating into the Project design;
- Develop designs that reflect cultural aspirations; and
- Review design development to confirm that cultural aspirations have been incorporated into the Project.

This process of working together will provide Ngāti Tama with a voice in the design development process and enable them to exercise their mana and kaitiakitanga in relation to the development of the Project. While already in action, this process will be confirmed by way of consent conditions and will continue through the design development process

9.7.3.5 Mitigation package development

As described in Section 9.8, the Project will remove a corridor of native vegetation, and will affect the streams and watercourses that drain the Mimi and Mangapepeke Valleys. The CIA notes that the awa (streams and rivers), ngahere (bush) and the flora and fauna of Parininihi are taonga. To address the ecological effects of the Project on these taonga, a fundamental part of the Project is a package of mitigation and biodiversity offsets. This mitigation and biodiversity offset package will involve:

- Pest management over an area of 560ha in perpetuity (or until such time as pest management in the form we know of it today is no longer necessary to sustain the levels of biodiversity created);
- Restoration planting of 6ha of swamp forest;
- Planting of 200 seedlings of the same species for every significant tree that has to be felled;
- Riparian planting and exclusion of livestock from approximately 9km of stream banks; and

- Restoration planting of 9ha of disturbed areas.

The package is expected to significantly expand the area of pest management being undertaken on the Parininihi land. The resulting benefits for the taonga of the Parininihi bush, its habitats, its flora and fauna and its biodiversity values will be significant and positive.

9.7.3.6 Construction

As the Project moves into the construction phase, the Transport Agency will continue to enable Ngāti Tama to express their mana whenua and kaitiakitanga responsibilities. It is intended that protocols will be developed with Ngāti Tama to recognise their cultural values and significant sites and provide for appropriate cultural inputs during construction. These protocols are expected to be broad ranging and cover aspects such as:

- Kaitiakitanga responsibilities, including cultural monitoring requirements for activities occurring at sensitive sites, such as vegetation clearance, earthworks, salvaging and translocation of protected fauna;
- Cultural protocols (tikanga) around tree felling and vegetation clearance, cultural harvest and use of vegetation to be removed during construction;
- Monitoring of cultural indicators of environmental health, and review and input to the wider programme of environmental monitoring, including development of any contingency or action plans prepared in response to monitoring outcomes.
- Accidental Discovery Protocol[53].

9.7.3.7 Operation

Road users will pass through Ngāti Tama's lands on the Mt Messenger Bypass as they come and go from Taranaki on an ongoing basis. In this regard, the Transport Agency acknowledges that Ngāti Tama's kaitiaki relationship with the Project and its interaction with the taonga and mauri of Parininihi continues into the future. The principles of partnership and collaboration with Ngāti Tama will extend through the operational life of the Project.

The Transport Agency will develop a protocol with Ngāti Tama that acknowledges this ongoing partnership. The content of the protocol will be developed following discussions with Ngāti Tama.

9.8 Ecological effects

9.8.1 Introduction

This section summarises the actual and potential ecological effects of constructing and operating the Project and is based on the assessments presented in Technical Reports 7a to 7h (Volume 3 of the AEE).

As described in Section 8.3.4 of the AEE and in Technical Reports 7a–7h, the Project traverses an area forested with indigenous native vegetation, which is part of a wider vegetation sequence running from the coastal margins inland to the lowland mountains. It straddles an ecological boundary between two broad forest classes with podocarp,

[53] An example Accidental Discovery Protocol has been provided with the management plans, but has not been specifically tailored to this Project through consultation with Ngāti Tama.

broadleaved forest largely in the Mimi catchment and the upper Mangapepeke Valley, and podocarp, broadleaved, beech forest within the lower Mangapepeke Catchment and northwards.

Unlike the Parininihi land to the west, the area which the Project alignment traverses has not had consistent pest control and as a result, the ecological condition of this area is diminished. The quality of the habitat varies along the alignment. Within the Mangapepeke Stream catchment, vegetation communities have been affected by long-term stock grazing, fire and logging, with the result being a transition to large open and grazed rushlands and poor quality pastureland further down the valley.

Despite this, the habitats which the Project traverses are of high ecological value. In particular, the Mimi swamp forest is of ecological value. This sequence within the northern tributary of the Mimi River represents a full range of swamp forest, scrub and non-forest wetland communities that would once have been more common throughout this area.

Avoidance of ecological effects, as far as practicable for a lineal road, has been inherent in the design process. As described in Section 6, the route selection process has avoided the high ecological values of the Parininihi land to the west of SH3. Along the Project alignment all vegetation types and significant trees have been mapped and delineated to identify the affected vegetation types and their values. Where it has been possible the Project alignment has been designed to avoid significant trees.

Construction of the Project will result in the removal of a corridor of vegetation and will affect the associated habitats and flora and fauna. A core element of the Project is a mitigation and biodiversity offset package. It includes pest management in perpetuity (or until technology has changed) over 560ha, 6ha of swamp forest and wetland, restoration of 8.9km of riparian margin, replacement mitigation planting of 9ha and revegetation of as much of the construction footprint that will not be road as is practicable.

The outcomes of the mitigation and biodiversity offset package are described in Technical Report 7h. In summary, a broad range of the indigenous flora and fauna present within the mitigation and offset area will benefit from the management of pest animals to permanently low densities and the establishment of new areas of swamp forest, shrubland and riparian habitat. The proposed mitigation will not only increase the area of healthy indigenous vegetation but will improve the connectedness of the forested areas. The net result will be a significant increase in healthy available habitat, enhanced recruitment rates amongst a wide range of indigenous animals, improved condition of the remaining significant forest trees, especially totara and rata, and increased regeneration of many of the more palatable plant species.

Over time further ecological benefits will accrue as a result of the offset programme. For example, the conditions created in the offset area will increase the likelihood of the survival and successful nesting of those kōkako that choose to move east from the release sites in the western Parininihi land.

The following sections summarise the assessments of ecological effects described in detail in Technical Reports 7a-7g. These include assessments of effects on vegetation, terrestrial fauna (including invertebrates, herpetofauna, avifauna and bats) freshwater ecology and marine ecology. The assessments consider the effects of the Project without and with the

mitigation and biodiversity offset package. Section 9.8.9 presents a summary of the mitigation and biodiversity offset package, which is described in detailed in Technical Report 7h.

The assessments are based on investigations completed within the Project footprint and at locations on the Parininihi land to the west of SH3. As has been noted, the Parininihi land to the west of SH3 has higher biodiversity values than the area to the east of SH3 through which the Project traverses. Accordingly, the investigations completed to date provide a conservative benchmark for assessing the potential ecological effects of the Project. Additional ecological investigations along the Project alignment are being completed over the 2017 / 2018 summer period to supplement the existing information base. This additional information will be used to update assessments, mitigation and management measures and will add to the baseline information.

9.8.2 Effects on vegetation

A detailed description of vegetation along the alignment, its values, the potential effects of the Project and the benefits of the mitigation and biodiversity offset package is contained in Technical Report 7a.

The vegetation/habitats that will be affected by construction of the Project include:

- the permanent road footprint (i.e. the road and its anticipated batters and cuts, spoil disposal sites, haul roads and stormwater ponds).
- areas associated with construction access, laydown areas and temporary stormwater drains.

The removal of vegetation will also establish an 'edge effect' along the forested corridor, where habitats will be impaired due to the loss of the adjacent vegetation.

In total, vegetation loss due to these factors (including the edge effect allowance) is 44.4ha. This comprises:

- 19.5ha of primary indigenous forest;
- 13.8ha of secondary indigenous forest; and
- 11.1ha of rushland and sedgeland vegetation, which is a mixture of indigenous and exotic vegetation in the rough pastureland in the valley floors.

This vegetation removal includes up to 15 large emergent old podocarp trees which have been specifically identified because of their significance. Affected trees are identified on the drawings in Volume 2 of the AEE. In addition to being old significant trees, these trees also provide habitat for epiphytes, and habitat and food for a range of potential bird, lizard and invertebrate species. The mitigation and offset package will see each of these trees replaced with 200 seedlings of the same species. The pest management programme will significantly benefit all vegetation within the 560ha area, including the old emergent trees which are currently in decline due to browser pressures.

Vegetation removal may also result in the removal of species which are recorded as being threatened or regionally distinctive. Where recovery and replanting or recovery of seed from these plants is feasible this will be undertaken in accordance with procedures set out in the ELMP. Further, the pest management programme will benefit all vegetation within the

560ha area, including threatened plants which are currently in decline, or no longer present, due to browser pressures.

Importantly, the Project mitigates adverse effects on the Mimi swamp forest, which includes a stand of the regionally distinctive plant, swamp maire. The road will cross a tributary to this swamp forest on a bridge, which has been specifically incorporated into the Project and designed to mitigate effects on the wetland habitat. This wetland habitat is also sensitive to sedimentation. The CWMP and CWAR described in Section 9.15.5 address erosion and sediment controls for the Project, including specific provisions to manage and treat construction water discharges that drain to this wetland area. These provisions will mitigate potential adverse effects on the wetland.

The mitigation and biodiversity offset package (described in detail in Technical Report 7h) has been developed to address all ecological effects of the Project, including on vegetation. Over 10 -15 years it will create a net ecological benefit and provide for significant ongoing benefits. The pest management component of the package will not only increase the area of healthy indigenous vegetation but will improve the connectedness of the forested areas (in particular with Parininihi). The net result will be a significant increase in healthy available habitat, improved condition of the remaining significant forest trees, especially totara and rata, and increased regeneration of many of the more palatable plant species. Details of the pest management will be described in the Pest Management Plan.

The restoration plantings component of the package includes restoration planting of 6ha of swamp forest and wetland. The intended area of planting proposed includes the valley flats of the Mangapepeke Valley, which will be transformed from rush / sedge dominated rough pasture areas into swamp forest of kahikatea, pukatea and swamp maire. While transition to a diverse mature swamp forest will take many decades, the ecological value will begin to improve immediately because of the removal of livestock and the management of pests. Ultimately, it is intended that the valley will transform into a diverse, high value swamp/wetland ecosystem.

9ha of restoration planting will also occur along the construction footprint to revegetate areas of temporary access tracks and storage areas that retain soil, hydrology and growing conditions suitable for reinstatement.

The areas of intended swamp forest plantings and restoration plantings are shown on the drawings in the LEDF (and in the drawing set in Volume 2). Restoration methods will be described in the ELMP.

Overall, the Project will result in vegetation loss. The overarching ecological aim, however, is to ensure no net loss of biodiversity values within the medium term, and to achieve overall a net benefit to biodiversity values. The proposed mitigation and biodiversity offset package will achieve net ecological benefit over 10 - 15 years and thereafter, ongoing ecological benefits. This appropriately mitigates and offsets the vegetation effects of the Project and provides significant vegetation benefits over time.

9.8.3 Effects on terrestrial invertebrates.

This section summarises the potential effects on terrestrial invertebrates resulting from the Project. A description of the terrestrial invertebrates expected near the Project alignment,

their values, the potential unmitigated effects of the Project and the benefits of the mitigation and offset package is contained in Technical Report 7c[54].

The invertebrate fauna in the wider Project area is typical of communities inhabiting native forests of southern North Island and northern South Island.

While there are local records from the wider Mt Messenger area, nationally 'At Risk' or 'Threatened' species have not been recorded from the Project footprint. This absence may be due, at least in part, to limited studies and it is possible that invertebrate species that are of conservation value would be present within the Project footprint. However, the likelihood of encountering these species is low.

The ecological condition of the forest in the Project area generally has been adversely affected by browsing of pest species, the presence of grazing stock, past logging and fires, particularly in the Mangapepeke Valley. This has reduced habitat quality for terrestrial invertebrates (especially compared to the Parininihi land west of SH3).

The potential effects of the Project on terrestrial invertebrates relate primarily to the effects of habitat loss and fragmentation resulting from vegetation removal, and the direct effects on the invertebrate communities associated with this habitat (current and future).

The mitigation and biodiversity offset package (described in detail in Technical Report 7h) has been developed to address the ecological effects of the Project, including on terrestrial invertebrates. The comprehensive pest management programme will likely be beneficial for terrestrial invertebrates, as predation of New Zealand's native invertebrate fauna by introduced mammals has been widely recognised as a major conservation concern. The precise level of benefit likely to accrue is difficult to quantify (especially as invertebrate predation may switch to increased native species), however, there is a clear link between the health of vegetation communities, and the health of invertebrate communities.

The proposed restoration planting and habitat enhancement programme will also in time, improve ecological connectivity, which will benefit the terrestrial invertebrate community affected by the Project.

Taking these measures into consideration, it is expected that within a 10 – 15 year timeframe there will be no net loss (and likely a net benefit) for terrestrial invertebrates affected by the Project. Overall, the mitigation and offset measures proposed will appropriately and adequately address the potential effects of the proposal on terrestrial invertebrates.

9.8.4 Effects on herpetofauna

The following section summarises the potential effects on herpetofauna resulting from the Project. A detailed description of the herpetofauna expected in the vicinity of the Project

[54] The report is based on desktop information and habitat assessments of sites located on the western Parininihi land and on parts of the Project area. The assessment is conservative and will be updated with additional surveys being undertaken over summer 2017/18.

alignment, their values, the potential effects of the Project and the benefits of the mitigation and biodiversity offset package is contained in Technical Report 7d[55].

Several herpetofauna species, including At Risk and Threatened species, could be present within the area affected by Project construction. Based on the assessments completed it has been assumed that up to 13 species (including the 'Threatened' Archey's frog *Leiopelma archeyi* and a number of 'At Risk' species) may be present within the Project footprint. This includes:

- a high likelihood that the following species will be present:
    - Copper skink (Not Threatened)
    - Forest gecko (At Risk – Declining)
- a moderate likelihood that the following species will be present:
    - Ornate skink (At Risk – Declining)
    - Pacific gecko (At Risk – Relict)
    - Striped skink (At Risk – Declining)
    - Elegant gecko (At Risk – Declining)
- a marginal likelihood that the following species will be present:
    - Archey's frog (Threatened – Nationally Vulnerable)
    - Brown skink (At Risk – Declining)
    - Common gecko (Not Threatened)
    - Duvaucel's gecko (At Risk – Relict)
    - Goldstripe gecko (At Risk – Relict)
    - Hochstetter's frog (At Risk – Declining)
    - Northern Grass skink (Not Threatened)

Overall, the ecological value of the area affected by Project construction for herpetofauna is considered to be 'Moderate–High'.

The potential effects of the Project on herpetofauna relate primarily to the effects of habitat loss and fragmentation resulting from vegetation removal, and the direct effects on the communities associated with this habitat (current and future). Vehicle strike is also possible during the operational stage of the Project, although this risk will not change significantly as it already exists on the existing SH3.

The mitigation and biodiversity offset package (described in detail in Technical Report 7h) has been developed to address the ecological effects of the Project, including on herpetofauna, and will over time create benefits for herpetopfauna.

In particular, the comprehensive pest management programme is expected to be beneficial for herpetofauna. There is currently a lack of published evidence that native herpetofauna populations in mainland forest habitats benefit from large-scale pest management

[55] The report is based on desktop information and habitat assessments of sites located on the western Parininihi land and on parts of the Project area. The assessment is conservative and will be updated with additional surveys being undertaken over summer 2017/18.

programmes. Also, like for invertebrates, benefits will be difficult to quantify (especially as predation may switch from introduced to native species). However, it is reasonable to assume that the proposed long-term pest management programme (which will reduce introduced predators and improve vegetation and habitat quality), along with the removal of grazing stock, will benefit herpetofauna.

Restoration planting and habitat enhancement will create habitat, improve ecological connectivity and reduce edge effects on existing vegetation, all of which are likely to benefit the herpetofauna community affected by the Project.

Targeted herpetofauna management measures will be undertaken during the construction stage to reduce the potential for effects, including capture and relocation. These measures will be set out in the ELMP.

Overall, taking into account these measures, effects of the Project on herpetofauna are likely to be negligible over the initial 10 – 15 year time period, but become more positive, with a net benefit, over the medium to longer term.

9.8.5 Effects on avifauna

The following section summarises the potential effects on avifauna resulting from the Project. A detailed description of the avifauna expected in the vicinity of the Project alignment, their values, the potential effects of the Project and the benefits of the mitigation and biodiversity offset package is contained in Technical Report 7e.

Based on the investigations completed, the bird community in the wider Project area is comparable with that of large patches of forest elsewhere in the Taranaki region and in the lower North Island. It is considered to be moderately rich by regional and national standards, in terms of the number of threatened and non-threatened species known to be present.

A total of 36 diurnal and two nocturnal bird species were recorded during the surveys in the wider Project area. Twenty-three of these species are indigenous, nine of which are currently listed as 'At Risk', including fernbird (*Bowdleria punctata*), spotless crake (*Porzana tabuensis)*, New Zealand falcon (*Falco novaeseelandiae)*, North Island brown kiwi (*Apteryx mantelli)*, North Island robin (*Petroica longipes*), long-tailed cuckoo (*Eudynamys taitensis*), whitehead (*Mohoua albicilla*), pipit (*Anthus novaeseelandiae*) and black shag (*Phalacrocorax carbo*). Additionally, three nationally 'Threatened' or 'At Risk' species (Australasian bittern (*Botaurus poiciloptilus*), kākā (*Nestor meridionalis*), and rifleman (*Acanthisitta chloris*) were not detected in surveys but are known to be present in the Taranaki region and possibly the wider Project area.

North Island kōkako (*Callaeas wilsoni*; Threat Status: 'At Risk – Recovering') were released into the western part of the Parininihi area in winter 2017. The release site was approximately 4km to the west of Mt Messenger and approximately 4.5km from the Project footprint. Kōkako are yet to disperse near the Project alignment and the chances of this happening in the near future are small, given the extent of available habitat both in and near the release location on the western Parininihi land. Kōkako typically live as bonded pairs in territories ranging in size from 4 – 25ha; the birds released so far are therefore unlikely to

currently occupy much more than 250ha of forest (20% of the western Parininihi land) even if they have all taken up very large territories.

The potential effects of the Project on avifauna relate primarily to the effects of habitat loss and fragmentation resulting from vegetation removal and the direct effects on the communities associated with this habitat (current and future). Vehicle strike is also possible during the operational stage of the Project, although this risk will not change significantly, as it already exists on the existing SH3.

The unmitigated effect of the Project on each bird species is examined in detail in Technical Report 7e. The level of the potential unmitigated effect on kiwi is high due to habitat loss and severance, and potential effects associated with road construction and ongoing operation, noting that kiwi dispersal is limited by their flightlessness. Given their conservation status, the level of potential unmitigated effect on North Island robin and whitehead is moderate. For all other forest birds the level of unmitigated potential effects is moderate or low.

For kōkako, the level of effect resulting from the Project is expected to be low and continue to remain low for some years. The birds released into the Parininihi land are some distance from the Project. Kōkako have relatively low reproductive rates, and relatively long population doubling times (about eight years on average based on the national population). On this basis, natural dispersal into the vicinity of the Project alignment is expected to take some years.

Avoidance of effects has occurred through route selection (on the high value western Parininihi area) and also through the use of a tunnel and bridge. A number of measures are proposed to mitigate potential effects on avifauna.

For kiwi, an intensive kiwi management and monitoring programme is proposed. This will involve locating, relocating and protecting individuals living near or alongside the footprint area during construction. Temporary fences may be used in selected places along the Project footprint to prevent kiwi entering the construction zone. On the completed highway alignment, permanent kiwi exclusion fences will be constructed in selected locations along the new road in areas where kiwi could enter the road corridor and find it difficult to escape (e.g. In large sections of cut). Appropriate signage will also be erected alerting motorists to the possible presence of kiwi along the road. These measures will be addressed in the ELMP.

The mitigation and biodiversity offset package (described in detail in Technical Report 7h) has been developed to address the ecological effects of the Project, including on avifauna, and will over time create significant ecological benefits.

Most forest birds are known to respond positively to pest control, as indicated by increases in relative abundance/conspicuousness and/or increase in breeding success. The pest management programme will increase the populations of most native birds in the offset area, by increasing survival rates and/or breeding success. This programme will also expand the available protected habitat for kōkako. The programme is expected to fully offset the effects of the Project on avifauna. Restoration plantings and habitat enhancement will also, in time, create habitat, improve ecological connectivity and reduce edge effects, benefiting most forest and wetland bird species affected by the Project.

Overall, taking into account the proposed management measures and the mitigation and biodiversity offsetting, it is considered that the overall effects of the Project on avifauna will be beneficial and positive.

9.8.6 Effects on bats

This section summarises the potential effects on bats resulting from the Project. A detailed description of the recorded bat activity in the vicinity of the Project alignment, the value of the affected habitat, the potential effects of the Project and the benefits of the mitigation and biodiversity offset package is contained in Technical Report 7f.

As noted in Section 8.3.4 of the AEE, New Zealand has two native bat species, the long-tailed bat (*Chalinolobus tuberculatus*) and the lesser short-tailed bat (*Mystacina tuberculata*). The available recent records (since 2012) of both of long-tailed and short-tailed bats within 15km of the Project footprint, in combination with the occurrence of suitable habitat (primarily old growth native forest), indicates that these species may be present within the wider Project area.

Ongoing bat surveys are being undertaken across the Project site. To date, automatic bat monitor (ABM) records are available for 84 sites across the wider Project area and confirm the presence of long-tailed bats at 79 (94%) of the survey locations. The distribution and levels of long-tailed bat activity indicates a significant population is present in the wider Project area. No short-tailed bats have been detected. While it is unlikely that short-tailed bats will be encountered within the Project construction area, the assessment assumes that it is possible.

The effects of the Project on bats relate primarily to the effects of habitat loss and fragmentation resulting from vegetation removal and the direct effects on any populations associated with this habitat (current and future). Vehicle strike and other possible effects such as disturbance due to people or vehicle lights are possible during the operational stage of the Project, although these risks will not change as they already exist on the existing SH3.

Both species of bats use trees for roosting, particularly large old trees which often have suitable roost cavities. Removal of roost trees can have adverse effects on bat populations, particularly if roosts are being actively used at the time of tree removal.

Overall, the level of effects on both long-tailed bats and short-tailed bats (if present) is considered to be moderate. It is noted however, that the loss of an occupied roost tree, if this occurred, would represent a higher level of effect.

A number of measures are proposed to avoid or mitigate potential effects on bats during the construction work.

The risk of removing trees with bat roosts will be addressed in the tree removal protocol to be included in the ELMP. This will involve application of a number of monitoring methods (e.g. ABM monitoring and visual inspections) to ensure that any trees that represent potential bat roosting habitat are only removed after it is confirmed that they are not occupied by bats. This is a commonly applied and effective protocol. A programme of radio tracking of bats will be carried out during late 2017 to establish the location of bat roosts in the vicinity of the Project construction area. Information from that monitoring will aid with the development of the tree removal protocol.

The mitigation and biodiversity offset package (described in detail in Technical Report 7h) has been developed to address the ecological effects of the Project, including on bats, and will over time create ecological benefits that extend on into the future. Research demonstrates that managing mammalian predators such as mustelids and rats, enhances the long-term survival of long-tailed bats. The assessment of Project effects on bats (Technical Report 7f) identifies that the mitigation and biodiversity offset package will benefit bats.

Overall, taking into account these measures, effects of the Project on bats are likely to be negligible over the initial 10 – 15 year time period, but become more positive, with a net benefit, over the medium to longer term.

9.8.7 Effects on freshwater ecology

The following section summarises the potential effects on freshwater ecosystems resulting from the Project. A detailed description of the streams associated with the Project alignment, the value of the affected habitat, the potential effects of the Project and the benefits of the mitigation and biodiversity offset package is contained in Technical Report 7b.

As in Section 8.3.4, the Project alignment is located within two catchments, the Mangapepeke and Mimi. The geology of these catchments is dominated by papa mudstone; which has a considerable influence on stream substrate and sediment load as the gravels are soft and there is a relatively high amount of fine sediment carried through the stream systems. Both streams support aquatic habitats of a moderate to high quality value in their upper reaches and a good diversity of fish species are present. Aquatic habitats in the lower, flatter sections of the streams are affected by cattle grazing and support lower habitat values.

The potential effects of the Project on freshwater ecosystems relate principally to the effects of culverting and diverting streams and to discharges from the construction works and from the operational roadway. These effects are described in detail in Technical Report 7b, and the location of the affected watercourses are shown on the drawing set (Volume 2 – Drawing MMA-DES-DNG-E1-DRG-1000 to 1010). The works are described in Section 4.16 and 5.14.

The potential effects will include both long-term effects over the operational life of the Project and short-term effects during construction. These potential unmitigated effects, along with the mitigation measures that will be implemented to address effects, are summarised in Table 9.7 below.

Photo 9.1 Typical fish in Mangapepeke Stream and Mimi River. (adult inanga, redfin bully, giant kōkopu)

Table 9.7 – Actual and potential effects on freshwater ecology

Type of effect	Commentary
Long-term effects (operational phase)	
Long-term effects on fish passage	The Project involves installing 21 culverts along the Project alignment (refer Section 4.16.3). Most of the culverts are 25 to 40m long, except at the larger fill sites where the culverts range from 55m up to 210m long. Fish passage will be provided through these culverts to match the climbing / swimming passage abilities of the fish communities in the habitat upstream of the culverts.
Loss of stream habitat and functions	The Project will require installing or extending culverts on 21 waterways, plus a series of stream diversions as described in Section 4.16.3. This will result in the permanent loss of some 3.47km of stream length. About two thirds of the affected stream length is in the Mangapepeke catchment and one third in the Mimi catchment. About half the affected stream length is in a natural condition, and most of the affected streams are permanently flowing, perennial streams. Overall, the effect of stream loss is considered to be high. It will be offset through both the creation of new naturalised stream diversions (as described in Section 4.16.2) and riparian planting along some 8.9km of stream banks.
Potential effects of stormwater runoff	Stormwater discharge effects from the operational highway are described in Section 9.11. The combination of the Project having a relatively small impervious footprint relative to the catchment and using a stormwater treatment system developed in accordance with Transport Agency guidelines means any effect on receiving environments will be no more than minor.
Short-term (construction phase)	
Direct effects on fish during construction	Direct effects on fish are possible during works associated with installing culverts and stream diversions, including the risk of direct removal, stranding or injury. To avoid or minimise this effect specific stream diversion methodologies will be developed and a fish recovery protocol will be implemented to capture and relocate fish prior to draining, diverting or excavating streams.
Potential sedimentation and water quality changes from vegetation	The associated stream systems carry naturally high sediment loads from the papa catchment. The CWMP sets out methods to manage and control erosion and sediment discharges during construction. An assessment of temporary construction discharges is set out in Section 9.15.5. Best practice management methods will ensure sediment discharges do not significantly increase sediment yield and losses relative to the natural yield from the wider catchment.

Type of effect	Commentary
clearance, earthworks and construction related discharges	Concreting activities will occur at sites along the alignment and could result in elevated pH levels in discharges. These activities will managed so that contaminated water is treated before discharge or will be removed from site. The CWMP and any site specific measures will ensure that any effects on aquatic ecosystems are temporary and no more than minor.
Short term limitations on fish passage	Upstream fish passage could potentially be restricted for a short period during construction when culverts are installed and water is flowing through any temporary diversion pipes. These restrictions for most culverts will be for a relatively short duration (a few days to weeks) and adverse effects will be negligible. For the longer culverts at the large fill sites (either side of the tunnel) the process of filling and creating a clean water diversion may take several months. A temporary culvert will be installed to carry water under the fill until the clean water diversion is created on top of the fill and permanent culverts installed. Spat ropes would be installed in these culverts to enable fish passage.
Short term loss of stream habitat	Streams will need to be diverted or culverted at multiple locations for the period of construction, but will be removed and the stream restored on completion of works. As a consequence, there will be a loss of stream function and habitat during the construction period. This loss of stream habitat will be offset as part of the mitigation and biodiversity offset package and is described in more detail below.
Water take for dust suppression	The Project is seeking two water takes for the purpose of dust suppression. These are: • up to 150m^3/day from the Mimi River near the southern extent of the Project area; and • up to 300m^3/day from the Mangapepeke Stream. The location will be near the northern extent of the designation either about 50m upstream of the confluence with the west branch (catchment area of about 330ha) or just downstream of this confluence (catchment area to 683ha). Water takes will be restricted to no more than 20% of the water depth at the time of the take. This approach is conservative and would offer a high level of protection to the downstream aquatic ecosystems considering expected stream flow conditions and short term nature of the abstraction. The water intakes will need to be appropriately designed to exclude fish. In particular the screen mesh size will need to be less than 3mm (side of square) and the surface area sufficiently large so that water velocities through the intake are less than 0.12 m/s.

As noted in Table 9.7 above, the permanent loss of stream habitat will result in modification to the aquatic ecosystems at those locations. The mitigation and biodiversity offset package (described in detail in Technical Report 7h) has been developed to address the ecological effects of the Project, including on aquatic ecosystems, and will over time create ecological benefits that extend on into the future.

The amount of stream restoration required to achieve sufficient biodiversity offset has been calculated using the Stream Ecological Valuation (SEV) method. The SEV is a standard method for assessing stream values and quantifying loss and any requirements for offset compensation. Based on current designs and SEV calculations the offset restoration will require restoration of 8.9km of stream habitat by planting and fencing riparian margins along streams to achieve a 10m wide strip either side of the stream. The details of how this riparian margin restoration will be achieved will be outlined in the ELMP. Potential locations for much of this restoration plantings are shown on the landscape drawings in the LEDF and in the drawing set (Volume 2, drawings MMM-DES-UDL-CO-DRG-1000 to 1010).

Overall, the effects of the Project on freshwater ecology can be appropriately managed and mitigated, and the residual loss of habitat can be adequately offset to result in 'no net loss' of stream ecological values. Allowing for the implementation of the mitigation and biodiversity offset mitigation, the short-medium term effects of the Project on freshwater ecosystems will be no more than minor and long term there will be an overall benefit.

9.8.8 Effects on marine ecology

A detailed description of the coastal environment between Urenui and Tongaporutu estuary and the associated ecological values is contained in Technical Report 7h. This local coastline supports high value marine ecosystems, including within the Parininihi Marine Reserve.

The Project alignment and all construction works are well removed from the coastal environment. However, the Project site is effectively connected to the marine environment via the Tongaporutu and Mimi Rivers. Construction or operational related discharges from the Project could be conveyed to the marine environment.

The erosion and sedimentation controls proposed during construction as part of the CWMP, along with the stormwater treatment measures developed for the operational highway, are designed to protect the downstream freshwater receiving environments and as a consequence, also provide protection to the marine environment. The assessments of construction and operational discharges presented in Sections 9.8.7 and in Sections 9.11 and 9.15.5 conclude that provide the measures described are in place, the effects on freshwater receiving environments are expected to be no more than minor. Accordingly, effects further downstream in the marine environment are not anticipated.

Overall, the Project is expected to have no measurable effect on marine ecosystems.

9.8.9 Ecological mitigation and biodiversity offset package

The mitigation and biodiversity offset package is a core part of the overall Project and is described in Section 4.2.3 and based on the analysis presented in Technical Report 7h.

As described in the ecology Technical Reports (Technical Reports 7a to 7) the mitigation and biodiversity offset package mitigates and offsets all of the residual ecological effects of the

Project. The package and its outcomes have been summarised in the sections above. The elements of the mitigation and biodiversity offset package are described in more detail below.

9.8.9.1 Pest Management

The objective of this part of the package is to reduce all major introduced mammalian predators and herbivores (including livestock) from a management area of 560ha. This is a key component of the mitigation and biodiversity offset package, and has been proven from other locations in New Zealand to have wide ranging ecological benefits. It is proposed that this programme of pest management will be continued in perpetuity (or until such time as pest management in the form we know of it today is no longer necessary to sustain the levels of biodiversity created), delivering beneficial outcomes from its implementation into the future.

Intensive, effective and enduring pest management, with a focus on all animal pests down to the size of rats, has been shown to generate biodiversity benefits across a wide range of plants and animals. Bats, kiwi, many forest bird species, most wetland bird species, reptiles and many invertebrate species will increase in number as predatory pressures are greatly reduced and habitat recovery increases local carrying capacities. Plant biomass and diversity will increase as grazing and browsing pressure is reduced, the diversity and abundance of the browse sensitive species will increase as seedling survival improves, and the health of the old emergent forest trees, especially rata and totara, rebounds in the absence of possums in particular.

As forest and vegetation health improves in the low-pest environment, the carrying capacity within the pest management area for many indigenous animal species will increase substantially. When the carrying capacity of each species is met, "surplus" juveniles of mobile species (birds and bats) will move out into the wider Mt Messenger area and increase populations in those areas. This is sometimes referred to as the "halo effect". Because the pest management is proposed in perpetuity (or until such time as pest management in the form we know of it today is no longer necessary to sustain the levels of biodiversity created) the ecological benefits throughout the region will be permanent.

The amount / area of restoration planting and pest management to be undertaken has been determined through utilisation of a biodiversity offset calculation model (which is described in Appendix A to Technical Report 7h). The model was developed as part of the New Zealand Government's 'Guidance on Good Practice Biodiversity Offsetting in New Zealand' (August 2014), is consistent with international guidelines on biodiversity offsetting and was selected in consultation with DOC experts.

The location proposed for the pest management is described in Technical Report 7h, and will focus on the Ngāti Tama land to the east of SH3 and surrounding land areas. The details of this pest management will be developed as part of the Pest Management Plan (PMP).

9.8.9.2 Swamp forest and wetland plantings

Six hectares of swamp forest restoration planting is proposed to fully offset the loss of the kahikatea and swamp maire forest affected by the Project. Restoration planting, in addition to pest management, is proposed because there is only a small amount of this vegetation

type (especially swamp maire) remaining in the wider Project area as a result of land clearance and drainage and the impact of pests. Increasing the area of this forest type by planting, and with the support of pest management in perpetuity (or until technology negates the need) will improve the likelihood of swamp forest species expanding naturally back into suitable habitat in the wider Project area.

The intention of the swamp forest restoration planting will be to transform pasture / rush / sedge dominated areas that are suitable for planting into swamp forest into stands of kahikatea, pukatea and swamp maire, with small areas of rimu and matai where ground conditions are not as saturated. The process will require the establishment first of a hardy, successional vegetation (manuka, hukihuki, ramarama, houhere, putaputaweta and others), and then the interplanting of the swamp forest species into this 'nursery' habitat. This approach is well understood and proven as successful from other restoration projects.

Locations for swamp forest and wetland plantings have been evaluated and are described in Technical Report 7h and is proposed to include parts of the Mangapekeke Valley. The details of this restoration planting will be developed as part of the ELMP.

While transition to a diverse mature swamp forest will take many decades, the ecological value will begin to improve immediately because of the removal of livestock and the management of pests. Ultimately the proposed mitigation planting will transform into a diverse, high value swamp/wetland ecosystem.

9.8.9.3 Seedling planting to replace significant trees

It is proposed that 200 seedlings of the same species should be planted for every significant tree that has to be felled along the Project footprint. Technical Report 7a identifies these trees, noting that some 15 significant trees may have to be removed during road construction. While efforts will be made to reduce the number of these trees that do have to be removed, if all 15 are lost then 3000 seedlings will be planted in their place.

Locations for these seedling plantings have been considered in Technical Report 7h and will likely focus on the deforested tributaries of the Mangapekeke Valley and in other suitable locations. The details of this planting will be developed as part of the ELMP.

9.8.9.4 Habitat replacement plantings

Nine hectares of predominantly indigenous vegetation that will be removed or disturbed during construction will not be offset by pest management or swamp forest restoration planting. The loss of this vegetation will be mitigated for by one-for-one replacement planting of the same or similar indigenous species.

The main areas where this restoration planting will occur are those sites disturbed by construction where the original soil cover and hydrology is retained or can be restored and it is appropriate to re-establish the original vegetation type to that site. Locations for this plantings have been considered in Technical Report 7h and will likely focus on the middle and lower sections of the Mangapepeke Valley and other suitable areas.

Details of the site preparation, species planting mixes, planting methods and post-planting maintenance will be included the ELMP.

9.8.9.5 Stream restoration

The waterways affected by the Project have been assessed in Technical Report 7b using the SEV calculator to establish the requirements for offsetting the effects of stream loss. Some 3.47km of stream length will be lost and offset by stream restoration along 8.9ha of stream margin.

Stream restoration work will consist mostly of planting a 10m wide riparian margin on each side of the channel and fencing of the stream to exclude livestock. Riparian plantings will consist of a mix of indigenous riparian margin sedges, shrubs and trees. The primary objective will be to provide shade and organic matter to the stream channel to improve the quality of habitat for native fish and invertebrates. A reduction of sediment and nutrient loads entering the streams will also be achieved by fencing and planting, especially along the stream sections that pass unfenced through farmland.

Locations for this stream restorations have been considered in Technical Report 7h and will likely focus on the Mangapepeke and Mimi Streams and local tributaries. Details of the site preparation, species planting mixes, planting methods, post-planting maintenance and fencing will be included the ELMP.

9.8.9.6 Roadside rehabilitation plantings

After the completion of construction the disturbed land area not covered by road surface and not mitigated by replacement planting (refer Section 9.8.9.4 above) will consist of:

- Steep cut faces;
- Constructed fill embankment slopes;
- Newly constructed stream channels (stream diversions).

All fill areas and road margins and construction zones that cannot be returned reasonably quickly to the vegetation types present before construction will be revegetated with appropriate early successional plant species. A variety of restoration and revegetation techniques are proposed to accelerate successional processes.

On the steep cuts, natural regeneration of faces will occur over time, as has been observed in locations along SH3 at Mt Messenger (refer Section 9.9.3.1 below). To facilitate and speed up this process, planting of species that can inhabit steep faces along the upper edge of the face will occur where safe and feasible to serve as a supply of seed to the cut face surface.

On the fill embankments, the mudstone fill materials are not suitable for the establishment of seedlings and it will be necessary to establish a conditions where favourable planting outcomes can occur. This will involve re-applying back onto the fill, the soil, duff, and woody debris collected when the surface for the new road is cleared. This material provides a suitable growing substrate for several colonising and early successional species. Also, cut manuka vegetation and fern trunks will be placed over the ground surface to provide a constant trickle of seed and create weather-protected, moisture retaining microhabitat that will enhance seedling germination and survival. The retrieval, stockpile and re-use of topsoil and organic material will occur wherever possible for this roadside restoration work.

The design of the roadside restoration areas is described in the LEDF. Detailed restoration planting methods and post-treatment maintenance requirements will be detailed in the ELMP.

9.8.10 Ecology outcomes resulting from the Project

All aspects of the indigenous flora and fauna present in the wider Project area will benefit from the management of pest animals to permanently low densities and the establishment of substantial new areas of swamp forest, shrubland and riparian habitat. The proposed mitigation will not only increase the area of healthy indigenous vegetation but will greatly improve the connectedness of the forested areas. The net result will be:

- a significant increase in healthy available habitat;
- enhanced recruitment rates amongst a wide range of indigenous animals;
- improved condition of the remaining significant forest trees, especially totara and rata; and
- increased regeneration of the browse sensitive plant species.

Over time, further ecological benefits will accrue as a result of the offset programme. The conditions created in the pest management area will increase the likelihood of the survival and successful nesting of those kōkako that choose to move east from the release sites in the western Parininihi block. Other species, especially more mobile long-tailed bats and forest birds, will begin to move into adjacent forest areas as carrying capacity limits are met.

A range of other mitigation and management measures are proposed to avoid or reduce construction effects on flora and fauna (eg collection and relocation of cuttings / seed from threatened or regionally distinctive plants; kiwi, bat and lizard relocations; kiwi exclusion fencing; fish recovery).

Additional ecological investigations along the Project alignment are being completed over the 2017 / 2018 summer period to supplement databases. This additional information will be used to update mitigation and management measures and will add to baseline information and records.

Overall, the assessment of ecological effects of the Project, as described in Technical Reports 7a to 7h, concludes that the management measures and the mitigation and biodiversity offset package will appropriately address all of the ecological effects of the Project and over time, deliver significant ecological benefits.

9.9 Landscape, natural character and visual effects

9.9.1 Introduction

This section outlines the Project's landscape, natural character and visual effects and is based on the assessments presented in Technical Report 8a (Volume 3 of the AEE).

The existing landscape and natural character values of the area are described in Section 8.3.5. The Project alignment is contained within two valley systems, being the well-defined Mangapepeke Valley in the north, and the broader upper Mimi Valley in the south. At the northern and southern ends of the Project alignment, the landscape comprises pastoral flats contained by these two valleys, with a gentle topography, and modified landscape character. As the Project alignment progresses from the flats up each valley, either travelling in a southerly direction up the Mangapepeke, or a northerly direction up the Mimi, the slopes become steeper and covered in indigenous forest, and the environment takes on higher naturalness characteristics.

9.9.2 Landscape and environmental design approach

The approach to developing the landscape and environmental design measures that will be incorporated into the Project is described in the LEDF (Technical Report 8b, Volume 3 of the AEE). The LEDF informs the assessment of landscape, natural character and visual effects as it describes the design outcomes that the Project seeks to achieve that avoid, remedy and mitigate adverse landscape effects.

The LEDF articulates four overarching landscape design principles, all aimed at avoiding, remedying and mitigating adverse landscape, natural character and visual effects:

- "Keeping low in the landscape" – minimising the physical landscape effects.
- "Letting the landscape speak" – emphasising the surrounding landscape and its scenic amenity.
- "Integrating the Landscape and Ecological" outcomes of the Project – responding to and reflecting the natural character of the area, the natural ecological, patterns and processes, and integrating with the biodiversity outcomes that will come from the ecological mitigation package.
- Recognising culture – enabling a design development process where Ngāti Tama continue to express their mana whenua and kaitiakitanga over the Parininihi land.

The Project design described in Section 4 and the drawing set (Volume 2, particularly on the preliminary landscape concept drawings, MMA-DES-UDL-DRG-1000 to MMA-DES-UDL-DRG-1010) gives effect to these design principles through a design that:

- Retains the key ridgelines defining the landscape by using a tunnel, and minimising effects on landform and bush;
- Includes a bridge across a tributary to the Mimi swamp forest;
- Minimises stream and valley crossings by keeping to the sides of the valleys;
- Develops cut faces that echo natural slope angles;
- Promotes natural succession re-vegetation;
- Integrates landscape and ecological rehabilitation;

- Provides an opportunity for cultural expression and recognition; and
- Promotes a scenic journey experience.

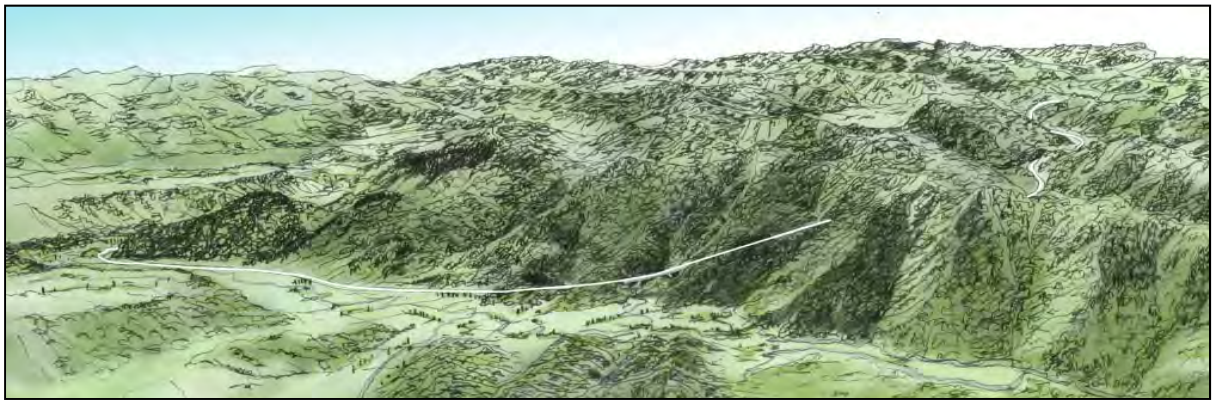


Figure 9.1 – Landscape perspective of alignment viewed from above the eastern ridge of the Mimi Valley

9.9.3 Assessment of landscape, natural character and visual effects

The assessment of landscape, natural character and visual effects uses the definition of 'landscape' contained in the New Zealand Institute of Landscape Architects Best Practice Note 1070:

> "*the cumulative expression of natural and cultural features, patterns and processes in a geographical area, including human perceptions and associations*".

In assessing the effects of the Project, consideration has been given to the overlapping matters of:

- Physical Landscape Change;
- Landscape Character;
- Natural Character of the streams and wetlands;
- Effects in relation to associative landscape values; and
- Amenity including visual amenity to and from the Project for identified viewing audiences including rural residents, and the travelling public.

These effects are described below for:

- The Mangapepeke Valley; and
- The Mimi Valley.

Visual effects are described for five indicative view points along the alignment.

9.9.3.1 Effects on Mangapepeke Valley

Physical landscape change effects

From the north the Project alignment sits on the eastern flank of the valley and gently works southwards up the Mangapepeke, cutting through minor toe slopes (refer Figure 9.2). The result is a sinuous, relatively open alignment that affords scenic views, and reflects the meandering natural valley landform. As the alignment progresses up the valley (towards the

south) the scale of landform modification becomes higher, as the alignment becomes more dominant in the tighter valley and surrounding valley landform.

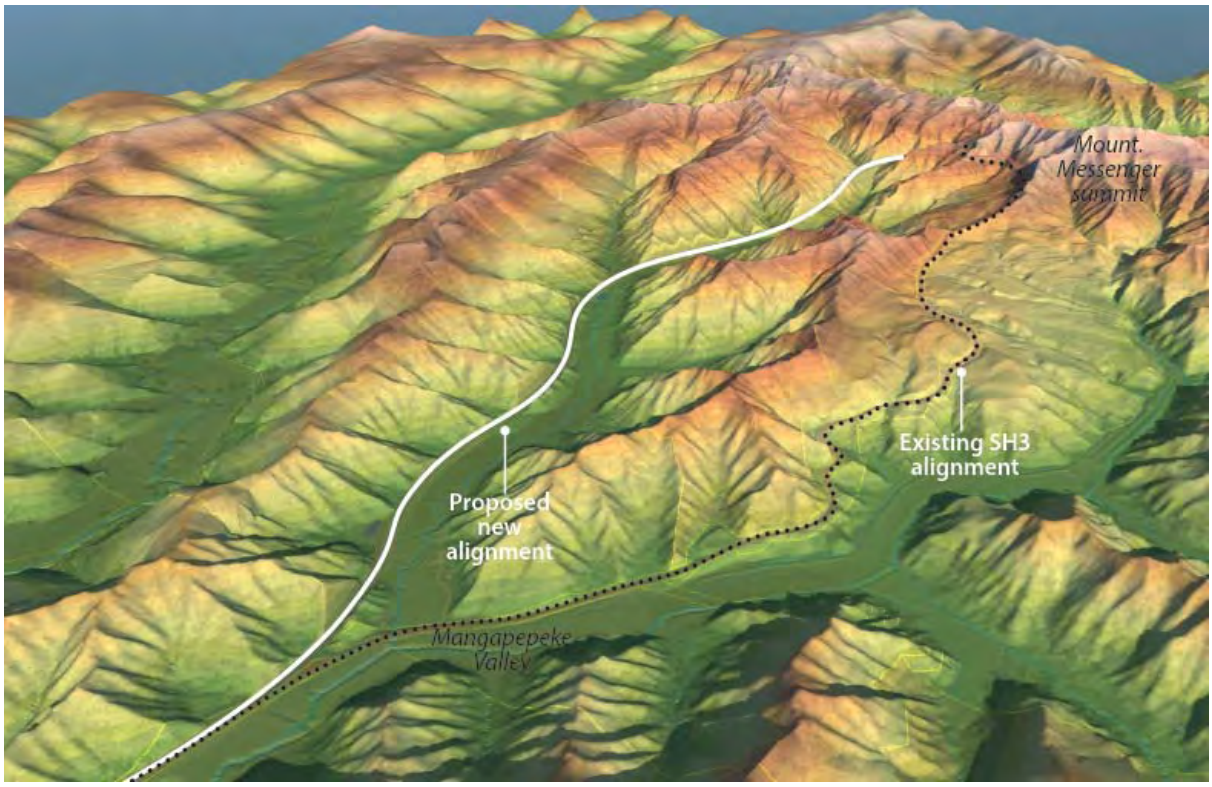


Figure 9.2 – Topography of alignment viewed looking south up the Mangapepeke Valley

The cut and fill transitions along the Project alignment (refer drawings) are sensitive locations, which will be integrated with the surrounding terrain to minimise effects. Where cuts and steep faces occur on the existing SH3 (refer Photo 9.2 and Photo 9.3 below) they re-vegetate and take on a natural appearance and blend with the immediate bush roadside. In the context of the surrounding papa landscape, slip / cliff faces are a common natural feature (refer Photo 9.2). Cuts on the new alignment will also be colonised naturally by vegetation. This process is estimated to take up to 5 to 10 years and will be assisted by top seeding of the upper soil slopes above the cuts, textured finishing of cut faces and the use of successional hydro-seeding.

Photo 9.2 – A Natural exposed rock (slip) face and bush as seen from SH3

Photo 9.3 – Naturalised cuts along the existing SH3 corridor.

Excess fill will be placed into disposal areas. These disposal areas are currently grazed side gully areas along the west of the lower Mangapepeke Valley. These disposal areas will be designed to integrate with the immediately adjoining landform, avoiding the appearance of

artificial or engineered landforms that would be more obvious and contrasting in proximity to the valley flats.

The large engineered fill near the head of the Mangapepeke Valley represents a moderate-high degree of landform modification within a very discreet and visually contained steep bush upper catchment landscape. While modified, the fill generally works "with the grain" and follows the natural alignment of the primary valley landform and spurs, which moderates the overall effect.

Landscape character effects

The Project will introduce a highway into what is current a relatively remote, generally undeveloped landscape setting. This represents a change in landscape character.

As noted earlier, in the lower Mangapepeke, the Project alignment sits on the eastern flank of the valley and gently works southwards up the Mangapepeke, cutting through minor toe slopes. The Project design minimises major landform modification and disturbance and preserves the integrity of the key characteristics of the existing hill county bush character. In this regard, the highway will be a relatively recessive element in the context of the dominant qualities of the surrounding natural hill country. It preserves the large undisturbed areas of bush, as well as the dominant and strong landforms with bush cover forming backdrops of the lowland and more modified valley flats.

In the more contained upper Mangapepeke Valley, the change in character will be more pronounced, particularly at the areas of the large embankment starting at Chainage 2850. This fill occupies and alters the valley floor and natural stream corridor. The change in character will be moderated through design which seeks to integrate the fill into the existing pattern of steep surrounding hill slopes and natural drainage patterns, restoration plantings which integrate the highway with the bush character of the immediately surrounding landscape, and by reinstatement of the streams along the fill margins.

Significant vegetation removal will be required in forming the alignment, particularly where the alignment is higher up in the Mangapepeke Valley. This includes the removal of around 15 significant old emergent forest trees.

The mitigation and biodiversity offset package described in Section 4.2.3 (and in the ELMP) outlines how vegetation losses will be mitigated. Significant ecological mitigation planting is also proposed, including:

- 6ha of swamp forest planting, all or predominantly in the lower Mangapepeke valley;
- Riparian planting (10m each side of the stream edge) along 8.9km of stream; and
- 9ha of replacement mitigation planting consisting of manuka and early successional planting.

The majority of the planting is intended to be within the lower Mangapepeke valley and to integrates landscape and ecology outcomes. This planting will have significant long term positive landscape effects on the enhancement of the natural landscape characteristics of the lower Mangapekeke Valley in particular, and will greatly assist the integration of the highway within a natural bush setting.

Natural character of streams and wetlands

The Project has been specifically designed to minimise impacts on natural streams and wetlands through the Mangapepeke Valley. In hugging the eastern flank of the valley the alignment avoids the main stem of the Mangapepeke Stream for much of its length, with modification being limited to the streams draining the side gullies to the east.

The large embankment starting at Chainage 2850 will have a greater effect on the natural character values of the upper Mangapepeke Stream system. Through this section the stream channel will be filled and diverted into new naturalised stream channels and under the embankment via a culvert. These works will modify the higher natural character values in this upper part of the Mangapepeke Valley.

As noted above, the mitigation and biodiversity offset package described in Section 4.2.3 outlines how riparian restoration will be undertaken on some 8.9km of local streams. A significant portion of this riparian restoration is intended to occur within the Mangapepeke Valley. This restoration planting will enhance the natural character values of these watercourses and mitigate for the effects of construction works. When also taking into account the swamp forest plantings proposed in the lower Mangapepeke Valley, the mitigation and biodiversity offset package will enhance the natural character of the entire Mangapepeke Stream corridor and valley.

Associative values

Cultural associations are a recognised factor in the wider appreciation of landscape values. The LEDF promotes a process for working with Ngāti Tama to ensure that cultural aspirations are expressed within the Project designs. This is likely to be an iterative process, where the exchange of ideas is required to fully explore opportunities and to enable Ngāti Tama to express their mana and kaitiaki responsibilities.

Amenity values

By selecting an alignment that works with the underlying landform, the wider scenic amenity qualities of the Mangapepeke Valley are maintained, and the natural scenic landscape qualities of the valley and wider landscape dominate. It is expected that these scenic amenity qualities will be further enhanced over time. As natural successional processes begin to colonise cut slopes and as the restoration plantings described above establish and return areas of the rural valley flats to swamp forest, the Mangapepeke Valley will become a highly naturalised and unique bush highway that will be appreciated by future road users for its remoteness and scenic qualities.

9.9.3.2 Effects in Mimi Valley (including inter-valley ridge)

Physical landscape change effects

On the southern side of Mt Messenger, progressing from south to north, the alignment sits on the existing SH3 alignment to the point where the existing highway starts to climb. From here it progresses up the western flank of the Mimi Valley, sitting to the east and below SH3 (refer Figure 9.3). It cuts through the lower spurs of the ridge as it gains height to the bridge over the adjoining Mimi swamp forest, and then into another deeper cut and fill before reaching the southern tunnel portal and tunnel through the inter-valley ridge between the Mangapepeke and Mimi catchments.

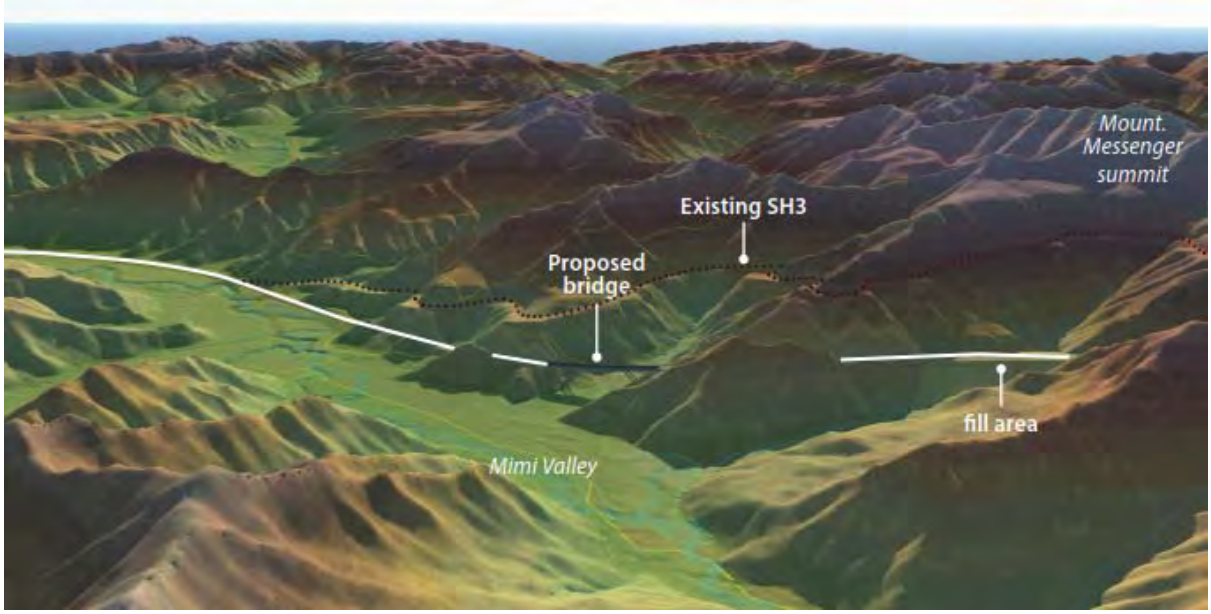


Figure 9.3 – Landscape model of alignment viewed from above the eastern ridge of the Mimi Valley

The inter-valley ridge between the Mangapepeke and Mimi catchments is a defining landform in the local context. This feature has been preserved by the tunnel that conveys the alignment between the two catchments and remains intact as a connected ridgeline spur as part of the wider Mt Messenger topographical pattern. The tunnel is one of the principal positive landscape features of the Project, which not only maintains the integrity of natural landform but also echoes the character and heritage associations of the existing SH3 Mt Messenger tunnel as a transitional 'journey feature' or waypoint reference for road users.

The fill south of the tunnel portal infills the steep gully at this point. It will be integrated into the surrounding steep terrain forming a minor basin west (upslope) of the proposed alignment and will then tie into the surrounding gully to the east (downslope).

The cut immediately to the south of this fill passes through one of the minor spurs that run southwards below the existing SH3 alignment, and runs obliquely through the underlying papa geology. Cuts through these southern spurs will be designed in a similar fashion to those described in the Mangapepeke Valley, and similarly colonised naturally by vegetation.

Landscape character effects

In addition to the physical change described above, the bridge structure (refer Figure 9.4) over the head of the Mimi swamp forest will bring additional landscape change. This structure has been specifically included to protect the wetland habitat and avoid landform modification (fill) within the steep bush gully that immediately adjoins the wetland. The form and proportion of this bridge has been considered as part of the integrated design development process. The underbridge form of this structure has been specially designed to minimise land disturbance and minimise vegetation and land disturbance at the pier footings.

Figure 9.4 – Bridge over Mimi swamp forest

The bridge is considered an appropriate design response to this section of the Project, preserving as far as practically possible the natural landform context and also preserving the adjoining swamp forest. The bridge affords road users a strong visual connection with this landscape feature and the wider Mimi Valley beyond.

The hydrant tanks to be located on SH3 at the existing rest area, and tunnel control building to be located alongside the alignment south of the tunnel, represent additional new built structures. Screening will be provided to screen the structures from view.

Natural character effects

The Project specifically avoids directly impacting the natural character values of the Mimi swamp forest. Road drainage will be diverted away from the swamp forest system to storm water treatment areas downstream.

The bridge offers unique scenic views of the wetland for southbound road users. This is a positive outcome for the appreciation of the wild and scenic values of this landscape feature. The Project does however shift SH3 closer to the wetland, and this will alter the perceptual and experiential qualities of visitors to the wetland.

Associative values

The processes outlined above for the Mangapepeke Valley will enable Ngāti Tama to fully explore opportunities and express their mana and kaitiaki responsibilities across the full Project area.

Amenity values

The alignment selected for the southern approach to Mt Messenger retains the natural scenic qualities of the landform, preserving the important inter-valley ridgeline and wetland features. The two key structural design elements of the Project (the tunnel and the bridge) have been designed to fit with the surrounding landscape and not appear as discordant or obtrusive built elements in an otherwise natural landscape setting.

Road users will be very much aware of the wider dominance of the natural landscape. Approaching the tunnel the roadway will be "swallowed" by the landscape only to emerge in an equally scenic environment. This represents a dynamic journey experience for road users

with the tunnel a key 'waypoint'. Views from this bridge will be of scenic amenity value providing a strong visual connection and journey experience with the wider landscape.

9.9.4 Assessment of visual effects

Technical Report 8a presents an assessment of the visual effects of the Project for the expected viewing audience, and is informed by five indicative viewpoints.[56] The viewpoints comprise both public and private viewing locations. Given the remote setting, the private viewing audience is very small, comprising three rural dwellings[57].

Views are typically dominated by the wider character of the surrounding hill county, which is reinforced by the naturalised vegetation patterns. These successional vegetation patterns bring a bush character down to the immediate roadside. Similar vegetation patterns will be reinforced adjacent to the highway by the mitigation plantings described in Section 9.9.3 above. In the lower Mimi Valley, views are moderated by the influence of the existing SH3 corridor and generally modified character of the working rural landscape.

Three rural dwellings will be affected as follows:

- 3072 Mokau Road is in relatively close proximity to the alignment and currently has views of the existing SH3 highway. The existing landform and proposed screen plantings help visually integrate the highway and screen northbound views from this dwelling. The northern cut slope (western face) and adjacent landform will also screen headlight glare and daytime visibility of southbound traffic.
- Northerly views from the private dwelling at 2750 Mokau Road will include a short section of the new alignment. At this location, the natural landscape character of the surrounding hill country predominates, including views across to Mt Messenger and expansive northerly hill country views with uninterrupted ridgelines extending northwards into the distance. Low visual effects of highway mitigated by the visual exposure of a limited roadway section and the recessive location of the Project in the wider context of the upland hill county. It may also be possible to screen the particular line of sight to this section of the Project by foreground planting on 2750 Mokau Road should this be appropriate and acceptable to the property owners.
- Northerly views from 2528 Mokau Road will include the road corridor itself as a relatively recessive element, generally taking a lower alignment than the current SH3 corridor. The proposed alignment will be visible in the context of a working rural landscape that includes the influence of existing farm buildings and structures as well as the mixed vegetation patterns of the Mimi Valley. The most visible elements of the Project in this view will be the south facing cuts (right of frame). However these cuts are expected to take on a naturalised appearance similar to existing south facing cuts on SH3 where successional re-vegetation has occurred. Over the construction period,

[56] Photosimulations have been prepared for each of these locations and are contained in Technical Report 8a)

[57] 3072 Mokau Road in the north, 2750 Mokau Road on the inter-valley ridge and 2528 Mokau Road in the south. The assessment assumes all three dwellings will remain in place and occupied.

views from this property will include construction activities, reducing the immediate rural amenity for periods.

The visual assessment concludes that any visual effects on the viewing audience are typically low or moderate to low.

A low level of temporary visual effects are expected over the duration of construction. Much of the work occurs out of public view and in remote areas not visible from the SH3 corridor.

9.9.5 Overall conclusion on landscape, natural character and visual effects

Technical Report 8a concludes that overall, the Project represents an appropriate and well considered design response to the wider hill country setting within which it is located, such that the prosed highway will be a recessive human influence within a predominantly natural landscape setting.

The route selection process (see Section 6 above) avoided potential adverse effects on the following significant landscape areas and features:

- The intact wilderness area of the Waipingao Valley;
- The area west of Mt Messenger that is of particular significance to Ngāti Tama and the wider community reflected in the Parininihi Protection Project;
- The 'Regionally Significant Landscape' that has been identified west of SH3;
- The high quality Mimi swamp forest; and
- The landmark peak of Mt Messenger – including the picturesque tunnel and other features of the existing Mt Messenger section of SH3.

In summary, the key landscape effects that have been identified include:

- The introduction of a highway into two valleys that currently have a quiet, remote rural character – albeit exposed in places to the existing highway on the western flanking hills;
- The clearance of 44ha of vegetation, of which 33ha is indigenous vegetation;
- Earthworks including batters cut into the side slopes of the valley and fills placed into gully areas;
- The creation of permanent disposal areas; and
- The crossing, filling and diversions of 3.47km of streams.

The key natural character effects relate principally to the effects on watercourses.

Overall, landscape effects are considered to be moderate, while natural character effects are moderate – high in the upper Mangapepeke, moderate in the lower Mangapepeke, and moderate – low in the Mimi.

A number of measures that mitigate landscape, natural character and visual effects have been introduced through the design process. Future design development through the LEDF process, including collaboration with Ngāti Tama, will mitigate effects further. Key mitigation measures proposed as a core part of the Project include:

- Treatment of cut and fill batters to integrate with natural landforms;
- Integrating earthworks into the immediate landform context;

- Mitigation plantings that reinforce existing vegetation sequences;
- Constructing stream diversions with naturalised elements reflecting the characteristics of the existing streams; and
- Ecological restoration, particularly of swamp forest plantings through the Mangapepeke Valley and riparian planting along 8.9km of streams.

Taking into account the proposed mitigation measures, the Landscape, Natural Character and Visual Assessment concludes that landscape and visual effects will be reduced to moderate-low, while natural character effects will be reduced to moderate.

As natural successional processes begin to colonise cut slopes and as the restoration plantings establish the alignment will become a highly naturalised and present a unique bush highway. This will enable a scenic user experience that not only integrates the highway into the landscape but also connects landscape and ecology, addressing wider landscape fragmentation particularly in relation to the restoration of patches of lowland pasture back into the surrounding indigenous landscape. Overall, the Project will have positive visual amenity effects.

9.10 Effects on historic heritage values

9.10.1 Introduction

This section presents a summary of the historic heritage effects of the Project, and is based on the Historic Heritage Assessment report (Technical Report 9, Volume 3 of the AEE).

A description of the historic heritage values of the area is set out in Section 8.4.2 of this Report. In summary, while the coastal areas and river valleys near the coast were areas of historic Māori occupation, the steep hill country associated with the Project area was less widely utilised. There is unlikely to have been any significant occupation of the Mangapepeke Valley because of its frequent flooding and steep inaccessible valley sides, although the valley may have been used by Māori to access inland areas.

No archaeological or other historic heritage features were identified within the Project footprint. Near to the southern end of the Project alignment in the Mimi River valley there is a recorded pā site, Maukuku Pā (archaeological site Q18/74) and related cultivations on a relatively flat spur overlooking the Mimi River valley. A site recorded as 'old clearing' ('Nga oko oko') was also identified from early survey plans adjacent to Maukuku Pā.

9.10.2 Project effects on historic heritage

The Historic Heritage Assessment concludes that no known archaeological or other historic heritage sites will be affected by the proposed construction of the Project.

The likelihood of encountering heritage sites is considered to be low, given the steep rugged terrain covering much of the Project route and the fact that the remainder of the route is within low-lying valley floors prone to flooding. However, the large scale nature of earthworks required for the Project means there is some potential to encounter settlement remains within the Project footprint, although these are unlikely to be significant.

Conditions are proposed to address any accidental discovery of heritage remains, and also any accidental discovery of koiwi tangata, in accordance with the Transport Agency's Accidental Archaeological Discovery Specification (P45). Additionally, the Transport Agency

intends to seek a Project-wide Authority under Section 44(a) of the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA).

Overall, any potential effects of the Project on historic heritage values are expected to be no more than minor.

9.11 Operational stormwater management effects

This section assesses the actual and potential effects of the Project on stormwater quantity and quality. It deals with stormwater generated by impermeable surfaces associated with the Project that require treatment. Stormwater management provisions for the Project are described in Section 4.16 of this AEE Report and are based on Austroads standards and the Transport Agency's Stormwater Treatment Standard for State Highway Infrastructure.

In summary, the stormwater drainage network and treatment system for the Project comprises:

- Open roadside channels (swales) constructed along the alignment to convey flows (up to the design storm) from the road surface downstream to constructed wetlands for treatment.
- Stormwater will then be detained and treated in constructed wetlands, prior to discharging to the receiving environment. Two wetlands will be located adjacent to the road alignment in the Mangapepeke Valley and one wetland in the Mimi Valley.
- Clean water flows from the natural valleys and associated streams and watercourses will be conveyed from one side of the road corridor to the other to enable the continuation of streams and overland flowpaths.
- Runoff from the bridge and drainage from the tunnel (which is expected to be minimal) will be collected and conveyed for treatment in the constructed wetlands.

9.11.1 Stormwater quantity effects

The Project will increase the area of impervious surface in both the Mangapepeke Stream and Mimi River catchments. However, these increases are small in the context of the overall catchments. The impervious surface represented by the new alignment equates to about 2.4% of the Mangapepeke catchment and 0.7% of the Mimi catchment. Any change in the quantity of storm flow discharge from these catchments following completion of the Project works will be small.

9.11.2 Stormwater quality effects

The drainage network will convey all road runoff to the constructed wetlands for treatment. Pre-treatment will occur in the conveyance swales, where solids will be filtered. The wetlands will provided extended detention of flows and treatment to reduce total suspended solids (TSS), metals, nutrients, oil, grease and bacteria and also to remove gross litter and floatables, such as oil and volatile hydrocarbons. Stormwater will be treated in accordance with the water quality standards identified in the Freshwater Plan to comply with Permitted Activity Rule 23. Stormwater discharge effects on water quality and freshwater ecology are also addressed in Section 9.8.7 and in Technical Report 7b.

The two northern constructed wetlands will discharge to the Mangapepeke Stream and the southern wetland will discharge to the Mimi River. Outlets from the wetlands will be designed to avoid scour and erosion at the point of discharge to the receiving environment.

Overall, stormwater discharge from the Project will comply with the Permitted Activity standards in Rule 23 of the Freshwater Plan. Any effects of stormwater discharge are expected to be no more than minor.

9.12 Effects of structures on streams and watercourses

Where the alignment crosses natural valleys and watercourses, culverts will be installed to provide for the conveyance of natural flows from one side of the embankment to the other and enable the continuation of streams and overland flowpaths. Where fill embankments are located parallel to watercourses, the watercourses will be diverted along the toes of the embankments. Permanent stream diversions will be required where it is necessary to realign a natural stream channel. The design approach for culverts and stream diversions is described in Section 4.16 and shown also on the drainage drawings in Volume 2 (Drawings MAA-DES-DNG-DRG-1000-1010 and on MAA-DES-DNG-00-DRG-40022, 4005, 4006, 40088).

The effects of the Project on the ecological values of streams and watercourses, and the measures proposed to mitigate and offset those effects, are addressed in Section 9.8.7 above and in Technical Report 7b.

9.12.1 Stream diversions

Stream diversions will:

- seek to replicate the gradient, sinuosity and hydraulic characteristics of the natural channel being diverted;
- seek to replicate the natural materials and characteristics of the original watercourse to ensure similar ecological functions are maintained; and
- be designed to enable fish-passage for species encountered in the upstream habitats.

Details on the individual diversions, their location, length of stream affected and the reinstated stream channel designs are proved in Section 4.16.2. Details are also presented in the assessment of ecological effects in Section 9.8.7 and in Technical Report 7b. Diversion channels will be sized to convey design storm flows and overland flow provided where channel capacity is exceeded.

9.12.2 Culverts

The Project will require the installation of culverts on both permanent and intermittent watercourses, as outlined in Section 4.16.3. Culverts will be sized to convey the design storm and to enable fish passage, provide erosion control and debris management, and energy dissipation. Fish passage provisions through the culverts are described in more detail in Section 4.16.3 and in Technical Report 7b, but in summary, will enable fish-passage for the species encountered in the upstream habitats.

9.12.3 Effects of structures on streams and watercourses

As described in Section 9.8.7 and in Technical Report 7b, the Project will result in the modification of some 3.47km of watercourses. Effects of modification will be mitigated by way of riparian plantings for some 8.9km of stream length. Based on the design provisions incorporated into stream diversions and culverts outlined above, and on the proposed mitigation, any effects of the proposed stream structures will be no more than minor.

9.13 Operational air quality effects

This section summarises the actual and potential effects of the Project on air quality during the operational phase of the Project. A detailed assessment of the effects of the Project on Air Quality is presented in Technical Report 11.

There are only three sensitive residential air quality receptors in the vicinity of the Project[58].

Existing air quality in the Project area is expected to be very good. The Project is located in a relatively undeveloped rural area, with only localised source of air emissions (eg motor vehicles using the existing SH3; domestic heating emissions, and intermittent discharges from farming activities).

Once the new alignment has been opened, there will be emissions to air comprising exhaust emissions and brake and tyre wear from vehicles. There are a variety of air contaminants from motor vehicle emissions, including carbon monoxide (CO), sulphur dioxide (SO_2), fine particulates (PM_{10} and $PM_{2.5}$) and nitrogen dioxide (NO_2).

Operational air quality effects have been assessed using the Transport Agency Guide[59], which addresses air quality impacts associated with state highway improvement projects. The Guide recommends use of the Transport Agency's air quality screening model, which considers the effect of PM_{10} and NO_2. The screening model has been used to assess the operational air quality effects of vehicle emissions on the sensitive receptors and consider effects now and in 10 years' time (i.e. 2017 and 2027), both with and without the Project.

The screening model results show that the concentrations of NO_2 and PM_{10} during the operational phase are well within air quality criteria and therefore the risk of adverse air quality effects, including on the three sensitive residential air quality receptors, is low.

An assessment of vehicle emission effects on ecological air quality has also been completed using the screening model results. The results indicate that predicted levels of NO_2 during the operational phase will remain well within ecological air quality criteria and therefore any effects on ecosystems will be negligible.

Overall, the effects of the Project on air quality are expected to be no more than minor.

[58] 3072 Mokau Road at the northern end of the alignment, and 2528 Mokau Road and 2397 Mokau Road at the southern end.

[59] NZ Transport Agency, Guide to Assessing Air Quality Impacts from State Highway Projects, Version 2.0, December 2014. Note that this guide is more current than the MfE Good Practice Guide for Assessing Discharges to Air from Land Transport

9.14 Operational noise effects

This section summarises the effects of noise generated by vehicles on the new alignment during the operational phase of the Project. A detailed assessment of noise and vibration effects is presented in Technical Report 10.

Road traffic noise in New Zealand is generally assessed and controlled through NZS 6806:2010 Acoustics – Road-traffic noise – New and altered roads (NZS 6806 or the Standard). The Standard assesses noise effects at noise sensitive locations only, and in rural areas this includes all residential dwellings (and other sensitive receivers defined in the standard) within 200m of the road. There are only 3 sensitive receivers located in relation to the Project alignment: 3072 Mokau Road in the north, 2750 Mokau Road on the inter-valley ridge and 2528 Mokau Road in the south[60].
Noise level predictions have been made for these receivers following the methodology set out in NZS6806, and are presented in Table 9.8. Noise levels arising from the operation of the highway once the Project is complete is predicted to comply with the relevant noise criteria from NZS 6806.

Table 9.8 – Predicted Traffic Noise Levels

Receiver	Predicted Traffic Noise Level, dB $L_{Aeq(24h)}$		NZS 6806 Noise Criteria (dB $L_{Aeq(24h)}$)
	Without Project	With Project	
3072 Mokau Road	51	54	≤64
2750 Mokau Road	48	44	
2528 Mokau Road	57	56	

The change in noise effects at 3072 Mokau Road will be noticeable, but is considered acceptable due to the low overall traffic noise level received. The level of noise at all facades of the dwelling will be substantially lower than the NZS6806 noise limit. The dwellings at 2750 Mokau Road and 2528 Mokau Road are predicted to receive slightly lower traffic noise levels than they currently receive from traffic on SH3. For these dwellings the Project will result in a slight noise level improvement.

Traffic vibration does not generally cause adverse effects in situations where roads are well-maintained. The Mt Messenger Bypass will be subject to a comprehensive road maintenance policy as part of the wider SH3 maintenance programme which will ensure the road surface remain smooth and any defects are fixed within short timeframes. Even if the road was to degrade, effects are only an issue for residential receivers within 25 metres of the road surface;[61] there are no houses within this distance of the Project alignment.

Overall, any operational noise and vibration effects from the Project are expected to be acceptable and no more than minor.

[60] It is noted that the dwelling at 2750 Mokau Road is outside the 200m distance and not technically a sensitive receiver in accordance with NZS 6806, but has been included for completeness.
[61] As per Class C of the Norwegian Standard NS 8176.E:2005.

9.15 Temporary construction effects

9.15.1 Temporary traffic effects during construction

9.15.1.1 Construction traffic effects

Technical Report 2 includes an assessment of temporary traffic and transport effects during construction. The key temporary effects will be from construction traffic, such as trucks and other vehicles travelling or delivering materials to the site.

Construction traffic movements are summarised as follows:

- At peak, some 500 light vehicle movements per day for a workforce of 200-250 staff coming to and from site.
- Approximately 80 truck movements per day over a six month period to shift in the order of 87,000m^3 of bulk fill.
- On average, 20 truck movements per day delivering aggregates throughout the duration of works, with an expected peak of 120 movements per day.
- On average, 16 concrete truck movements per day, peaking during the 12 month period of lining the tunnel.
- On average, 120 pavement materials truck movements per day, occurring over about a 120 days.
- A small number of deliveries of plant and equipment to and from site, and transport to different locations across the site. Some of the plant will require over dimension permits to travel along the existing route.
- Occasional deliveries of materials such as culverts, geotextile, steel, barriers, fencing materials and other such bulky construction items. These will generally arrive on single unit trucks or semi-trailers.
- Daily site servicing by delivery of fuel to site by mini tanker, along with potable water tankers and trucks to remove sewage from on-site toilets, which will visit the site as required.

Allowing for the sequencing and staging of construction activities, the amount of truck traffic can be expected to fluctuate between 60 and 160 movements per day, with an overall average of around 80 movements per day.

The traffic assessment presented in Technical Report 2 notes that as existing daily traffic volumes on SH3 are relatively low, additional construction traffic generated by the Project will be accommodated within the capacity of the existing SH3 corridor. Temporary traffic management measures will be in place over the duration of the construction to manage any temporary traffic related effects. These measures are described in the CEMP and CTMP, and are summarised in Section 10 of the AEE.

Overall, and allowing for the implementation of appropriate traffic management measures, any temporary effects of construction traffic on the existing SH3 alignment are expected to be no more than minor.

9.15.1.2 Site accesses and stopping bay

A number of temporary site accesses will be required from SH3 into the Project construction area. These access locations are described in Section 5.7.2 and considered in Technical Report 2 and in the CTMP.

The site accesses will be controlled, so that access will only be possible for those authorised to access the site. The accesses will be developed so as to ensure good visibility to and from the accesses, in line with the approach design speeds, and where necessary LED warning signs will be used to warn road users. Where appropriate, the access points will be sealed for the first 10m onto the site to prevent detritus spreading onto SH3. In addition, a stopping bay at the southern approach to the site provides trucks with an area to pull over while drivers check that relevant accesses are clear.

The traffic assessment presented in Technical Report 2 concludes that the site accesses can be appropriately managed to ensure the safety of SH3 users. Overall, any temporary effects associated with site access to the Project construction site are expected to be no more than minor.

9.15.1.3 SH3 tie-in works

As noted in Section 5.7.4, works will be required at the northern and southern ends of the new alignment to connect the new alignment to SH3 at the completion of the Project. The works will require appropriate traffic management, with stop/go control of traffic required to enable parts of the work to be completed safely. Given the relatively low volume of traffic on SH3, a stop/go operation will be able to clear waiting traffic without significant delays or build-up of traffic queues. Any effects are expected to be temporary and no more than minor.

9.15.1.4 Temporary traffic management during construction

All construction works involving temporary traffic management will be undertaken in accordance with the CTMP (refer Volume 5 of the AEE). The CTMP addresses:

- Traffic controls required at SAPs and during tie-in works;
- Temporary speed restrictions during construction;
- Delineation devices, such as cones;
- Signage;
- Maximum delays permitted during traffic management control; and
- Notification methods to road users of potential disruptions on the State Highway network as a result of the Project.

Overall, and allowing for construction traffic management in accordance with the CTMP, the temporary effects of construction related traffic are considered to be no more than minor.

9.15.2 Construction effects on air quality

This section summarises the temporary effects on air quality during construction. A detailed assessment of air quality effects is presented in Technical Report 11.

Potential effects on air quality from road construction activities relate principally to dust generated by earthworks. Other potential air discharge sources include odour, if

contaminated soils are disturbed, or from exhaust emissions from construction vehicles and plant.

Technical Report 11 details the qualitative assessment methodology that has been adopted for assessing potential construction related air quality effects. The approach takes into account the likely frequency, intensity, duration, offensiveness/character and location of the effects and reaches a conclusion as to whether emissions are likely to have an objectionable or offensive effect on receptors (referred to as a 'FIDOL assessment').

As noted in Section 9.13 on operational air quality effects, the Project is located in a relatively undeveloped rural area, with only three residential dwellings (sensitive air quality receptors) in the vicinity (refer Section 9.13).

9.15.2.1 Effects of construction dust

There are two main potential effects from dust (particulate matter):

- nuisance/amenity effects; and
- health effects.

Nuisance/amenity effects are generally associated with coarser fraction dust. Health effects are generally associated with fine dust (referred to as PM_{10} and $PM_{2.5}$) as these fine fractions of dust are able to penetrate the nose and mouth if breathed in, and can enter the lungs.

The dust emitted during road construction activities is generally in the coarser dust range (referred to as deposited dust – greater than 30µm in diameter), which falls out of the air and is deposited on exposed surfaces. As the proportion of fine particles in the emissions is likely to be low, the potential adverse effects are mainly associated with nuisance / aesthetic effects.

Possible nuisance / aesthetic effects include the visible soiling of surfaces such as houses, furniture, cars and the visible deposition of dust on flowers and vegetable gardens. The three sensitive residential dwellings near the Project are also likely to collect rainwater from their roofs as a drinking water source.

Deposited dust (where there is high dust loading) also has the potential to impact on vegetation and ecosystems.

Potential dust sources during construction activities include:

- Construction yards, site and haul road establishment;
- Topsoil removal and distribution;
- Excavations;
- Cut and fill operations;
- Soil stabilisation and base course construction;
- Loading and unloading of bulk materials;
- Stockpiling of materials, including unloading and placement;
- Vehicle movements on unsealed roads; and
- Wind erosion from exposed areas and stockpiles.

The most significant sources of dust generation during the Project construction works are likely to be:

- stockpiles;
- exposed areas during earthworks; and
- vehicle movements on unsealed haul roads.

The risk of exposure of sensitive receptors to dust emissions depends on the following factors:

- The proximity of the receptors to construction activities that could give rise to dust emissions. In this regard, deposited dust will generally deposit out of the air within about 100m of the source (except under very high wind speed conditions); and
- The frequency and duration of meteorological conditions that are likely to transport dust towards the sensitive receptors (e.g. dry conditions and strong winds (greater than 5m/s) in the direction of receptors).

In summary, the FIDOL assessment presented in Technical Report 11 shows that there is the potential for significant amounts of dust to be generated from the proposed construction activities during dry, windy weather conditions unless appropriate dust controls are implemented. Most of the area surrounding the Project is not sensitive to amenity effects of dust.

However, the proximity of the three residential receptors means that good practice dust control methods will be required in proximity to these locations to minimise the risk of nuisance / aesthetic effects. A draft DMP has been developed (refer Volume 5) to address good practice at these locations. With the DMP in place any residual effects of dust are unlikely to be offensive or objectionable or be of concern for roof drinking water supply.

Overall, with good practice dust management measures in place as per the DMP, any temporary construction related dust effects at the three sensitive residential dwellings are expected to be no more than minor.[62]

Potential dust effects on native vegetation adjacent to the construction works have also been considered. While dust deposition could occur on fringing vegetation immediately adjacent to the construction foot print (within 10m of dust generating construction activities), the associated vegetation is unlikely to be particularly sensitive to dust and the frequent rain events are expected to reduce levels. Accordingly, any dust effects on vegetation are expected to be no more than minor.

9.15.2.2 Other potential construction air quality effects

The air quality assessment in Technical Report 11 concludes that separation distances between residential dwellings, earthworks areas and possible contaminated soil locations (refer Section 9.15.4 below) are such that any potential for odour effects is very low. Similarly, the separation distances between construction vehicle operating areas and dwellings are such that they would not be impacted by exhaust emissions. Overall, any effects of other construction related emissions are considered to be no more than minor.

[62] At the time of lodging the applications, it has been assumed that the land owners at 3072 Mokau Road, Debbie and Tony Pascoe will relocate from this site during construction. Regardless, the assessment concludes that effects at this dwelling will be no more than minor.

9.15.3 Construction noise and vibration effects

9.15.3.1 Introduction

This section summarises the temporary effects on air quality during construction. A detailed assessment of air quality effects is presented in Technical Report 11.Environmental Noise and Vibration Assessment (Technical Report 10, Volume 3 of the AEE).

Construction noise effects are considered in relation to the construction noise standard NZS 6803:1999[63]. The "long-term duration" criteria from NZS 6803:1999 are most appropriate for this Project given the long duration of works. The Standard does not anticipate that full compliance with the construction noise criteria will necessarily be achieved at all times and at all receivers. Where compliance is not possible, it focusses on the implementation of the best practicable option (BPO) for construction noise management and mitigation.

Construction vibration effects are considered in relation to the Transport Agency's "State highway construction and maintenance noise and vibration guide (August 2013)". The Guide adopts the German (DIN 4150) and British standards (BS 5228-2) noted in Section 2.0, and applies them in a progressive manner that addresses both annoyance and building damage effects.

As noted in Section 9.14, given the relatively remote location of the site, there are few sensitive receptors in the vicinity of the alignment. The dwelling at 3072 Mokau Road will be vacant during construction and no assessment of construction noise and vibration has been made for that property. All other dwellings in the vicinity of works have been included in the assessment. This includes 2750 Mokau Road and 2528 Mokau Road (which are in the order of 300m and 100m from the edge of the designation boundary), along with 2397 Mokau Road which is the closest dwelling to the spoil disposal area located at the southern end of the Project (at approximately 35m from the edge of the designation boundary).

9.15.3.2 Effects of construction noise

Estimates of construction noise and the separation distance (day time and night time) at which compliance with the construction noise standard is achieved (without noise mitigation) is presented in Table 9.9 for the plant and equipment expected to be utilised in the Project construction activities.

[63] Which is the standard referenced in the Transport Agency's 'State Highway Construction and Maintenance Noise and Vibration Guide'.

Table 9.9 – Construction noise levels and compliance distance

Activity	Activity Sound Power Level	Compliance distance to day-time limit (70 dB LAeq) without noise barriers (direct line of sight)	Compliance distance to night-time limit (45 dB LAeq) without noise barriers (direct line of sight)
	dB LWA	metres	metres
Earthworks	118	65	700
Vibropiling or hammer piles	<120	80	800
Typical retaining wall construction	107	20	280
Structures piling/foundations	110	40	370
Above ground bridge works	107	20	280
Pavement construction	110	40	370
Staging area/construction yard	100	10	150

Construction noise is predicted to comply with the day-time limits for the dwellings at 2750 and 2528 Mokau Road. The construction noise effects at these locations during the day-time are considered acceptable.

24/7 construction is proposed for the tunnel and general construction activities are proposed for Monday to Sunday 6:30am to 9:00pm. At 2750 Mokau Road shielding from the local topography is expected to enable compliance with both day-time and night-time noise limits.

At 2528 Mokau Road there is the potential that construction works outside Monday to Saturday 7:30am to 6:00pm will exceed the construction noise limits. Similarly, works at the spoil disposal site at 2397 Mokau Road have the potential to exceed day-time construction noise limits.

To manage noise effects during construction a CNMP has been prepared and implemented to address noise management at these two receivers. The CNMP will be prepared in accordance with the requirements of NZS 6803:1999 and will detail mitigation measures and procedures to enable compliance with the limits, including the management and communication procedures for any night works affecting these receivers (a draft CNMP is presented in Volume 5).

With the adoption of a CNMP and appropriate scheduling night works so that general compliance with the limits is achieved, construction noise effects associated with the Project will be no more than minor.

9.15.3.3 Effects of construction vibration

Vibration generating construction activities have been assessed for a range of plant and equipment and separation distance requirements to meet vibration criteria have been identified in Table 9.10.

The separation distance predictions in Table 9.10 adopt the following thresholds for determining the effects of construction related vibration:

High Risk	Vibrations predicted to exceed criteria that avoid annoyance of receivers; and potential damage to buildings.
Medium Risk	Vibrations predicted to exceed criteria that avoid annoyance of receivers; but comply with criteria that avoid damage to buildings.
Low Risk	Vibrations predicted to comply with criteria that avoid annoyance of receivers; and damage to buildings.

Table 9.10 - Vibration generating activities and required separation distances to meet risk criteria

Equipment	Separation distances	
	Occupied Dwellings (Residential)	All Other Buildings
Vibrating Roller	High: <20m Med: 20-90m Low: >90m	High: <5m Med: 5-20m Low: >20m
Vibropiling	High: <20m Med: 20-120m Low: >120m	High: <5m Med: 5-20m Low: >20m
Impact Piling	High: <20m Med: 20-150m Low: >150m	High: <5m Med: 5-20m Low: >20m

While not currently planned as part of the Project construction activities, vibropiling and impact piling have been included in the analysis as it is possible they could be used during construction of the bridge over the Mimi swamp forest. That site is more than 900m to the nearest dwelling and vibration effects are not expected.

Vibratory roller activity will occur during pavement formation, in which case the separation distance to the nearest dwelling is at 2528 Mokau Road, which is about 100m. Work to the south of Chainage 5250m involves overlay to the existing road profile and hence vibration effects are not expected at 2397 Mokau Road.

Overall, any construction vibration effects are expected to be no more than minor.

9.15.4 Management of contaminated land

This section outlines the potential effects of contaminated land on human health and the environment as a result of the works. A detailed assessment of the effects of the Project on Contaminated Land is presented in Technical Report 12 (Volume 3 of the AEE). Along with a site visit, the assessment involved review of:

- Property files from the District Council;
- The Regional Council Register of Selected Land Use (RSLU) and incident register;
- Current and historical aerial photographs; and
- Current and historic certificates of title.

The contaminated land investigation identified the following potential activities which could have resulted in ground contamination along the Project alignment:

- Fly tipping has occurred at locations along existing SH3, particularly at the summit rest area;
- Farm dumps at the rural properties at the northern and southern ends of the Project alignment are likely. Illegal dumping of material has been reported;
- Storage of fuels, chemicals and wastes associated with farming operation; and
- Possible structures containing asbestos-containing materials (ACM).

There have also been reports of spills along existing SH3 where accidents have happened.

Based on this assessment, there is potential for activities to have occurred which are listed on the Ministry for the Environment's (MfE) Hazardous Activities and Industries List (HAIL). If encountered during construction, contaminated soils can present a risk to human health and the environment.

The potential effects of the contaminating activities are likely to be isolated to near surface soils, which are likely to be removed during construction activities. The Contaminated Land Assessment concludes that it is highly unlikely for any contamination to be at a sufficient level to pose a risk to human health and the environment upon completion of the construction works.

To address the risk posed by contaminated soils encountered during construction a CLMP will be prepared (a draft CLMP is presented in Volume 5). The CLMP will address the management, monitoring and reporting requirements with respect to contaminated land encountered during construction.

Overall, the potential adverse effects of the Project on human health and the environment, with the implementation of the CLMP are considered to be no more than minor.

9.15.5 Effects of land disturbance activities and construction related water discharges

9.15.5.1 Introduction

This section considers the effects of land disturbance activities (earthworks and vegetation clearance) associated with Project construction. It includes consideration of the erosion and sediment control measures that will be used to minimise sediment discharges from construction stormwater. A detailed assessment of construction water discharges is presented in Technical Report 13 (in Volume 3) and management methods are described in the CWMP in Volume 5 and in the erosion and sediment control drawings in Volume 2 (Drawings MMA-DESESC-C0-DRG-1000 to 1010 and 4001 to 4008).

As described in Sections 8.3.4, the Project is located within a sensitive area, with high quality indigenous terrestrial and aquatic flora and fauna. The local geology is dominated

by papa mudstone, which has a large influence on stream substrate and sediment loadings. Stream bed gravels are soft and the stream environments are subject to relatively high natural sediment loads from the associated catchments.

The topography of the area is characterised by steep slopes (typically greater than 20%), and areas of valley floor with slopes typically less than 10%. In general, the Project is located within the lower slopes above the valley floor, to avoid both the steeper slopes and the wetter valley floor environment.

9.15.5.2 Erosion and sediment controls

Erosion and sediment controls for the Project are outlined in the CWMP and will involve the interception and treatment of sediment-laden runoff from the various construction areas along the Project. The controls will be carried out in accordance with the Transport Agency and Taranaki Regional Council land disturbance guidelines.

The erosion and sediment control measures proposed for the Project will be designed to minimise the extent of soil erosion and manage any resultant sediment yield. Erosion control will be the highest priority in the design of Project erosion and sediment control measures as it prevents sediment generation in the first instance. This is particularly important when considering the steep existing slopes associated with the Project.

The general sediment control measures to be used on the Project are:

- Sediment retention ponds;
- Decanting earth bunds;
- Container impoundment systems;
- Silt fences and filter socks; and
- Chemical treatment (use of flocculants).

The CWMP (refer Volume 5) sets out the methods that will be in place to manage all land disturbance aspects of construction, summarised as follows:

- **Vegetation removal** – Prior to undertaking any vegetation removal that creates an erodible surface, erosion and sediment control measures that apply to the subsequent earthworks operation shall be installed.
- **Haul roads and access tracks** – where roads or tracks might become sources of sediment, dirty water diversion drains will be constructed on each side of road to receive and direct runoff to a treatment device.
- **Stockpiles** – SCWMPs will be prepared for temporary stockpile sites which shall identify locations, setbacks from watercourses, clean and dirty water diversions, treatment devices, and dust control methods.
- **Spoil disposal sites** – Erosion and sediment controls will be installed for all spoil disposal sites and will comprise a dedicated treatment device (a sediment retention pond or decanting earth bund), bunding and silt fences to contain all saturated soils or other wet materials (if any), permanent stream diversions within the disposal site, and clean water diversion drains.
- **Construction yards** – controls will comprise silt fences installed around the perimeter of the yard during the yard establishment phase of works (if necessary), stabilised

construction entrances, dirty water diversion drains as required to intercept and divert runoff to a dedicated treatment device, clean water diversions around the upslope perimeter.

- **Stream works** (culverts, diversions – both temporary and permanent) – will comprise both offline diversion, constructed in the dry before the stream diversion takes place (most diversions), and online diversions only in the steeper gullies. For each diversion a SCWMP will be prepared detailing the sequencing and controls required.
- **Bridge construction** – A SCWMP will be prepared for the bridge construction works. Methods will include: treatment of dirty water in a treatment device, super silt fences around and below the bridge abutment and pier locations but above the stream bank profile, pumping any sediment laden or cement laden water within the abutment and pier excavations to the nearest treatment device for pH or to a sucker truck for removal.
- **Tunnel construction** – A SCWMP will be prepared for tunnel construction works. This will address requirements for yards or access associated with tunnel construction. Significant groundwater is not expected to be encountered during tunnelling. Any drainage will be collected and treated in a treatment device. Drainage from concreting activities collected and treated for pH control (where required).
- **Bulk earthworks** – construction water management and erosion and sediment control measures for the bulk earthworks stage of the Project will include measures specific to the site and stage of works, and will include:
    - Decanting earth bunds.
    - Silt fence and super silt fences.
    - Where practical, clean water diversion channels, bunds and checks to separate clean water from sediment laden water, progressively installed as works proceed.
    - Sediment retention ponds.
    - Progressive and rapid stabilisation of disturbed areas throughout the Project. Stabilisation will particularly apply at stockpile areas and batter establishment to reduce both erosion and dust generation.

9.15.5.3 Effects of construction water discharges

Construction of the Project will occur over a total area of approximately 36 hectares. Of this, 19 hectares comprises the proposed road alignment and 17 hectares the works to enable construction (e.g. access, spoil disposal sites, laydown and yards).

Approximately 890,000m^3 of excavated (cut) material will be generated from the site and some 835,000m^3 of material will be placed in fill embankments on-site. As such, excess fill will be created and disposed of within the designation boundaries either in disposal sites or embankments.

The discharge of sediment laden runoff from disturbed land to aquatic environments has the potential to result in adverse effects on associated flora and fauna through reduced water quality conditions and smothering of habitats. The measures summarised above and

described in the CWMP are designed to reduce sediment losses from disturbed areas during construction.

Sediment yield estimates have been prepared for losses anticipated for the earthworks areas using similar calculations applied on other Transport Agency projects in similar geologies[64]. Yields have been established for the Project in relation to the two catchments draining the Project area, being the Mangapepeke (which is part of the wider Tongaporutu cachment) and the Mimi catchments. Estimates have also been prepared for the natural sediment yield for these catchments. The estimates are for the catchment area draining to the extent of the works site (i.e. from a relatively small catchment area where the Project footprint makes up a significant portion of the overall catchment to that point) and for the wider catchment area at the coastal margin (i.e. a much larger catchment area within which the Project footprint is very small). Results are presented in Table 9.11 below.

Table 9.11 – Comparative Sediment Yield

Catchment		Catchment area (ha)	Project Earthworks (ha) (% catchment area)	Potential Sediment Yield from Earthworks (tonnes)	Potential Natural Sediment Yield from Catchment (tonnes)	% increase in Sediment Yield
Tongaporutu Catchment	To Project extent	332.4	24.6 (7.4%)	1207	2,625	46%
	To coast	21,237	24.6 (0.12%)	1207	167,770	0.7%
Mimi Catchment	To Project extent	978.4	11.4 (1.2%)	560	7,729	7.2%
	To coast	13,235	11.4 (0.09%)	560	104,550	0.5%

The analysis shows that the significance of the potential Project sediment yield, relative to natural yield from the catchment, reduces markedly with progression downstream in response to inflows and contributions from the wider catchment land area. In the Mangapepeke, as the Project area represents a larger proportion of the catchment, the percentage increase in sediment yield is more significant. In the Mimi the contribution is less significant at the edge of the Project footprint given the large size of the upstream contributing catchment.

Available baseline water quality information indicates that both the Mangapepeke (and downstream Tongaporutu) and Mimi streams carry a relatively high sediment load during storm events. The assessment of freshwater ecology (Technical Report 7b) concludes that provided best practice erosion and sediment controls are in place during land disturbing activities as described above and in the CWMP, any adverse effects on receiving environments can be appropriately mitigated. Some sediment is likely to be discharged from areas of works during rainfall events, but this will generally occur when the streams are under higher flows and receiving sediment from other sources in the catchment. Given the natural conditions that exist, and assuming best practice erosion and sediment control

[64] In particular, the Puhoi to Warkworth Project.

as described in the CWMP, the effects of construction discharges on receiving environments should be no more than minor.

9.15.6 Effects of construction on groundwater

Construction activities may encounter groundwater in the underlying rock during excavation works for the cuttings and in the tunnel. While only limited groundwater monitoring information is available from the geotechnical investigations completed to date, the underlying papa rock is known to have low groundwater transmissivity rates. If groundwater is encountered during excavations limited seepage will occur from the cut faces and from the tunnel excavation.

At the cuttings, it is anticipated that a number of perched water tables will be present within the coarser sandstone layers, with limited vertical hydraulic connectivity through the finer-grained mudstone and clayey siltstone beds. Based on the available information, preliminary modelling of possible groundwater seepage from the road cuttings indicates that in the order of 10 to 30m^3/day of groundwater could drain from the combined total area of cut faces along the Project alignment.

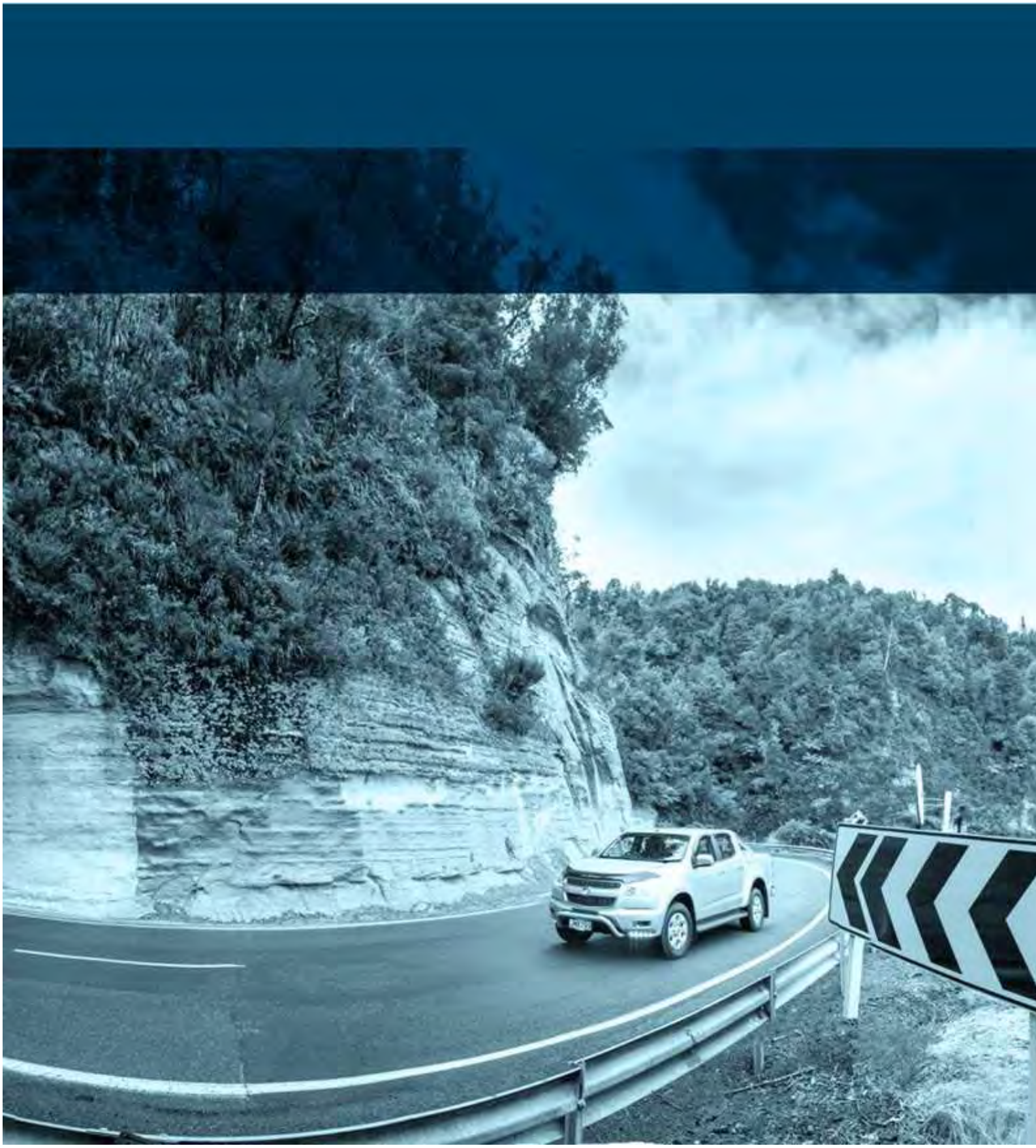
Significant groundwater inflow to the tunnel is not anticipated based on the available hydrogeological information. Preliminary modelling indicates in the order of 10m^3/day of groundwater inflow is possible for the fully excavated tunnel.

General lowering of groundwater levels within the bedrock as a result of the proposed tunnel and rock cuttings is not expected to have any significant impact on the moisture availability for vegetation on the slopes beyond the construction works. This is expected to be controlled primarily by pore water held in the near-surface soils replenished by direct precipitation, rather than root systems reaching down to deeper groundwater sources. However, groundwater lowering and a reduction in moisture availability will occur locally within the soils along the top of cuttings, which may impact on vegetation in the areas affected. Similarly, any ground settlement that occurs as a consequence is not expected to be noticeable and will not result in adverse effects.

There are no know users of groundwater in the vicinity of the tunnel or cuttings. Accordingly the taking and diverting of groundwater from these locations will have no effect on groundwater users.

Overall the effects of construction on groundwater levels or groundwater drawdown are expected to be negligible.

Section 10 – Management of Effects on the Environment



10 Management of Effects on the Environment

10.1 Introduction

This section outlines the environmental management measures to be implemented prior to, during and post construction of the Project, to avoid, remedy, mitigate or offset effects on the environment as identified in Section 9 of this AEE.

The Project (as reflected in this AEE, the drawings in Volume 2 and technical reports in Volume 3) has sought to avoid or mitigate adverse effects through the route selection process, the design of Project elements and the management of the construction works.

The assessment of effects in Section 9 of this AEE and the supporting technical reports in Volume 3, identify a number of positive and adverse effects on the environment expected to result from the construction and operation of the Project. Where it has not been practicable to avoid adverse effects, the measures described in this section have been developed to remedy, mitigate or offset them.

The key measures developed to avoid, remedy, mitigate or offset effects of the Project have been discussed through the AEE (particularly in Sections 4, 5 and 9) and are:

- A substantial mitigation and biodiversity offset package;
- An overarching CEMP to address both designation and resource consent matters related to construction of the Project;
- A series of specific management plans that detail the measures that will be in place to avoid, remedy, mitigate or offset environmental effects, including construction water management, ecology and landscape management, pest control, contaminated land management; construction traffic management dust, and construction noise management;
- Site or activity specific components of the CEMP and management plans to manage particular effects during construction (e.g. detailed Specific Construction Water Management plans);
- An accidental discovery protocol to address the management of any unexpected discovery of archaeological sites; and
- Protocols, outlined as part of the CEMP, to communicate with the local community and stakeholders for the duration of construction of the Project on construction activities.

These measures will be formalised through the Project designation and resource consent conditions.

10.2 Designation and Resource Consent Conditions

A suite of designation and resource consent conditions has been developed so that the potential adverse effects that may arise from the construction, operation and maintenance of the Project will be avoided, remedied, mitigated or offset (Refer draft conditions set out in Appendix D of AEE, Volume 1). Table 10.1 identifies the key topics addressed in the designations and resource consent conditions.

Table 10.1 – Designation and consent condition topics

Designation Conditions	Resource Consent Conditions

Construction Works
• Construction management, including:
  o the CEMP and management plans;
  o Complaints management;
  o Communications;
  o Incident management.
• Construction noise management.
• Construction traffic management.
• Ecological and landscape management including restoration and rehabilitation planting, and pest management.
• Archaeology management, including Accidental Discovery Protocol.
• Access to existing walking tracks.
	Construction Works
	• Construction management, including:
	  o the CEMP and management plans;
	  o Complaints management;
	  o Communications;
	  o Incident management.
	• Construction water management, including:
	  o earthworks and land disturbance activities (including vegetation clearance);
	  o temporary stormwater management;
	  o construction phase streamworks (i.e. installation of temporary culverts, temporary stream diversions).
	• Dust management.
	• Disturbance of contaminated land.
	• Ecology and landscape management including restoration and rehabilitation planting, and pest management.
	• Surface water abstraction for construction related purposes.
	Permanent Works
	• Ecology and landscape management including restoration and rehabilitation planting, and pest management.
	• Works in a watercourse – installation of permanent culverts, permanent stream diversions.
	• Operational stormwater management.

10.3 Management Plans

This section sets out the framework of management plans required to avoid, remedy, mitigate or offset effects associated with the Project. The proposed management plan framework is shown in Figure 10.1.

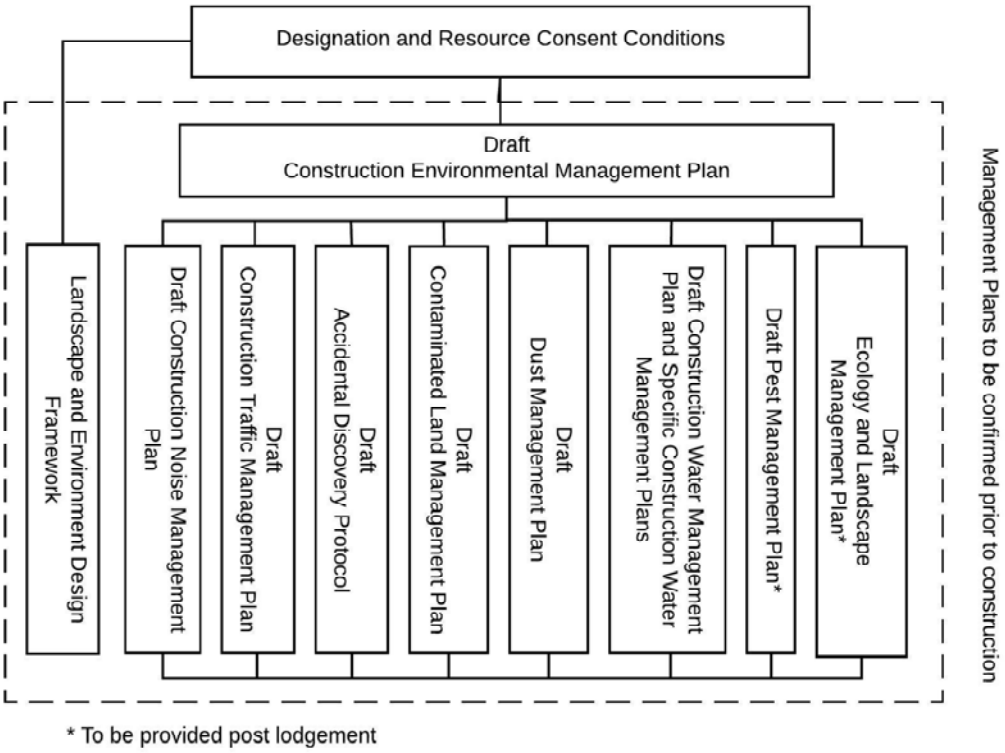


Figure 10.1 – CEMP and Management Plan framework

10.3.1 Construction Environmental Management Plan

The CEMP is the overarching management plan which sets out the framework to manage the activities associated with construction of the Project. The principles and general approach (including methods and tools) to managing the effects are set out in the CEMP, with detailed management methods described in the suite of specialised management plans. Its purpose is to ensure that construction activities are appropriately managed during all stages of construction to avoid, remedy, mitigate or offset effects associated with the Project.

A draft CEMP has been prepared for the Project (refer Volume 5). It will be finalised prior to the commencement of construction to meet the requirements of the designation and resource consent conditions.

The Transport Agency (through the Mt Messenger Alliance) will undertake all construction activities in accordance with the provisions of the relevant designation or resource consent conditions, the CEMP and management plans.

The CEMP will provide details on:

- Construction activities and related cultural, environmental and social aspects of the Project, including:
  - the location of key construction activities;
  - details on cultural protocols developed with Ngāti Tama;
  - the receiving environment and sensitive receptors;
  - environmental management requirements.
- Staff and contractors' roles and responsibilities.
- Training requirements for employees, sub-contractors and visitors.
- Environmental incident and emergency management.
- Environmental complaints management.
- Environmental monitoring and auditing.
- Corrective action and continuous learning.
- Stakeholder communication, methods and interface procedures.
- Reporting.
- Review of the CEMP and management plans during construction.

The draft designation and resource consent conditions detail the matters to be addressed in the CEMP (and that are to be included in the final version of the CEMP).

The CEMP and management plans are subject to review and updating during construction to reflect changes to activities, risks, mitigation measures, responsibilities and management processes. The draft conditions provide that reviews of the CEMP and all management plans are to be carried out annually, and list matters to be taken into account in the reviews. The conditions also set out the processes for updating the CEMP and other management plans.

10.3.2 Ecology and Landscape Management Plan

An ELMP will be prepared following lodgement of the application to detail the management and rehabilitation, mitigation and offset measures that will be implemented to avoid, remedy, mitigate or offset ecological and landscape effects associated with construction of the Project and once the Project is operational (a framework document is presented in Volume 5). It will cover the rehabilitation of the site works, ecological mitigation and ecological planting (including terrestrial and riparian mitigation planting and swamp forest restoration planting), animal pest management (in the Pest Management Plan) and the management and monitoring of terrestrial vegetation, riparian and freshwater environments, avifauna, herpetofauna and bats.

The Plan will include a number of protocols and management measures to minimise the impact of construction on flora and fauna, as outlined in Table 10.2 (these are also outlined in Technical Report 7h). It will also include post construction monitoring.

Table 10.2 – Protocols to be included in ELMP

Ecological Protocol	Protocol summary
Vegetation clearance	• Methodology for the removal, pruning and protection of high value vegetation to be retained during construction, including: o Physical delineation (such as fencing or flagging tape) to show the extent of vegetation clearance, along with vegetation to be retained. o Vegetation will be cleared only prior to construction works beginning in the Project footprint in order to reduce habitat effects and reduce the potential for erosion and sediment generation. o Supervision of vegetation clearance by a suitably qualified ecologist. • Methodology for removal of vegetation for re-use on site including seeds/cuttings, plants, ponga logs, forest duff, manuka slash, vegetation for mulching. • Procedures for minimising the area and duration of soil exposure from vegetation clearance, minimising the volume of vegetation to be mulched, locating wood residue piles with an appropriate separation distance from any waterways, and minimising potential leachate from these piles.
Lizard Management	• Pre-construction surveys to detect the presence of herpetofauna species, and the habitats they occupy. • Methodology for salvage and relocation to minimise loss of herpetofauna within the Project footprint, including timing and construction supervision details. • Release site/s selection based on habitat suitability assessment and capability of supporting additional herpetofauna. • Habitat enhancement at the release site(s), including provision of refugia.
Bat Management	• Trapping, banding and radio tracking of long-tailed (and possibly short-tailed bats) bats to locate and describe bat roosts within the Project footprint, and identify important foraging areas prior to construction. • Protocols for identification of potential bat roost habitat. • Implementation of tree removal protocols when clearing vegetation which could potentially offer roosting habitat for bats. • Protocols for bat injury and mortality.
Avifauna Management	• Pre-construction surveys to detect the presence of avifauna species, and the habitats they occupy. • Vegetation clearance methodology (links to the vegetation clearance protocol).

Ecological Protocol	Protocol summary
	• Specific management to avoid or mitigate effects on the North Island Brown Kiwi. • Timing of works to minimise disturbance during bird breeding season as practicable.
Fish Recovery	• Methodology to minimise direct effects of construction on fish, kōura and kākahi (freshwater mussels) prior to draining, diverting or excavating streams. This will address: o Recovery of fish prior to instream works; o Rescue of fish from any spoil o Relocation of fish; o Reporting. *Note: The CWMP details the protocols for works in streams including, the diversion and realignment of watercourses and activities such as culverting and the installation of erosion protection structures.*

Monitoring of ecological resources prior to and during the construction phase, along with post construction monitoring will be detailed in the ELMP to measure the effectiveness of environmental controls and to provide feedback for the adjustment of the controls.

A number of potential ecological effects will also be avoided or mitigated through the implementation of construction water management (including erosion and sediment control), noise management, dust management practises, and contaminated land and spill response procedures addressed in the CEMP and other management plans.

The mitigation and biodiversity offset planting and rehabilitation treatments will be carried out to mitigate and offset the vegetation and habitat loss associated with construction of the Project. This will include restoration planting of 6ha of swamp forest and wetland, restoration of 8.9km of riparian margin, replacement mitigation planting of 9ha, and rehabilitation treatment to revegetate as much of the construction footprint that will not be road as is practicable.

10.3.2.1 Pest Management Plan

The ecology technical reports prepared for the Project (Technical Reports 7a – 7h in Volume 3 of the AEE) identify that introduced animal pests have significant impact on the indigenous plants and animals in the forest and wetland areas within and adjacent to the Project footprint. Pest management is therefore the priority focus for offsetting Project effects as it will result in the most immediate and sizeable ecological benefit.

Intensive long-term pest management will be undertaken over a Pest Management Area of approximately 560ha area in perpetuity (or until such time as pest management is no longer required). Pest management will include:

- A long-term pest management programme (targeting possums and mustelids), which will include a ground-based poison and trapping regime or a combined aerial and ground-based approach over the full Pest Management Area; and
- Periodic hunting of feral goats, pigs and deer (annually, once numbers have been reduced).

Depending on the location of land chosen for pest management, farm livestock will need to be excluded completely by the construction of permanent eight-wire post and batten fences wherever effective fences don't currently exist.

A detailed Pest Management Plan will be prepared following lodgement of the application and form an appendix to the ELMP. It will be well integrated with all other restoration activities proposed for the Project. The Plan will be prepared by a person experienced in the management of multiple pest species in forested and wetland environments and contain information regarding:

- Target pest species;
- Appropriate residual trap catch targets to achieve the desired biodiversity outcomes;
- Grid line and trap and bait station spacings;
- The timing of bait applications, trap set and hunting effort;
- Monitoring requirements to determine if the target outcomes are being achieved; and
- The skill requirements of the personnel employed to undertake this work.

Pre-construction monitoring of pest densities in the proposed Pest Management Area will be necessary to help develop the details of the Pest Management Plan and to serve as a baseline against which the successfulness of the pest management programme can be measured.

10.3.3 Construction Water Management Plan

A draft CWMP has been prepared for the Project (refer Volume 5). The CWMP provides a framework for the following:

- Erosion and sediment control approach, principles and management practises to be implemented during construction of the Project so that potential or actual discharges of sediment from the site are minimised;
- Site monitoring and auditing functions, including the monitoring programme to be implemented during construction; and
- Management of other contaminants which may directly or indirectly discharge into receiving environments from site activity, such as concrete and fuel use.

The draft resource consent conditions detail the matters addressed in the CWMP (and to be included in the final CWMP).

The approach for construction water management during construction of the Project as set out in the CWMP is to:

- Prepare a strategy to assist with medium to long term construction decision making;
- Prepare detailed Specific Construction Water Management Plans (SCWMPs) for area and activity based planning (refer to Section 10.3.3.1); and
- Have an experienced and involved team to ensure that all relevant aspects of the Project are taken into consideration as part of planning and decision making. A comprehensive monitoring programme will be implemented as part of this (refer to Section 10.3.3.2).

This approach will ensure that adequate Project team resources, commitment and expertise are available for construction water management (including the implementation of erosion and sediment control measures) from start to finish of the Project (i.e. design and construction planning through to disestablishment of controls and reinstatement of the site).

10.3.3.1 Specific Construction Water Management Plans

Detailed SCWMPs will be prepared for specific works areas or activities within the site (outlined in Technical Report 13) in accordance with the CWMP. SCWMPs will provide the detailed design of specific construction activities, specific erosion and sediment control measures and location, staging and sequencing of works for that location or activity.

The SCWMPs will take into account environmental and ecological values and risks to determine the most effective and appropriate form of erosion and sediment control devices and management practices required to manage construction water on a location and/or activity basis.

The SCWMPs will consider a number of factors:

- The specific construction activity to be undertaken and associated risk;
- The area and volume of the earthworks and / or streamworks;
- The location of the works with particular consideration of the receiving environment;
- The duration of the works;
- The time of the year that the works are to be undertaken; and
- Specific construction water management methodologies and design criteria.

The draft resource consent conditions require the preparation of the SCWMPs.

The SCWMP process also allows for ongoing improvement as a consequence of learning from the Project's comprehensive monitoring programme.

10.3.3.2 On-site monitoring

A comprehensive monitoring programme will be implemented during construction, as per the CWMP. The focus of this monitoring programme is the management of sediment yield from the Project.

The monitoring programme will involve ongoing site monitoring throughout the construction phase to check that construction water management measures have been installed correctly, and methodologies are being followed and are functioning effectively.

Monitoring results will be used to identify future risks to freshwater ecology based on pre-determined management trigger levels. These triggers require an investigation and ongoing improvement opportunities to be considered and implemented as appropriate by the construction team.

The monitoring programme will include an assessment to determine what further measures are required to reduce sediment yield. Monitoring will include a feedback loop until it has been verified that the implemented responses have been successful in minimising sediment yields from the Project.

10.3.4 Contaminated Land Management Plan

A draft CLMP (Volume 5) has been prepared to manage the potential for adverse effects relating to the disturbance of potentially contaminated land during the construction of the Project. Specifically, the purpose of the CLMP is to:

- Ensure that the earthworks required as part of the Project are appropriately managed and that contaminated or potentially contaminated soils are identified, handled and disposed of in an appropriate manner; and
- Provide procedures to manage potential ground contamination effects on human health and the environment during ground disturbance activities associated with proposed earthworks.

The CLMP contains details of:

- Roles and responsibilities for management and implementation of the CLMP;
- Health and safety precautions including personal protective equipment to manage inhalation and dermal contact with contaminated material;
- Spoil sampling requirements prior to the commencement of works;
- Contaminated soil management, including reuse, and off-site disposal;
- Management of stockpiling, including cover to stop dust and runoff;
- Stormwater and erosion and sediment controls;
- Imported fill requirements; and
- Unexpected contamination discovery protocols.

The CLMP will be implemented during construction under the supervision of a Suitably Qualified and Experienced Practitioner as required by the NES Soil and defined in the NES Soil Users' Guide (April 2012).

10.3.5 Dust Management Plan

A draft DMP (refer Volume 5) has been prepared to manage, mitigate and monitor dust emissions during construction of the Project. The objective of the DMP is to detail the best practicable option to avoid dust nuisance being caused by construction works and to mitigate any such effects should they occur.

Matters addressed in the DMP are:

- Potential sources of dust that may be created during the construction Project;
- Sensitive receptors in the vicinity of identified potential sources of dust for targeted dust management;
- Dust management and mitigation methods; and
- Monitoring methods.

The draft resource consent conditions (refer Appendix D) set out the requirements for the DMP.

10.3.6 Construction Noise Management Plan

A draft CNMP (refer Volume 5) has been prepared. The draft CNMP outlines the specific measures relating to the control of noise during construction, to as far as practicable

comply with the noise standards in NZS6803:1999 "Acoustics – Construction Noise" (NZS6803:1999). The final CNMP will be confirmed prior to construction and will set out measures to appropriately address any activities that do not comply with the NZS6803:1999 standards.

At a minimum, the final CNMP will address the relevant measures in Annex E of NZS6803:1999. Specifically, the CNMP contains:

- A summary of the Project construction noise criteria;
- General work hours, construction practices, management and mitigation measures;
- Procedures to comply with NZS6803:1999;
- in respect of activities that may not comply with NZS6803:1999, noise management and mitigation specific to sites, activities and/or receiving environments;
- Communication procedures with receivers where works may exceed the relevant noise limits;
- Monitoring requirements; and
- The necessary setbacks for plant and construction equipment in relation to residential dwellings.

The draft designation conditions set out the requirements for the CNMP.

10.3.7 Construction Traffic Management Plan

A draft CTMP (Volume 5) has been prepared for the Project. The CTMP outlines the management, mitigation and monitoring of the effects of construction activities and construction traffic on other road users. The overall intent of the CTMP is to detail how traffic safety, access and efficiency effects caused by the construction works will be avoided, managed or mitigated should they occur.

The CTMP identifies the following:

- Construction activities that might create road safety and/or efficiency effects;
- Sensitive locations on the road network;

  Management procedures and mitigation methods;
- Monitoring methods;
- Arrangements for providing continuing access to properties, emergency services and walking tracks;
- The framework for reporting and review.

The draft designation conditions set out the requirements for the CTMP; as well as the requirements for ongoing access during construction.

As and if necessary site or activity specific traffic management plans (TMPs) will be in place during construction of the Project for discrete stages of work within the SH3 corridor. The TMPs describe the measures to be implemented to manage traffic effects associated with specific temporary road layouts or traffic management measures during construction. The TMPs will follow the format set in the Transport Agency Code of Practice for Temporary Traffic Management (CoPTTM).

The TMPs will be submitted to, and approved by, the Traffic Management Coordinator responsible for the section of road involved (in this case the SH3 road maintenance contractor). The TMPs will be assessed for compliance with CoPTTM and the ability to avoid or mitigate adverse effects on the travelling public. Draft TMPs have been included as an appendix to the draft CTMP for information.

10.3.8 Accidental Discovery Protocol

The draft Accidental Discovery Protocol (ADP) for the Project will be finalised in consultation with Ngāti Tama and HNZPT prior to the commencement of construction. The ADP will be in accordance with the Transport Agency's Accidental Archaeological Discovery Specification: P45[65].

The ADP will apply throughout the construction phase unless an archaeological authority for all Project works is obtained from HNZPT in accordance with Section 44(a) the Heritage New Zealand Pouhere Taonga Act 2014.

The ADP will set out the process and procedures that apply following the discovery of material that could be an archaeological site, kōiwi and/or taonga.

The specific aspects addressed by the ADP will include:

- Actions to be taken following the discovery of material including ceasing work in the immediate area and securing the area;
- The parties to be notified of the discovery and providing guidance on management of the discovery;
- The circumstances when an archaeological authority must be obtained from HNZPT; and
- When work in the area of the discovery can recommence.

The draft designation conditions set out the requirements for an ADP, and the relationship between the ADP and the archaeological authority that is anticipated to be sought for the Project.

10.3.9 Stakeholder Engagement

The CEMP contains protocols in relation to stakeholder engagement and communication during construction of the Project, as specifically required by the draft conditions. Other management plans also address stakeholder engagement and communication as appropriate.

During construction the stakeholder engagement and communications emphasis will be on keeping stakeholders and the wider public updated and informed on progress and timing to ensure a 'no surprises approach'.

Key objectives for stakeholder engagement during the construction phase are to:

- Inform local communities and other key stakeholders about the construction progress and timings;
- Continue to work closely with directly affected landowners and address any concerns;

[65] An example has been included with this CEMP.

- Continue to foster good relationships with stakeholders and provide opportunities for learning about the Project;
- Mark major Project milestones as appropriate; and
- Respond to stakeholder queries and complaints.

Stakeholder engagement and communications during the construction phase will include the following:

- A Project hotline, manned 24 hours a day, will be available for all stakeholders to communicate complaints and enquiries to the Project team;
- The Project website will be kept up to date with Project communications, such as construction updates, public notices, construction photos and videos;
- The Project email address can be used to communicate key Project information;
- Regular newsletters updates to keep stakeholders updated on Project progress;
- Meetings with key stakeholders to discuss specific Project aspects, as required; and
- An information kiosk with visual displays related to the Project and construction works.

10.3.10 Landscape and Environment Design Framework

A LEDF has been prepared for the Project (Technical Report 8b, Volume 3). The LEDF sets out the landscape and environmental design outcomes and approach for the Project and how these fulfil the Transport Agency's landscape and environmental design policy requirements.

The overall design concept for the Project is for an alignment that is integrated with the landscape that keeps low in the landscape and delivers an outstanding scenic highway. The Project will form a new valley to valley bypass of the mountain and existing SH3 alignment.

The following principles have been developed with respect to the landscape and environmental design aspects of the Project:

- Retain key landforms and ridgelines by using a tunnel;
- Minimise stream and valley crossings;
- Develop cut faces that echo natural slope angles;
- Seek to enable natural successional re-vegetation of the roadside;
- Has the potential to develop a programme of considerable landscape restoration;
- Provide an opportunity for cultural expression and recognition; and
- Deliver an enhanced driver experience and scenic amenity.

The LEDF also details the landscape design and treatments of engineered landscape forms and structural elements, and how these new features integrate with the existing landscape and vegetation (i.e. cut and fill slopes, the tunnel and bridge, stormwater management system). It also outlines the revegetation and restoration strategy to help rehabilitate and mitigate the vegetation and habitat loss within the Project area associated with construction works. Landscape concept plans are provided with the LEDF.

The LEDF will be finalised in consultation with key stakeholders, including Ngāti Tama.

10.4 Measures to avoid, remedy, mitigate or offset effects

The range of measures that have been incorporated into the Project to avoid, remedy, mitigate or offset the potential adverse effects on the environment are summarised in Table 10.3.

Table 10.3 – Summary of measures to avoid, remedy, mitigate or offset adverse effects

Avoidance of adverse effects	*Ecological, Cultural, Landscape, Natural Character and Visual* The nature and extent of potential effects of the construction and operation of the Project on cultural, ecological, landscape and natural character values have been avoided and / or considerably reduced through the route selection and design refinement process. In particular, the alignment has avoided: • Parininihi forest and Waipingao Valley, located to the west of the existing SH3, which are of very high ecological, cultural and landscape value. The area is part of the Parininihi Protection Project and subject to pest control by Ngāti Tama and the site of recently released kōkako. It is also a Regionally Significant Landscape in the New Plymouth District Plan. • The landmark peak of Mt Messenger. The design of the Project, has significantly reduced effects as follows: • Inclusion of a 240m long tunnel through the ridge dividing the Mangapepeke and Mimi catchments has greatly reduced the size of the cut and fill area that would otherwise have been required and has preserved the important east – west connectivity of habitat (ridge to coast) and mobile animal movement (especially bats). • Incorporation of a 120m long bridge across a tributary valley of the Mimi River on the south side of the route has significantly reduced the effects that a cut and fill approach would have had on the Mimi swamp forest. • Introduction of construction techniques to reduce ecological effects. For example, the bridge mentioned above has been designed in a way that will allow it to be constructed from each side rather than from the valley bottom. This will reduce the amount of ground and vegetation disturbance compared to a more conventional approach of building the bridge from the valley bottom, and it will also reduce the risk of sediment erosion down into the Mimi swamp forest. • Minor adjustments to the route to avoid the need to fell significant trees. The number of significant trees potentially needing to be felled has been reduced from 22 to 15 by this means. • Realignment of the road corridor, including shifting part of the corridor further from the Mimi swamp forest. • Location of construction yards, laydown areas, construction access tracks and haul roads away from ecologically sensitive/significant areas to minimise the extent of disturbance and vegetation clearance. • Use of retaining walls to avoid loss of significant trees / wetland where possible. • Location of spoil fill areas in areas likely to cause the least ecological effects.

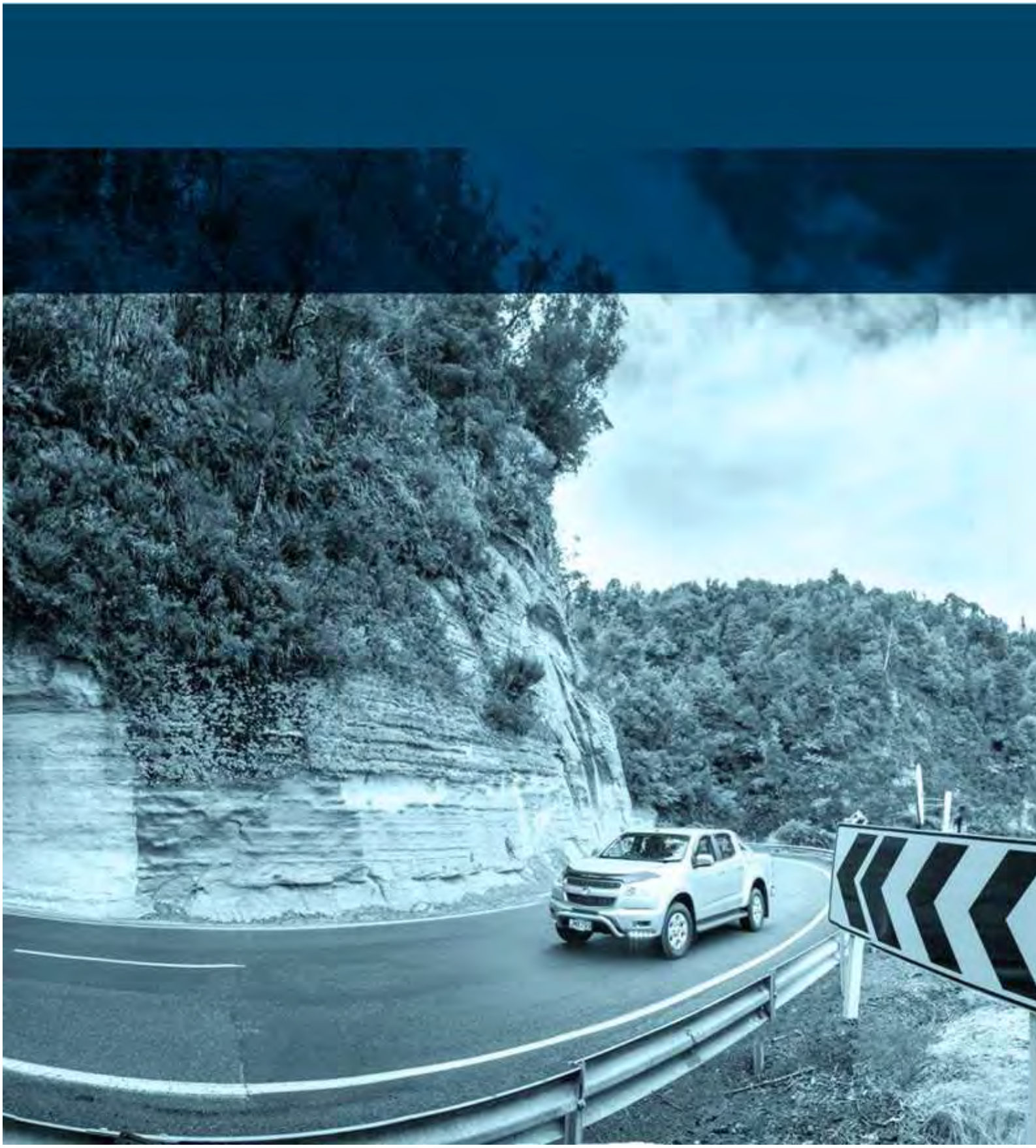
	Construction effects • The location of the alignment to the east of the existing SH3 corridor will enable much of the Project to be constructed offline from the existing SH3 and thus enable a number of effects on the SH3 network and the local community to be avoided. Construction activities that may impact the SH3 network will be limited to operation of the SAPs and the tie-ins to the existing SH3 network.
Avoidance, mitigation or offsetting of adverse effects – construction phase	*Ecology* Implementation of the ELMP and PMP to mitigate and manage residual ecological effects, including: • Protocols to avoid or mitigate ecological effects on flora and fauna. • A comprehensive and large scale pest control programme. • Restoration and mitigation planting. • Rehabilitation treatments. *Cultural* • Engagement and ongoing input from Ngāti Tama in detailed design and construction aspects of the Project. • Specific principles for the design of specific permanent design elements (e.g. tunnel portals). • Protocols for recognition of the cultural values and significance in which the Project sits (e.g. undertaking blessings for construction works). • Implement protocols for cultural monitoring of sensitive sites. • Develop an ADP for the Project in consultation with Ngāti Tama and HNZPT. *Landscape, Visual and Natural Character* The design of the Project has reduced potential adverse landscape and visual effects by: • Following the topography by connecting two valleys and crossing a single ridge rather than routes that followed spurs or crossed more than one ridgeline. • Adopting a tunnel to pass through the ridgeline, reducing potential effects on landform and bush. • Aligning the highway along the edge of the valleys, following the existing landscape patterns. Residual landscape, natural character and visual effects will be mitigated through implementation of the ELMP.

	Construction water • Implement erosion and sediment control measures during construction, including structural (physical) and non-structural (site management and staging of the works) measures to meet the Regional Council and Transport Agency requirements for land disturbance activities. • Preparation of SCWMPs. • Comprehensive on-site monitoring to successfully implement effective erosion and sediment controls that respond to the Project constraints and continuously improve the management approach. *Contaminated Land* • Manage effects on human health and the environment associated with works in contaminated land through implementation of the CLMP. This will enable potentially contaminated soils to be identified, handled and disposed of in an appropriate manner. *Social* • Ongoing communication with affected property owners, including Ngāti Tama and DOC. • Regular communication and liaison with stakeholders and the public prior to, and during, construction. • A full-time contact phone number for stakeholders to liaise with the Alliance on any issues that arise during construction. • Implementation of the CEMP and management plans during construction, particularly the CNMP and the CTMP. • Formalised complaints and response process. *Construction Traffic* • Implementation of the CTMP to minimise disruption to road users of the SH3 corridor and private property access during construction. • Preparation of TMP where works are required on the SH3 network, such as tie-ins at the northern and southern extents of the alignment. *Construction Noise* • Compliance with Project noise limits during construction subject to the exceptions provided for in the CNMP. • Implementation of the CNMP to determine necessary setbacks, and mitigation measures where works will exceed the Project noise limits. • Consultation with occupants of dwellings that may be impacted by night time works.

	• Limiting night time works in the southern spoil disposal area as far as practicable to minimise impacts on the dwelling at 2397 Mokau Road. *Construction Dust* • Manage construction activities in accordance with the DMP to reduce the potential for dust discharges, particularly in relation to sensitive receptors. Mitigation measures may include keeping surfaces damp, limited stockpile heights, sealing or stabilising surfaces, or controlling traffic speeds. • Visual monitoring of dust emissions. • Implementation of specific dust management measures at the southern spoil disposal site to minimise adverse effects on the dwelling at 2397 Mokau Road. *Heritage and Archaeology* • Undertake works in accordance with the Project ADP so that appropriate steps are taken in the event of archaeological discoveries (where no Archaeological Authority is in place). • Undertake works in accordance with the Archaeological Authority once obtained. *Recreation* • Public access to the Kiwi Road Track during construction will be provided when possible and as safety permits during working hours, and during weekends and after work hours. The Track may need to be diverted during the works in the immediate vicinity of the construction site.
Avoidance, mitigation or offsetting of adverse effects – operational phase	*Ecology* • Implementation of the PMP to provide for ongoing pest control within the Project area. *Landscape, Visual and Natural Character* • Implementation of the LEDF and ELMP. *Stormwater discharge* • The stormwater network will be designed in accordance with the Transport Agency's Stormwater Treatment Standard for State highway Infrastructure as appropriate for the rural environment in which the Project is located. • Runoff will be collected and conveyed in a safe, low-maintenance and simple drainage network.

	• Culvert crossings will be used to maintain flows across valleys and natural flowpaths within the Project area. • Stream diversions will be minimised where practical, and existing streams improved where diversions are necessary. • Constructed wetlands will collect road run-off and provide treatment, extended detention to minimise scour/erosion of streams and contain emergency spills. • Fish passage, where it exists naturally, will be maintained and provided for as practicable in new culverts. *Recreation* • Opportunities to provide a combined rest area and parking and entry points for the Kiwi Road and Mt Messenger Tracks; improved management options for fly-tipping; improved passive surveillance; and improved amenity for road cycling.

Section 11 – Statutory context and assessment



11 Statutory context and assessment

11.1 The Transport Agency

The Transport Agency is the requiring authority and applicant for the Project. The sections below set out the objectives, principles and functions of the Transport Agency.

11.1.1 The Transport Agency – Operating Principles and Functions

The Land Transport Management Act 2003 (LTMA) provides the statutory framework for New Zealand's land transport system. It is also the statute under which the Transport Agency operates (in conjunction with the Government Roading Powers Act 1989 and the Land Transport Act 1998).

The Transport Agency's objective is set out in Section 94 of the LTMA as being:

"to undertake its functions in a way that contributes to an effective, efficient and safe land transport system in the public interest."

The Transport Agency's functions are set out in Section 95(1) and include:

(a) to contribute to an effective, efficient, and safe land transport system in the public interest…

(c) to manage the State highway system, including planning, funding, design, supervision, construction, and maintenance and operations, in accordance with this Act and the Government Roading Powers Act 1989:

The principles under which the Transport Agency must operate are set out in Section 96 and include:

"(1) In meeting its objective and undertaking its functions, the Agency must –

(a) exhibit a sense of social and environmental responsibility, and, –

(b) use its revenue in a manner that seeks value for money, and,—

(i) if the revenue is part of the national land transport fund, in accordance with Section 10(3); and

(ii) in all other cases, for the purpose for which it is collected; and

(c) ensure that its revenue and expenditure are accounted for in a transparent manner; and

(d) ensure that—

(i) it acts in a transparent manner in its decision making under this Act; and

(ii) it gives, when making decisions in respect of land transport planning and funding under subpart 1 of Part 2, the same level of scrutiny to its own proposed activities and combinations of activities as it would give to those proposed by approved organisations."

11.1.2 Power to construct and operate road

The Government Roading Powers Act 1989 provides the Transport Agency with powers in relation to the construction, operation and maintenance of State highways.

Subsection 61(2) provides the Transport Agency various powers in respect of roads granted to local authorities under the Local Government Act 1974, including the ability to construct footpaths and cycleways. Powers under subsection 61(4) include:

"(4)The Agency shall have power to do all things necessary to construct and maintain in good repair any State highway, and in particular, but without limiting any power conferred on the Agency elsewhere in this Act, to do the following things:

a) *to alter the line of any State highway, but a new line shall not be laid out by the Agency without the written consent of those persons whose written consent would be required under Section 114(2) of the Public Works Act 1981 if the land were to be declared to be a road:*
b) *to increase or diminish the width of any State highway:*
c) *to determine what part of a State highway shall be a carriageway and what part a cycle track or footpath only:*
d) *to construct, erect, dig, or grow on any State highway, or remove from it, such barriers, dividing strips, guide or sign posts, pillars, or other markers, trees, hedges, lawns, gardens, and other devices, as may in the opinion of the Agency be necessary or desirable:*
e) *to place or construct temporarily or permanently on any carriageway any reasonable device or thing for the purpose of controlling vehicle speeds, if it is desirable for the safety of road workers or users of the State highway, or members of the public, or to protect any part of the State highway:*
f) *to place or construct, or allow to be placed or constructed, on any State highway clear of the carriageway any road-making or maintenance materials, plant and equipment, traffic weigh stations, traffic control aids, and stations, facilities, and amenities for State highway users:*
g) *to alter the level of any State highway:*
h) *to stop, divert, or otherwise control the traffic upon any State highway temporarily while any work or investigation is being undertaken or for the structural protection of any part of the State highway:*
i) *To close to traffic any State highway, or any part of it, for such period as the Agency considers necessary to execute repairs or to remove any obstruction: …"*

11.1.3 Requiring Authority Status

The Transport Agency was confirmed as a Requiring Authority in accordance with section 167 of the RMA via an order in Council dated 7 December 1992; with subsequent Gazette Notices on 10 December 1992, 3 March 1994 (GO1500) and 19 November 2015 (GO6742). Copies of these gazette notices are attached to the NoR. The Transport Agency has the ability to designate, construct and operate state highways, motorways, cycleways, shared paths and directly associated works. Therefore, the Transport Agency has the authority to designate all matters relating to the NoRs.

11.2 Introduction to the statutory RMA framework

The RMA sets out the legal framework to promote the sustainable management of natural and physical resources in New Zealand. The directly relevant sections of the RMA in relation to the assessment of the Project and the NoR and consent processes are:

- Part 2 – Purpose and principles: s5 – 8 which establish the overriding purpose of the RMA and matters which all decision makers and persons exercising powers must recognise and provide for, have particular regard to, or take into account;
- Part 6 – Resource consents: s104 which prescribes matters to be taken into account when considering resource consent applications, s104B which sets out determination of discretionary applications and s105 and 107 which relate to discharge permits; and
- Part 8 – Designations and heritage orders: specifically s168 which sets out the provisions for making a Notice of Requirement and s171 which sets out matters to be taken into account by the territorial authority when considering a Notice of Requirement.

An assessment against these parts of the RMA is presented on the following pages. This section of the AEE assesses the Project against the key provisions of the Resource Management Act 1991 (RMA) and comments on other relevant legislation. In accordance with s104(1) and s171(1), this section also assesses the Project against the relevant provisions of the following statutory policy statements and plans:

- Resource Management (Measuring and Reporting Water Takes) Regulations 2010 (Water Takes Regulations)
- Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES Soil)
- National Policy Statement for Freshwater Management 2014 (NPS Freshwater)
- New Zealand Coastal Policy Statement 2010 (NZCPS)
- Regional Policy Statement for Taranaki 2010 (RPS)
- Regional Fresh Water Plan for Taranaki 2001 (Fresh Water Plan)
- Regional Soil Plan for Taranaki 2001 (Soil Plan)
- Regional Air Quality Plan for Taranaki 2011 (Air Quality Plan)
- New Plymouth Operative District Plan (NPDP)

Other relevant documents are discussed in Section 11.7. In all cases, the assessment is based on the information presented earlier in this report and supported by the accompanying Technical Reports.

11.3 Key provisions of the Resource Management Act 1991

11.3.1 Part 2 Purpose and Principles

11.3.1.1 Approach in light of *Davidson*

Traditionally, an analysis of the consistency of applications with Part 2 of the RMA has been fundamental to the overall assessment of applications for resource consent, and NoRs.

Sections 104 and 171 of the RMA require that consideration of applications for resource consents, and notices of requirement for designations, be "*subject to Part 2*". The phrase "*subject to Part 2*" has until recently, consistently been considered to require an 'overall broad judgement' approach in the form of a fulsome Part 2 analysis.

However, that traditional approach has been called into question by the High Court decision in *RJ Davidson Family Trust v Marlborough District Council* (*Davidson*).[66] The High Court held that the words "*subject to Part 2*" do not give a specific direction to apply a Part 2 analysis in all cases, but to do so only where there is "*invalidity, incomplete coverage or uncertainty of meaning in the statutory planning documents*". The High Court considered this position to be an application of the reasoning of the Supreme Court in *King Salmon*, where it was determined that Part 2 should not normally be considered when making decisions on plan documents.[67]

In respect of NoRs, the 2015 High Court decision in *New Zealand Transport Agency v Architectural Centre Inc* (*Basin Bridge*), confirmed that the traditional Part 2 analysis approach should still be followed.[68] This has subsequently been applied by the Environment Court to NoR decisions even after the *Davidson* decision.[69]

A further complication is that *Davidson* is currently subject to appeal to the Court of Appeal.

Taken together, that means the current position is that:

- The applications for resource consent are not to be subject to the 'overall broad judgement' approach. Instead, Part 2 of the RMA is to be applied only where there is "*invalidity, incomplete coverage or uncertainty of meaning*" in the relevant planning instruments, as that phrase has been applied through Environment Court case law following *Davidson*.
- The NoR is to be subject to the traditional 'overall broad judgement' approach.

This statutory analysis section proceeds on that basis. However, for completeness, a traditional Part 2 analysis is included in respect of the resource consent applications after the *Davidson* analysis.

This approach takes into account the fact that it is possible the current position will alter, or be further clarified, through a Court of Appeal decision on *Davidson* before the applications and NoR are determined.

11.3.1.2 Section 5 - Purpose

Section 5(1) states that the purpose of the RMA is to promote the sustainable management of natural and physical resources, with sustainable management defined in s5(2). It is concluded that construction of the Project will have positive and adverse effects, but overall, the Project will achieve the purpose of the Act. The reasons for this assessment include (and further detail is provided in the other sections of the AEE):

- The Project will significantly improve safety, travel times and resilience of travel over the existing substandard Mt Messenger section of SH3. The Taranaki region is heavily

[66] *RJ Davidson Family Trust v Marlborough District Council* [2017] NZHC 52.
[67] *Environmental Defence Society Inc v The New Zealand King Salmon Co Ltd* [2014] NZSC 38
[68] *New Zealand Transport Agency v Architectural Centre Inc* [2015] NZHC 1991.
[69] See for example *Queenstown Airport Corporation* [2017] NZEnvC 46.

reliant on primary industry, including agriculture and oil and gas. SH3 is a key connection from the Taranaki region through to the Waikato and on to Hamilton, Tauranga and Auckland for Taranaki's primary sectors, tourism and recreation, and access to health and other social services. Enhancement of the SH3 connection, specifically the Mt Messenger Bypass, is therefore directly linked to enabling the people and communities of the region to provide for their social, economic and cultural well-being and for their health and safety.

- Ngāti Tama have a strong and longstanding connection with the wider Project area. The Transport Agency has engaged in a robust process with Ngāti Tama, acknowledging Ngāti Tama's kaitiakitanga responsibilities and mana over the Project area. This will be carried through to the detailed design and construction stages, including exploring cultural narrative and expression into the detailed design, construction and operation of the road, along with engagement around land acquisition and mitigation.
- The Project will significantly improve the connectivity of freight to and from the Taranaki region, appropriately reflecting the Regional Route classification of SH3. The existing SH3 is no longer fit for purpose or its classification as a Regional Route due to a number of known problems, including a poor safety record, poor route resilience, and poor road geometry and associated low speeds.
- In developing the Project, a wide range of technical, environmental, social, economic and cultural matters were considered with a focus on firstly avoiding effects and then remedying and mitigating (and also offsetting) effects that cannot be avoided.
- While there will be effects associated with a project of this scale, as identified throughout the AEE, the focus has been to avoid, remedy, mitigate or offset effects. For example, as soon as the preferred option was selected, a core part of the Project has been to develop a robust ecological mitigation and biodiversity offset package. The result of this process is a package which is expected to achieve a net gain in biodiversity within 10 to 15 years following construction.
- The development of detailed conditions and methodologies for construction and a CEMP (and other associated management plans) will ensure that the life-supporting capacity of air, water, soil and ecosystems are safeguarded. This is achieved by setting out the framework for efficient and effective construction of this regionally significant road, while addressing the adverse effects of the establishment of the Project in a manner which will avoid, remedy or mitigate adverse effects.
- Once commissioned, the Project will help to sustain the potential of natural and physical resources to meet the foreseeable needs of future generations by providing a modern, resilient and reliable connection from Taranaki to the north.

11.3.1.3 Section 6 – Matters of National Importance

Matters of national importance, which are to be recognised and provided for, are set out in Section 6 of the RMA. Relevant matters for the Project are:

> *(a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their*

margins, and the protection of them 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 Māori 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:

(h) the management of significant risks from natural hazards.

In relation to these matters of national importance:

6(a) Potential effects of the Project on the natural character of wetlands, rivers and their margins have been considered throughout the Project's development, including via the alternatives assessment. The location and design of the chosen route option is considered to be appropriate from a natural character perspective, as it avoids the Waipingao Stream catchment (Parininihi) to the west which has very high natural character values. This Project will mitigate adverse effects on natural character by minimising construction effects on natural stream environments where possible and constructing stream diversions with naturalised elements where effect are unavoidable. In particular, within the Mimi catchment adverse effects on natural character have been avoided by locating the road outside of the Mimi swamp forest, and providing for a bridge over a tributary. Riparian planting and restoration of swamp forest is also proposed and will provide an opportunity to enhance the natural character values.

6(c) The ecological values present in the Project footprint and adjacent forested and wetland areas are high, although considerably diminished from their full potential because of the long term and largely unchecked impact of farm livestock and animal pests (and the effects of previous logging and fires). The Mimi swamp forest is the area of greatest ecological significance in close proximity to the Project. In order to avoid effects on this area, the Project was routed to the west of the wetland area, with a bridge crossing a tributary to the wetland to avoid fill in this location. In addition, a comprehensive mitigation and biodiversity offset package has been developed as a core part of the Project. This is predicted to result in a net ecological benefit which will enhance the biodiversity value of this area within the next 10-15 years with significant enhancement thereafter.

6(d) Existing public access will be enhanced in the long-term. There may be short-term disruptions to access to the Kiwi Road track (which leads to Mimi River) while construction is occurring in this location. Once the Project is complete, the track will have safer access off SH3 and be re-routed under the new SH3 to allow for better and safer walking access at this location.

6(e) Ngāti Tama have significant cultural values associated with the Project area and the Transport Agency is fully aware of this deep association with the area. The Transport Agency has undertaken extensive consultation with Ngāti Tama. In its ongoing engagement with mana whenua and particularly Ngāti Tama, the Transport Agency has taken into account the principles of the Treaty of Waitangi, including recognition of the spiritual relationship that tangata whenua have with the environment and acknowledgement of Ngāti Tama's rangatiratanga and kaitiaki responsibilities in relation to the Project area. This process has significantly influenced route selection and design, including avoiding the western Parininihi land, setting the Project back from Mt Messenger, and using a tunnel under the ridge. This engagement process is ongoing and will continue throughout the resource consent process and beyond, including input into detailed design where it is anticipated there will be opportunities for cultural expressions to be explored and embedded within the landscape of Mt Messenger and the Mangapepeke valley.

6(f) No known archaeological or other historic heritage sites will be affected by the proposed construction of the Project, and the Historic Heritage Assessment (Technical Report 9) anticipates a low risk on historic heritage (archaeology) as a result of the Project. Therefore, there should be no constraints on the proposed construction of the Project on archaeological or historic heritage grounds, however an Accidental Discovery Protocol is proposed to provide for the possibility of unrecorded archaeological sites being uncovered during construction.

6(h) The Project will result in a significant improvement in resilience over the existing SH3 route to the potential natural stresses and shock challenges in the region ie it will lower the risk of natural hazards on the route. This will be achieved through major improvements to grades and curves, design methodologies for cut slopes, embankments and culverts, innovation and robust design of structures such as the tunnel and bridge, and integrated stormwater management of water quality and water quantity.

These matters are addressed in the objectives and policies of the relevant RMA plans and assessed in summary in Section 11.4 to 11.6 and in full in Appendix A.

11.3.1.4 Section 7 – Other Matters

Section 7 sets out other matters to which particular regard must be had when exercising functions and powers under the RMA. The following matters are relevant to the Project:

(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:

(i) the effects of climate change…

Having particular regard to these matters, the following points are noted:

7(a) Ngāti Tama have kaitiaki responsibilities in this location. The Transport Agency has, and will continue to engage with Ngāti Tama throughout the process, including facilitating active participation and exercise of kaitiakitanga by Ngāti Tama in relation to the Project. It is anticipated this will include input into components of the detailed design and construction and operation phases which will include the appropriate exercise of Ngāti Tama's kaitiakitanga.

7(aa) The Transport Agency acknowledges the sensitivity of the surrounding environment. The concept of 'stewardship' has been inherent in the design process. In this respect, the alternatives assessment forms a key part of the process as the preferred route is located where the environmental effects could be avoided, remedied, mitigated or offset in a manner which will achieve a net biodiversity gain in the short to medium term. Equally, key Project features, including the tunnel and bridge have been included to avoid effects. To address residual adverse effects, a comprehensive offset and mitigation package is included part of the Project, including pest management over 560ha of forest ecosystems in the local area, to achieve a net gain in biodiversity within 10 to 15 years following construction.

7(b) The Project delivers the efficient use and development of natural and physical resources through a robust route selection process that avoided the western Parininihi land, provides for a significant improved transport system over the existing Mt Messenger route and safely ties in with the existing SH3 and the northern and southern ends. The Project will also help to ensure the efficient use and development of natural and physical resources by providing capacity to support transport growth within the Taranaki region and through improving resilience of the SH3 network.

7(c) Measures are proposed at construction sites so that temporary effects on amenity values during construction and ongoing effects arising from permanent works are minimised or mitigated (refer Sections 5, 9 and 10 above and Volume 5). Amenity matters such as noise, vibration, dust, and lighting will be undertaken within the relevant standards and controlled through the application of the CEMP and other relevant management plans. Long-term, existing access to recreational tracks will be enhanced and there are opportunities to enhance the amenity values through screen and amenity planting where the road will be viewed from existing dwellings.

7(d) A comprehensive ecological mitigation and biodiversity offset package forms a core part of the Project, in order to mitigate/offset residual adverse effects which cannot be avoided or remedied. This will provide for a net positive effect in relation to ecological values within 10-15 years following the completion of works particularly in those areas where the ecological values are currently degraded. Overall, the Project will maintain and enhance the quality of the environment.

7(f) The Project will have significantly change the quality of the environment within the Project footprint. It will form a permanent impervious area where there is currently vegetation and pasture. In order to address this the landscape and ecological mitigation package provides for enhancement of the quality of the environment immediately surrounding the new road in the medium to long-term.

7(i) The new road resulting from the Project will decreased carbon dioxide emissions associated with a shorter length of road and a reduced climb with flatter grades.

11.3.1.5 Section 8 – Treaty of Waitangi

Section 8 requires those exercising powers or functions under the RMA to take into account the principles of the Treaty of Waitangi. As described above, the Transport Agency has engaged with iwi, in particular with Ngāti Tama, throughout the process to address effects of the Project on tangata whenua or cultural heritage matters. In particular the Transport Agency has actively worked with Ngāti Tama in good faith throughout the Project's development so as to enable it to make fully informed decisions. In this regard, the draft Ngāti Tama CIA states:

> *From what we have observed through the process, it has given us confidence in the experts and people involved in the project. We have been pleased to hear the approach of 'treading as lightly as possible on the whenua' and can see that the experts are advocating for the ecological values of the area. They have been very open with us and supported us to participate in the process and provide our input. There is no complaint about the consultation and the ability for us to provide our input and cultural views to the project. Thus, the purpose of this report is to record that we have been involved in the process and outline the cultural importance of this area.*

The Transport Agency recognises the cultural significance and importance of the Ngāti Tama land affected by the Project, including that it was returned to Ngāti Tama under its Treaty of Waitangi Settlement, and the consequential effects of the Project. The Transport Agency also recognises the spiritual relationship that tangata whenua have with the environment and acknowledges Ngāti Tama's rangitiratanga and kaitiaki responsibilities in relation to the Project area.

The Transport Agency's engagement with Ngāti Tama is ongoing and is consistent with the principles of the Treaty.

11.3.2 Part 6 Resource Consents

11.3.2.1 Section 104 Consideration of resource consent applications

Section 104(1) of the RMA requires a consent authority, when considering an application for *resource consent, to have regard to:*

(a) any actual and potential effects on the environment of allowing the activity; and

(ab) any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and

(b) any relevant provisions of—

(i) a national environmental standard:

(ii) other regulations:

iii) a national policy statement:

(iv) a New Zealand coastal policy statement:

(v) a regional policy statement or proposed regional policy statement:

(vi) a plan or proposed plan; and

(c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.

Having regard to the matters outlined in s104(1) of the RMA, the following points are noted:

Any actual and potential effects on the environment of allowing the activity

- Section 9 and the Technical Reports contained in Volume 3 consider the actual and potential effects of the Project on the environment. Those parts of the report address the positive effects of the Project, potential adverse effects on the environment during construction operation of the Project.
- With the implementation of the proposed management plans and mitigation and offset measures as outlined in the AEE and the Technical Reports in Volume 3, the adverse effects of the Project can be avoided, remedied, mitigated or offset such that they are either of a no more than minor nature, or where there are residual adverse effects that are more than minor in the short-term, then environmental enhancement is achieved over the long term.
- The Project will have regionally significant positive effects associated with improved transport outcomes compared to the existing route (travel time savings etc), greater resilience in the road network to accidents and natural hazards, and improved capacity and ease of movement for both freight and people.

Any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity

- The Project is proposed in order to address the safety, resilience and reliability issues associated with the existing Mt Messenger route. The Project will upgrade the existing safety classification of this stretch of road to Star Rating 3, improve natural hazards and operational resilience of the road, facilitate significant benefits in relation to travel time savings for light and heavy vehicles (contributing to lower freight costs) and increase reliability of the route which has particularly cost implications for freight.
- Section 9.8.9 and Technical Report 7h describe the ecological mitigation and biodiversity offset package, which is a core part of the Project. The package has been designed to achieve a net gain in biodiversity within 10 to 15 years following construction. This will substantially reverse the diminished state of some 560ha of forest ecosystems currently found in the Project area.

Any relevant provisions of a national environmental standard, other regulations, a national policy statement, a New Zealand coastal policy statement, a regional policy statement or proposed regional policy statement, a plan or proposed plan

- Sections 11.4 to 11.6 below provide an assessment of the Project against the relevant provisions of the applicable planning documents. Overall, the Project is consistent with the relevant objectives, policies and assessment criteria set in the relevant statutory and non-statutory documents referred to in s104(1)(b) of the RMA.

Any other matter the consent authority considers relevant and reasonably necessary to determine the application

- Ngāti Tama's connection to the area is reflected in the Ngāti Tama Claims Settlement Act 2003 which provided for the redress of historic breaches of the Treaty of Waitangi, and included commercial and cultural redress items. As set out in the preceding Sections 0, 7.7, 8.4.1, 9.7 and 11.3 to 11.6 below, the Transport Agency acknowledges the significant cultural, spiritual, historical, and traditional importance of the Project area to Ngāti Tama and has consulted on an early and ongoing basis. Discussions will continue throughout the resource consent process.
- The Project is of strategic importance to the region, as SH3 serves as Taranaki's strategic cross-boundary transport link leading to the north through Mahoenui and Pio in the Waikato and on to the key economic hubs of Hamilton, Tauranga and Auckland. Its availability and performance is vital to the growth and economic strength of all of the Taranaki region, particularly in relation to connecting people, communities and associated businesses and freight.
- This is reflected in a number of strategic planning documents including:
    - the recently released "Tapuae Roa: Make Way for Taranaki": Taranaki Regional Economic Development Strategy (August 2017). This identifies improvement of the northern highway as a 'one-off regional game-changer'.
    - The Taranaki Regional Council Long Term Plan 2015-2025,
    - Regional Land Transport Plan for Taranaki 2015-2021,
    - New Plymouth District Council Long Term Plan 2015-2025,
    - New Plymouth District Council Economic Development Strategy 2014-2024, which also provide strategic support to the Project.

  Transport and connectivity of Taranaki within the district and between the district, region, other districts and regions and offshore markets is a key theme that runs through these documents. The Regional Land Transport Plan for Taranaki identifies the priority inter-regional issue for the Taranaki region is the future route efficiency, safety and reliability of SH3 travelling north over Mt Messenger, through the Awakino Gorge to Te Kuiti, Hamilton and beyond. The Project will significantly improve connectivity of freight to and from the Taranaki region.

11.3.2.2 Sections 105 and 107 matters relevant to certain applications

Section 105(1) relates to matters relevant to applications for a discharge permit. In summary, in considering an application to which Section 105 relates, the consent authority must have regard to the sensitivity of the receiving environment, the applicant's reason for the proposed choice and any alternatives. The discharge permits being sought for the Project are set out in Section 2. The consideration under s105 are addressed in Section 6.

Section 107(1) provides that a discharge permit shall not be granted if, after reasonable mixing, the contaminant or water discharged is likely to give rise to any effects in receiving waters that would: cause conspicuous oil or grease films, scums or foams, or floatable or suspended materials; a conspicuous change in colour or visual clarity; emit objectionable odour; render fresh water unsuitable for farm animals; or have a significant adverse effect

on aquatic life. As noted above, the discharges are generally of a minor nature and stormwater and construction site related discharges will be treated prior to discharge such that the effects addressed by s107 will not occur.

11.3.3 Part 8 Designations

11.3.3.1 Section 168 Notices of Requirement to territorial authority

Section 168 provides that a requiring authority may give notice in the prescribed form to a territorial authority of its requirement for a designation for a project or work. The scope of the Notices of Requirement are set out in Section 2 of this report. The notices have been prepared in accordance with s168 of the RMA.

11.3.3.2 Section 171 Recommendation by territorial authority

Section 171 sets out the matters that New Plymouth District Council must consider when making a recommendation on a Notice of Requirement: Section 171(1) states:

When considering a requirement and any submissions received, a territorial authority must, subject to Part 2, consider the effects on the environment of allowing the requirement, having particular regard to—

(a) any relevant provisions of—

(i) a national policy statement:

(ii) a New Zealand coastal policy statement:

(iii) a regional policy statement or proposed regional policy statement:

(iv) a plan or proposed plan; and

(b) whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if—

(i) the requiring authority does not have an interest in the land sufficient for undertaking the work; or

(ii) it is likely that the work will have a significant adverse effect on the environment; and

(c) whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought; and

(d) any other matter the territorial authority considers reasonably necessary in order to make a recommendation on the requirement.

Having regard to the matters outlined in Section 171(1) of the RMA, the following points are noted:

Any relevant provisions of a national policy statement, a New Zealand coastal policy statement, a regional policy statement or proposed regional policy statement, and a plan or proposed plan.

- As stated above in relation to s104(1)(b) of the RMA, Sections 11.4 to 11.6 below provide an assessment of the Project against the relevant provisions of the applicable planning documents. Overall, the Project is consistent with the relevant objectives, policies and assessment criteria set in the relevant statutory and non-statutory documents referred to in s171(1)(a) of the RMA.

Whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if the requiring authority does not have an interest in the land sufficient for undertaking the work; or it is likely that the work will have a significant adverse effect on the environment.

- In this case, the Transport Agency does not have an interest in all of the land required for undertaking the work, and in addition, it is acknowledged that there are potentially significant adverse effects on the environment before mitigation and offsets are taken into account. Therefore, an alternatives assessment is required under s171(1)(b).
- Section 6 outlines the alternatives assessment associated with the Project. The process of consideration of alternatives involved an extensive option evaluation to arrive first at a longlist of routes, which was then reduced five shortlisted options. The shortlisted options which were developed further prior to the alignment which is subject to this AEE being selected. Volume 4 of this AEE sets out the detail considered during the longlist and shortlist process. This involved input from a wide range of independent experts and Ngāti Tama, with options evaluated through a MCA process. The Transport Agency's decision to progress the proposal form of the Project was made taking proper of account of the MCA process and results.

Whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought

As set out in Section 3, the Transport Agency's Project Objectives for the purposes of s171(1) of the RMA are:

1. To enhance safety of travel on State Highway 3;
2. To enhance resilience and journey time reliability of the state highway network;
3. To contribute to enhanced local and regional economic growth and productivity for people and freight by improving connectivity and reducing journey times between the Taranaki and Waikato Regions; and
4. To manage the immediate and long term cultural, social, land use and other environmental impacts of the Project by so far as practicable avoiding, remedying or mitigating any such effects through route and alignment selection, highway design and conditions.

The work is reasonably necessary to achieve the objectives for the reasons extensively set out within this AEE, but in summary including:

- The existing Mt Messenger section of SH3 is no longer fit for purpose. In particular, it has a poor safety record, poor route resilience (common closures with no suitable alternative routes without significant extra journey time) and poor road geometry and low speeds. Without the work the substandard status quo will continue, and get worse over time as traffic volumes increase;
- The work will enhance safety of travel on SH3 by improving its star rating from 2 to 3 (this also means this section of SH3 is in context with the large reminder of SH3) and providing improved forward visibility, improved geometry, reduced exposure, better

provision for active modes, improved passing opportunities and safer connections to the walking tracks.

- The work will enhance resilience and journey time reliability of SH3 (and the network) by:
  - Providing a route and modern design techniques with enhanced resilience to natural hazards and closures due to crashes;
  - Providing a route with faster recovery time in the event of a natural hazards or crashes; and
  - Providing a route and design that will reduce journey times and through reduced closures, less maintenance and faster recover time enhance journey time reliability
- The work will contribute to enhanced local and regional economic growth and productivity for people and freight by improving connectivity and reducing journey times between the Taranaki and Waikato Regions by:
  - Significantly improving a route that has considerable strategic value, being Taranaki's only arterial connection directly to and from the north, and is of particular importance to the economic well-being and wider future of Taranaki. The existing road is no longer fit for purpose and fails to appropriately provide for the transport (people and freight) between the Taranaki region and the north. This is particularly important given the transport requirements for the key economic drivers of the region being agriculture, manufacturing and services to the oil and gas industry;
  - Providing a safe and resilient (fit for purpose) roading connection between the Taranaki region and the north (in particular Hamilton and the Ports of Auckland and Tauranga) thereby reducing journey times and improving journey time reliability;
  - Providing:
    - significantly improved connectivity of freight to and from the region;
    - significantly reduced journey times for over dimension loads; and
    - lower vehicle operating costs (especially for freight).
- The work manages the immediate and long term cultural, social, land use and other environmental impacts of the Project, including through:
  - The engagement that has occurred with Ngāti Tama (including the Project location outside of the western Parininihi land and use of a tunnel); and
  - The use of an extensive ecological mitigation and offset such that net environmental benefit will be achieve after 10-15 years, and significant benefits achieved over time.

The designation mechanism under the RMA is reasonably necessary to achieve the Transport Agency's objectives in that:

- The application is for an alteration for an existing NoR (with the existing SH3 being designated in the District Plan) such that it:

- Maintains the current process within the District Plan; and
- Ensures consistent planning provision for the Transport Agency and SH3.

- The designation mechanism reflects the significance of this infrastructure and transport route by transparently providing for it within the District Plan; and
- That Transport Agency does not own all the land along the Project footprint such that the designation will:
  - Protect the land from other development; and
  - Provide certainty that the Project can be constructed, operated and maintained.

Any other matter the territorial authority considers reasonably necessary in order to make a recommendation on the requirement

- As set out above in relation to s104(1)(b) of the RMA, Section 11.7 sets out the other matters considered relevant for this application. In particular, the Ngāti Tama Claims Settlement Act 2003 provides the statutory basis for Ngāti Tama's ownership of the land within the Project footprint and the wider area. As set out in the preceding Transport Agency acknowledges the significant cultural, spiritual, historical, and traditional importance of the Project area to Ngāti Tama and has engaged on an early and ongoing basis (see Sections 0, 7.7, 9.7 above, and 11.3 to 11.6 below). Discussions with Ngāti Tama will continue throughout the resource consent and NoR process and beyond.
- The Project is of strategic importance to the region. This is reflected in a number of strategic planning documents. In particular:
  - The Taranaki Regional Economic Development Strategy (August 2017) identifies improvement of the northern highway as a 'one-off regional game-changer' which will improve connection and access of external (and local) business to the region by improving the ease of doing business.
  - The Regional Land Transport Plan for Taranaki 2015-2021identifies the priority inter-regional issue for the Taranaki region is the future route efficiency, safety and reliability of SH3 travelling north over Mt Messenger, through the Awakino Gorge to Te Kuiti, Hamilton and beyond.

  The Project will significantly improve connectivity of freight to and from the Taranaki region.

In addition to the matters considered in relation to s171(1), s171(1B) states:

The effects to be considered under subsection (1) may include any positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from the activity enabled by the designation, as long as those effects result from measures proposed or agreed to by the requiring authority.

- As set out above in relation to s104(1)(ab), the Project is proposed in order to address the safety, resilience and reliability issues associated with the existing Mt Messenger route. The Project will upgrade the existing safety classification of this stretch of road to Star Rating 3, improve natural hazards and operational resilience of the road, facilitate significant benefits in relation to travel time savings for light and heavy

vehicles (contributing to lower freight costs) and increase reliability of the route which has particularly cost implications for freight.

- Section 9.8.9 and Technical Report 7h describes the ecological mitigation and biodiversity offset package, which is a core part of the Project. The package has been designed to achieve a net gain in biodiversity within 10 to 15 years following construction.

11.3.4 National Environmental Standards

11.3.4.1 Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011

The NES Soil establishes a nationally consistent set of planning controls and soil contaminant values, and is applicable to the Project.

Preliminary investigations of historic and current land use activities has identified that a large portion of the proposed alignment has not been subject to potential contaminating activities (see Technical Report 12). Waste disposal to land associated with potential farm dumps at the dry stock farms at the northern and southern ends of the proposed alignment and potential impacts as a result of fly tipping along existing SH3 have been identified. A Project wide resource consent is sought for the works as identified in Section 2, and a CLMP to manage, monitor and report requirements any adverse effects is attached in Volume 5. This also identifies the requirement for a Detailed Site Investigation to be undertaken during/following detailed design works in the relevant areas of potential contaminating activities along the Project footprint. .

With these measures in place, and the consent obtained, the Project will be consistent with the provisions of the NES Soil. Adverse effects associated with disturbance of contaminated land are expected to be less than minor.

11.3.5 Other regulations

11.3.5.1 Resource Management (Measuring and Reporting Water Takes) Regulations 2010

The provisions of the Resource Management (Measurement and Reporting Water Takes) Regulations 2010 (Water Takes Regulations) apply to water permits for freshwater takes over 5 L/s, as set out in Section 4 of the Regulations.

The Water Takes Regulations set out the requirements for recording water takes and provision of these to the Regional Council. These requirements have been included in the draft conditions of consent attached as Appendix D.

11.3.6 National Policy Statements

11.3.6.1 National Policy Statement for Freshwater Management

The National Policy Statement for Freshwater Management (NPS Freshwater) sets out the objectives and policies for freshwater management under the Resource Management Act 1991. It came into effect on 1 August 2014 and amendments made in August 2017 took effect on 7 September 2017. Local authorities are required by the RMA to give effect to the NPS Freshwater through plans and policy statements.

In particular, Objectives A1 and A2 of the NPS Freshwater, which relate to the safeguarding of ecosystems and the health of communities, and to maintaining and enhancing water

quality, are of relevance. The Project includes a range of measures to safeguard aquatic ecosystems and maintain or improve water quality, including measures to manage sediment and erosion control during the construction works and treatment for stormwater runoff from the operational road surface.

The Regional Council has incorporated the relevant transitional policies relating to freshwater management into the Fresh Water Plan and an assessment of these is set out in Section 11.5.1 below and Appendix A.[70] The Project is consistent with the NPS Freshwater.

11.3.7 New Zealand Coastal Policy Statement 2010

The New Zealand Coastal Policy Statement 2010 (NZCPS) contains objectives and policies which include provisions relating to sedimentation levels and impacts on the coastal environment (Policy 22).

The Project footprint is not located in the coastal environment, however the catchments where construction will be located discharge to the Tongaporutu River to the north and the Mimi River to the south. Both of these watercourses eventually discharge to the coastal marine area. Therefore, effects of the Project on the coastal marine area have been considered (see the Marine Ecology Assessment, Technical Report 7g).

Effects of discharges from the works on the coastal marine area (namely sediment) are not anticipated to be measurable. Therefore, the Project is consistent with the NZCPS.

11.4 Regional Policy Statement for Taranaki 2010

The Regional Policy Statement for Taranaki 2010 (RPS) is a strategic document which sets out the direction of management for the use, development and protection of natural and physical resources in the Taranaki Region.

The RPS addresses a number of regional issues which are of relevance to the Project including (but not limited to): water quality, biodiversity values, natural features and landscapes, natural hazards, infrastructure and matters of significance to iwi.

The Mimi River and Tongaporutu River (where the Mangapepeke Stream discharges to) are both identified in Appendix I as River catchments of high quality or high value of their natural, ecology and amenity values. The RPS also identifies statutory acknowledgements, including Ngāti Tama (see Appendix 4B of the RPS).

A detailed assessment against the objectives and policies is included in Appendix A. Through this detailed assessment, a number of key themes have been identified as follows:

- Recognising the role of resource use and development in Taranaki;
- Supporting regionally significant infrastructure;
- Avoiding and mitigating the effects of natural hazards;
- Treaty of Waitangi, tangata whenua and cultural heritage;
- Indigenous biodiversity;
- Natural character of water bodies;

[70] These were incorporated in response to the 2014 version of NPS Freshwater, but do not require updating in response to the 2017 amendments.

- Natural features, landscapes and amenity;
- Land disturbance and soil conservation;
- Historic heritage; and
- Public health.

These themes are discussed in Sections 11.4.1 to 11.4.10 below.

11.4.1 Recognising the role of resource use and development in Taranaki

Section 4.1 of the RPS states that:

> "*A notable feature of the Taranaki region is its reliance on the region's natural and physical resources for its economic and social wellbeing."*

Linked to this, the chapter recognises that

> "*The region's infrastructure plays a vital role in the region's economy and the wellbeing of its people and communities. The region's road and rail network, Port Taranaki, New Plymouth airport, power generation facilities, radio and telecommunications facilities, transmission lines and sewage and water treatment and reticulation systems among other infrastructure, all provide essential services to the regional community and regional and national economies."*

The RPS identifies UDR[71] Objective 1 as

> "*To recognise the role of resource use and development in the Taranaki region and its contribution to enabling people and communities to provide for their social, economic and cultural wellbeing*."

As set out in the Economics Assessment (Technical Report 4), the key drivers for the New Plymouth District economy are oil and gas exploration and extraction, manufacturing and services provided to the oil and gas, agriculture and agricultural product processing activities within the wider Taranaki Region. The key drivers of the Taranaki economy are agriculture, manufacturing (including agricultural product processing and the heavy engineering industry) and the oil and gas industry.

The Strategic Transport Assessment (Technical Report 1) notes that SH3 serves as Taranaki's strategic cross-boundary transport link leading to the north through Mahoenui and Pio Pio in the Waikato and on to the key economic hubs of Hamilton, Tauranga and Auckland. Its availability and performance is important to the growth and economic strength of all of the Taranaki region, particularly in relation to freight connectivity. Enhancement of the SH3 connection, specifically the Mt Messenger Bypass, is therefore directly linked to providing for economic, and related social cultural wellbeing for the people and communities of Taranaki.

UDR Policy 1 states:

[71] In the RPS, each of the issues, objectives, policies, methods of implementation and environmental results anticipated has been given a unique identifying number. This number is based on a three letter symbol which relates to the subsection in this part of the RPS in which the relevant issue, objective etc is found followed by a number 1, 2, 3 etc. For example, provisions relating to 'Use and development of resources' are prefaced by UDR

"*Recognition will be given in resource management processes to the role of resource use and development in the Taranaki region and its contribution to enabling people and communities to provide for their economic, social and cultural wellbeing*."

The Project is proposed in order to address the safety, resilience and reliability issues associated with the existing Mt Messenger route. The Project will upgrade the existing safety classification of this stretch of road to Star Rating 3, improve natural hazards and operational resilience of the road, facilitate significant benefits in relation to travel time savings for light and heavy vehicles (contributing to lower freight costs) and increase reliability of the route (which has particular cost implications for freight).

In addition, the Social Impact Assessment (Technical Report 5) finds that from a social perspective, the Project will offer significant regional and local benefits once operational. Key regional benefits set out in that assessment include:

- Way of Life – greater resilience in the road network to accidents and natural hazards, and improved capacity and ease of movement for both freight and people
- Growth and Development –
    - increased competitiveness with Auckland and the Waikato by increasing the capacity of SH3 to safely handle oversized loads and more consistent journeys;
    - improved accessibility and improved trip experience for visitors;
    - enhanced accessibility for businesses, particularly those which are reliant on freight movements for production materials and access to markets;
    - residential growth becomes more attractive with regional connectedness and a reduction of the perception of isolation;
    - maintaining and enhancing regional liveability helps to retain skills and services in the region;
    - improving access and journey experience to essential facilities in the Waikato, such as Waikato hospital;
    - greater resilience in terms of trip reliability and trip-time reliability that improves competitiveness for businesses;
    - a potential to increase business activity and consequent positive, beneficial impact on employment; and
    - employment opportunities and economic activity created for local businesses and services during the construction phase.
- Wellbeing
    - improvement in the journey experience through reduction in driver frustration, by virtue of greater passing or overtaking opportunities, and a reduction in delays through being caught for long periods behind heavy vehicles; and
    - improved response times for emergency services leading to improved outcomes and reduced perception of isolation.

Overall, the Project will support the role of resource use and development in Taranaki and its contribution to the social, economic and cultural wellbeing of people and communities by improving the strategic connection from New Plymouth to the Waikato and beyond.

11.4.2 Supporting regionally significant infrastructure

Section 15.2 of the RPS explains that

> "*The region's network utilities[72] and other infrastructure are physical resources of considerable importance to Taranaki. They support human settlements and enable people and communities to meet their social, economic and cultural needs."*

Specifically, in relation to roads and SH3, the RPS states:

> *"Taranaki is generally well connected and serviced from a roading infrastructural perspective relative to its size and population. However, there are roading and transport infrastructure issues that require ongoing attention if Taranaki is to meet its current and anticipated growth and development needs. Some of these issues concern route security and reliability (particularly in relation to State Highway 3 north and south and State Highway 43), network efficiency and capacity (for example in relation to our rural roads and urban New Plymouth) and safety issues such as passing opportunities, road and bridge widths etc."*

The adverse effects on the environment arising from the construction, use and maintenance of regionally significant infrastructure are acknowledged in this section, but addressed more specifically elsewhere in the RPS.

INF Objective 1 is:

> *"To provide for the continued safe and efficient operation of the region's network utilities and other infrastructure of regional significance (including where this is of national importance), while avoiding, remedying or mitigating adverse effects on the environment."*

The existing SH3 was originally built in 1896 and designated as a State Highway in 1935. The existing route is no longer fit for purpose (or its classification as a Regional Route) due to a number of known problems, as described in this AEE:

- Poor safety standard
- Poor route resilience and journey time reliability (subject to frequent closures, with alternative routes adding significant time to journey); and
- Poor road geometry and low speeds.

These are detailed in the Traffic and Transport Assessment (Technical Report 2). In summary, the Mt Messenger section of SH3 no longer operates on a safe or efficient basis and therefore, the Project has been developed.

INF Policy 1 states:

> *"Provision will be made for the efficient and effective establishment, operation, maintenance and upgrading of network utilities and other physical infrastructure of regional significance (including where this is of national importance) and provision for any adverse effects of their establishment to be avoided, remedied or mitigated as far as is practicable."*

[72] The definition of 'network utilities' includes roads

As described above, the Mt Messenger section of SH3 is in need of improvement in order to continue functioning as a fit for purpose Regional Route/State Highway. In particular the Project will significantly improve connectivity of freight to and from the Taranaki region. The construction methodology set out in Section 5, along with the related technical reports in Volume 3 and management plans in Volume 5 will provide for avoiding, remedying and mitigating effects.

The sensitivity of the surrounding environment and related effects of constructing the road has been a key consideration throughout the development of the Project. Where possible, areas with significant values (eg the western Parininihi land and the Mimi swamp forest) have been avoided and environmental effects of the preferred route remedied as far as practicable. It is acknowledged that residual effects remain and therefore a substantial mitigation and biodiversity offset package is included as part of this application, with the intent of providing for a net gain in biodiversity within 10-15 years. INF Policy 1 supports this approach.

11.4.3 Avoiding and mitigating the effects of natural hazards

Section 11 contains provisions related to reducing the risk to the community from natural hazards. HAZ Objective 1 is:

> *"To avoid or mitigate natural hazards within the Taranaki region by minimising the net costs or risks of natural hazards to people, property and the environment of the region."*

One of the objectives of this Project is to enhance resilience and journey time reliability of the State highway network. The existing alignment of SH3 at Mt Messenger is prone to natural hazards that can affect road safety and result in traffic restrictions, delays and/or road closures for the road users and surrounding communities.

The Resilience Assessment (Technical Report 3) concludes that the construction of the Project will result in a significant improvement in resilience over the existing SH3 route to the potential natural stresses and shock challenges in the region, thereby lowering the effects of natural hazards on the route. It will achieve this through major improvements to grades and curves as well as design and construction of cuttings and embankments, engineered structures including retaining walls, stormwater culverts and a bridge and tunnel.

The alternatives assessment process took resilience into consideration, particularly geotechnical and hydrological resilience. The Project will establish an alignment that is resilient and minimises the risks posed by natural hazards.[73] Given the strategic significance of the SH3 connection north of New Plymouth, having a safe, reliable and resilient route for the long-term is critical.[74]

The RPS also considers the implications of responding to climate change in Section 7.2. It notes:

[73] HAZ Policy 2

[74] HAZ Policy 6

"…there is now strong evidence that most of the warming observed is attributable to increased concentrations of greenhouse gases such as carbon dioxide, methane and nitrous oxide produced by human activities. Human activities such as deforestation, animal husbandry, the application of nitrogenous pasture fertiliser, the decomposition of organic wastes, transport, and using fossil fuels, such as coal, for industrial processing and generating electricity have produced more and more of these gases over the last century."

In general, this may lead to an increase in the severity and frequency of extreme events such as flooding. In this regard, one of the benefits of the Project is to reduce decreased carbon dioxide emissions associated with a shorter length of road and a reduced climb with flatter grades (see Traffic and Transport Assessment, Technical Report 2).

CCH Objective 1 is

"*To avoid, remedy or mitigate the adverse effects on the Taranaki environment arising from climate change*

The provisions on managing effects associated with the use and development of river beds also consider natural hazards (flooding).[75] In this regard, the works in watercourses have been designed to convey flow as a minimum for the extended detention flow, as defined by the Transport Agency's *Stormwater Treatment Standard* and, where no acceptable alternative overland flow path is available, the 100 year Average Recurrence Interval flow. The effects of climate change have been factored into the design of the Project, noting that emissions of CO_2 relating to this section of the road are expected to decline as a result of the Project.

11.4.4 Treaty of Waitangi, tangata whenua and cultural heritage

There are a number of provisions in Part C of the RPS relating to resource management issue of significance to iwi authorities, including provisions relating to taking into account the principles of the Treaty of Waitangi, recognising kaitiakitanga, recognising and providing for the relationship of Māori with ancestral lands, water, sites, wāhi tapu and other taonga, and recognising cultural and spiritual values of tangata whenua in resource management processes.

The Transport Agency recognises Ngāti Tama's mana whenua and the significant cultural values of the wider Parininihi area (refer Section 8.4.1 and 9.7). As described in Section 7.7, the Transport Agency has undertaken extensive consultation with Ngāti Tama. This process has significantly influenced route selection and design, including avoiding the western Parininihi land, setting the Project back from Mt Messenger, and using a tunnel under the ridge.

Section 9.7 of the AEE describes how the Transport Agency has taken into account the principles of the Treaty of Waitangi, and provided for Ngāti Tama's rangitiratanga and kaitiaki responsibilities in relation to the Project area, the route selection process, development of the Project designs, monitoring of construction, and Ngāti Tama's ongoing relationship with the Project through the operational phase of the highway. Consultation and

[75] RLB Policy 1

collaboration with Ngāti Tama is ongoing and will continue throughout the resource consent process and beyond, including input into detailed design where it is anticipated there will be opportunities for cultural expressions to be explored and embedded within the landscape of Mt Messenger and the Mangapepeke valley.[76] [77] The Project design, the management measures set out in Volume 5, the LEDF and the ecological mitigation and biodiversity offset package have sought to protect the area from the adverse effects of the proposed activities as far as practicable, and to remedy, mitigate and offset those residual effects where avoidance has not been possible. The cultural values and relationship of Ngāti Tama to the area (including the watercourses) will be acknowledged and incorporated into the final Project design.[78]

The Transport Agency has also consulted with the iwi Ngāti Maniapoto and Ngāti Mutunga, whose rohe are to the north and south of Ngāti Tama.[79]

11.4.5 Indigenous biodiversity

11.4.5.1 Maintaining and enhancing indigenous biodiversity

Section 9 of the RPS contains provisions relating to maintaining and enhancing indigenous biodiversity. The background to this issue states:[80]

> *"Since human settlement and the introduction of accompanying pests, indigenous biodiversity has been in a steady state of decline. Managing land for specific purposes (e.g. residential subdivision and landscaping, pastures optimised for agricultural productivity, and plantation forests) almost always reduces biodiversity and the richest ecosystem habitats as a consequence.*
>
> *Historical land clearance and drainage have contributed to much of the reduction of indigenous habitats and the disproportionate loss of some types of terrestrial habitats such as wetlands, lowland forests and coastal environments. Because of their rarity, the protection of these habitats as self-sustaining ecosystems assumes added value and significance. Freshwater habitats and indigenous aquatic life are also affected by use and development of land and water, e.g. point and diffuse source discharges that reduce water quality, loss of habitat such as wetlands and riparian margins, and the presence of barriers to fish passage.*
>
> *The impact of pest animals and weeds is the key threat to the condition of remaining indigenous habitats and the continued survival of some threatened species in Taranaki. The release and proliferation of pest fish such as koi carp and other undesirable aquatic plant and algal species in the region is also a potential issue of concern in some waterways.*
>
> *Many remnant areas are also isolated and are surrounded by highly modified environments such as farmland. Furthermore, many are of a size or shape that makes*

[76] See TOW Objective 1, TOW Policy 1, TOW Policy 2, KTA Objective 1

[77] See REL Objective 1, REL Policy 1, REL Policy 3, REL Policy 5,

[78] See RLB Policy 1, CSV Objective 1, CSV Policy 1

[79] See KTA Policy 1

[80] See RPS, p81

their long term ecological viability uncertain unless ecological linkages with other areas can be maintained or enhanced."

BIO Objective 1 is

"To maintain and enhance the indigenous biodiversity of the Taranaki region, with a priority on ecosystems, habitats and areas that have significant indigenous biodiversity values."

The ecological values present in the Project footprint and adjacent forested and wetland areas are high, although considerably diminished from their full potential because of the long term and largely unchecked impact of farm livestock and animal pests (and the effects of previous logging and fires). The adverse effects of the Project are also high and therefore a comprehensive mitigation and biodiversity offset package has been developed as a core part of the Project. This is predicted to result in a net ecological benefit which will enhance the biodiversity value of this area within the next 10 – 15 years, with significant enhancement thereafter.

BIO Policies 2, 3, 4 and 5 provide for:

- Adverse effects to be avoided, remedied or mitigated;
- Prioritising the protection, enhancement or restoration of ecosystems, habitats and areas that have significant indigenous biodiversity values[81]; and
- Promoting the maintenance, enhancement or restoration of indigenous biodiversity where these still important for the continuing functioning of ecological processes (even if they do not have significant values).

The Transport Agency recognises that the Project is located in a high value ecological area. In the first instance, the Transport Agency selected a Project that minimises ecological effects by avoiding particularly significant habitat (particularly the western Parininihi land), and modifying the road design to avoid and minimise adverse effects.

A comprehensive mitigation and biodiversity offset package has been developed to address potential residual effects. The Project footprint includes areas of grassed pasture and grazed bush area (particularly in the northern part of the Project) which do not have significant values. However, in relation to the mitigation package these are still important as they provide potential buffer areas to the Core Pest Management Area, along with a location for the proposed area of swamp forest restoration. Swamp forest and wetland seedlings will be propagated from local sources of seed in accordance with BIO Policy 8. Overall, the Project will result in ongoing and significant enhancement of indigenous biodiversity values over the long term.

BIO Policy 7 states

[81] BIO Policy 4 sets out criteria considered in determining and identifying ecosystems, habitats and areas with significant indigenous biodiversity values. To be considered significant, a site must have values that meet at least one of the first three criteria (criterion (a), (b) or (c)) and be sustainable (criterion (d)), which takes into account the quality of the area, its naturalness and inherent ecological viability.

"*In the maintenance and enhancement of indigenous biodiversity in Taranaki consideration will be given to the social and economic benefits of appropriate use and development of resources.*"

There are considerable social and economic benefits from the Project (described in Section 9 of this report), and from the use and development of natural and physical resources in the area. The enhancement of safety, resilience and journey time reliability of travel on SH3 will benefit the whole of Taranaki, and in particular the growing proportion of heavy traffic carrying freight to and from key economic and transportation hubs. Overall, the Project is an appropriate use and development of resources, recognising that without the mitigation and biodiversity offset package which is a core part of the Project, the scale and nature of the Project would cause adverse environmental effects on indigenous biodiversity.

11.4.5.2 Freshwater management and aquatic ecology

There are also provisions in the RPS relating to indigenous biodiversity in Section 6.1 (Sustainable allocation of surface water resources), Section 6.2 (Maintaining and enhancing the quality of water in our rivers, streams, lakes and wetlands) and Section 6.6 (Managing effects associated with the use and development of river beds). These provisions relate particularly to freshwater management and aquatic ecology.

The Mimi River and Tongaporutu River (which the Mangapepeke Stream discharges to) are identified in Appendix I of the RPS as being "*river and stream catchments of high quality or high value for their natural, ecological and amenity values*". These values are identified as being:[82]

- The Mimi River has recreational and fishery values associated with whitebaiting and a good diversity of native aquatic fauna including eels, whitebait, bullies and torrent fish. The stream has aesthetic and scenic values associated with good scenic values, steep cliffs with puketea forest, high ecological values in upper reaches and the estuary is an area of outstanding coastal value. Native vegetation has been retained within the catchment.
- The Tongaporutu River has recreational and fishery values associated with a good diversity of native aquatic fauna including eels, whitebait, bullies and torrent fish and presence of threatened species, and recreational uses which include canoeing and whitebaiting. The Tongaporutu River is highly rated for aesthetic and scenic values, and the estuary is an area of outstanding coastal value. Water quantities and flows contribute significantly to high recreational, scenic and aesthetic values, and native forest is present in the upper reaches.

An estimated 3.47km of stream in the Mangapepeke and Mimi catchments will be diverted, culverted or substantially altered as a result of the Project. The affected streams have moderate to high ecological values, and a diverse fish community. Other potential effects on water courses considered in Section 9.8 and in Technical Report 7b include construction discharges, water takes during construction, fish passage effects and effects of stormwater discharge from the operational highway.

[82] See Appendix I of the RPS

Adverse effects of the Project on the values of the Mimi and Mangapepeke catchments have been appropriately avoided, remedied or mitigated, and any residual effects offset:

- In relation to construction effects, and as set out in the CWMP (Technical Report 13), a range of structural and non-structural construction water management measures are proposed for the Project.[83] The CWAR concludes that overall, provided that appropriate construction water management measures are implemented, any adverse construction water related effects arising from the construction of the Project will be less than minor. This conclusion is supported in the Aquatic, Marine and Vegetation Assessment Reports.
- Adverse effects on upstream fish passage during construction (which could potentially be restricted when culverts are installed and water is flowing through any temporary diversion pipes) are considered to be negligible to low (see Technical Report 7b).[84]
- During construction, water takes from Mimi River catchment and the Mangapepeke Stream (a sub-catchment of the Tongaporutu River catchment) are proposed. In order to protect these in-stream values, it is proposed that water takes are restricted to no more than 20% of the water depth at the time of the take, noting that the take will be temporary and utilised during construction only.[85]
- Once the road is constructed, the methods to avoid and mitigate the permanent adverse effects out in the Freshwater Ecology Assessment and the Ecological Mitigation and Offset Report are considered to appropriately avoid, mitigate and remedy the adverse effects resulting from the construction of the Project.[86]
- As set out in the Ecological Mitigation and Offset Report (Technical Report 7h), restoration of 8.9km of riparian margin is proposed following the completion of works. Stream restoration work will consist mostly of planting of a 10m buffer on each side of the channel and fencing of the stream and buffer plantings from livestock. This is considered to provide an effective riparian buffer along these lengths of stream.[87]
- Technical Report 7h notes that the proposed offset riparian planting will provide shade and organic matter to the stream channel to improve the quality of habitat for native fish and invertebrates, and a reduction of sediment and nutrient loads entering the streams. In addition, where the swamp forest restoration planting and stream restoration planting areas can coincide along the Mangapepeke Stream valley, the net ecological benefit will be substantial and considerably greater than if the swamp forest and riparian forest restoration plantings were undertaken in fragmented fashion.[88]

[83] See WQU Objective 1

[84] See WAL Objective 1, RLB Policy 1, WQU Objective 1

[85] See WAL Policy 2

[86] See RLB Objective 1, WQU Policy 1

[87] See WQU Policy 1

[88] See WQU Policy 2

- Fish passage will be provided for permanent culverts. Further, it is likely that the riparian planting will improve ecosystem functions, by reducing streambank erosion and trampling of spawning sites.[89]
- The basis of stormwater design is collecting and conveying runoff in a safe, low maintenance and simple drainage network; using culvert crossings to maintain flows across valleys and natural flowpaths; minimising stream diversions where practical, and improving existing streams where diversions are necessary; constructed wetlands will collect road run-off and provide treatment, extended detention to minimise scour/erosion of streams and contain emergency spills; and fish passage, where it exists naturally, will be maintained. Overall, the operational stormwater discharge will comply with the Regional Council permitted activity standards.[90]

Overall, the Project is considered to be consistent with the objectives and policies relating to freshwater management and aquatic ecology.

11.4.6 Natural character of water bodies

The preservation of the natural character of wetlands and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development is a matter of national importance under s6 of the RMA. The RPS contains provisions which reflect this direction in Section 6.4 (Protecting the natural character of wetlands) and Section 6.6 (Managing effects associated with the use and development of river beds).

For this Project, natural character especially relates to the existing natural elements, processes and patterns, in particular the natural movement of water; and natural experiential attributes of the Mangapepeke Stream systems and the Mimi swamp forest (refer Section 9.9 and Technical Report 8a). In this regard, natural character is considered within a range from pristine to modified. Where the degree of natural character generally reflects the absence of buildings and other human influences, the presence of original landforms and vegetation cover (particularly indigenous vegetation) together with other ecological patterns, water bodies and natural movement of water and sediment, as well as experiential attributes.

11.4.6.1 Natural character of wetlands

Section 6.4 of the RPS notes that:

> "*Prior to European settlement much of the Taranaki landscape was covered in wetlands, but since that time 98.5% of these areas have been drained or filled for agricultural production and urban development, leaving the region with a relative scarcity of wetland habitats, well below the national average. Because of their scarcity, the remaining wetlands have a heightened value.*"

Kahikatea swamp maire forest and Kahikatea forest are present within and immediately adjacent to the Project footprint. Of particular note, the Mimi swamp forest in the northern Mimi River catchment immediately adjacent to the Project footprint contains habitat for a wide range of threatened plants, and has high ecological value (see Technical Report 7a).

[89] See RLB Policy 1

[90] See WQU Policy 1

The northern parts of the upper Mimi Valley affected by the Project are of moderate natural character value from a landscape perspective due to the relative proximity of the existing SH3 corridor (see Technical Report 8a).

The natural character of the Mimi swamp forest has been protected[91] by locating the road alignment to avoid directly impacting on this wetland, and includes a bridge to the west of the wetland area will preserve the natural landform of the steep gully that feeds directly into this wetland. All road drainage will be diverted away from the system to storm water treatment areas downstream of the wetland.

Two small additional areas of this habitat type are affected: a small stand of kahikatea and swamp maire in the Mimi catchment and another area of pole kahikatea in the Mangapepeke Valley. Approximately 11ha of rushland/sedgeland mosaic community will potentially be affected in the lower Mangapepeke Valley, which contains areas of low producing pasture and rushland in the areas of imperfectly drained soils and intermittently wet ground. While modified from grazing and exotic weed invasion, these sedgeland communities meet the "wetland" definition in the RMA and are assessed as having moderate ecological value (see Technical Report 7a) and low-moderate natural character (see Technical Report 8a).

The ecological mitigation and biodiversity offset package involves the creation or restoration of similar wetland habitat. This will include planting of suitable species of a similar composition to communities in the Mimi swamp forest. While there will be some adverse effects on natural character in those locations affected by construction and the operational highway, the mitigation and biodiversity offset package will enhance natural character in the offset locations in the medium to long-term.

WET Policy 2 states:

> *"The enhancement and creation of wetland areas will be encouraged, where appropriate."*

In this regard, the proposed offset mitigation includes 6ha of swamp forest restoration planting to fully offset the loss of the kahikatea and swamp maire forest by the Project. In addition, three constructed wetlands are proposed to treat stormwater from the road once this is operational.

11.4.6.2 Natural character of rivers

Provisions of Section 6.6 seek to avoid, remedy or mitigate adverse effects on natural character of rivers (see RLB Objective 1 and RLB Policy 1).

The landscape, natural character and visual assessment (Technical Report 8a) considers the natural character of the area to be moderate-low (Lower Mangapepeke Valley), moderate-high (Upper Mangapepeke Valley) and moderate (northern part of the Mimi catchment). The northern and southern tie in sections, the lower Mangapepeke Valley and the southern Mimi Valley sections represent the most modified areas of the Mangapepeke and Mimi River systems. As such the natural character effects of the Project on these areas is low, due to the existing human influence on rural character and land use activities (including SH3 in the lower part of the Mangapepeke valley and also in the lower Mimi valley). However, works in

[91] WET Objective 1, WET Policy 1

the upper Mangapepeke valley will require filling and diversion of the natural stream in this location and adverse effects are considered to be moderate / high.

As set out in Technical Report 8a, the Project addresses adverse natural character effects by:

- Minimising the steam and valley crossings throughout the alignment;
- Maintaining and enhancing natural stream environments where practically possible;
- Mitigating stream disturbance through appropriate stream diversions of comparable natural character where practical;
- Offering a significant opportunity to enhance the natural character of the Mangapepeke Stream corridor and valley through the ecological mitigation and biodiversity offset package (see Technical Report 7h); and
- Offsetting effects on watercourses through riparian plantings and stream restoration

Overall, the Project is consistent with the provisions in Section 6.6 which seek to avoid, remedy or mitigate adverse effects on natural character of rivers.

11.4.7 Natural features and landscapes

NFL Objective 1 is:

> "*To protect the outstanding natural features and landscapes of the Taranaki region from inappropriate subdivision, use and development, and to appropriately manage other natural areas, features and landscapes of value to the region*."

There are no outstanding natural features or landscapes within the Project footprint. However, the Project area does have other natural areas, features and landscapes of some value as set out in the landscape, natural character and visual assessment (Technical Report 8a and the Ecological Reports 7a-7h). The landscape and area surrounding the Project footprint could be characterised as having a number of the values listed in NFL Policy 2, including:

- high water quality, particularly in the headwaters of the Mangapepeke and Mimi Streams;
- vegetated, steep hill country which is prone to erosion;
- moderate-high natural character values associated with the Upper Mangapepeke Valley;
- the alluvial and swamp forest vegetation communities present within the northern tributary of the Mimi River and the Mangapepeke Stream including kahikatea forest, kahikatea swamp maire forest, swamp maire forest, and kahikatea treeland has a high ecological value; and
- the entire area is culturally significant to Ngāti Tama.

As described in Section 9.9, the mitigation proposed as set out in the LEDF and ecological mitigation and biodiversity offset package is an appropriate response to the nature and scale of the Project and its effects on these landscape values. The design of the Project has been developed to:

- Retain the key ridgelines defining the landscape by using a tunnel, and minimising effects on landform and bush;

- Include a bridge across the Mimi swamp forest area;
- Minimise stream and valley crossings by keeping to the sides of the valleys;
- Develop cut faces that echo natural slope angles;
- Promote natural succession re-vegetation;
- Integrate landscape and ecological rehabilitation;
- Provide an opportunity for cultural expression and recognition; and
- Promote a scenic journey experience.

NFL Policy 3 states:

The protection of outstanding and where appropriate, other natural features and landscapes of value shall be achieved by having regard to the following criteria in determining appropriate subdivision, use and development:

a the value, importance or significance of the natural feature or landscape at the local, regional or national level;

b the degree and significance of actual or potential adverse effects on outstanding natural features and landscapes or other important natural features and landscapes, including cumulative effects, and the efficacy of measures to avoid, remedy or mitigate such effects;

c the benefits to be derived from the use and development at the local, regional and national level;

d the extent to which the subdivision, use or development recognises or provides for the relationship of tangata whenua and their culture and traditions with their ancestral lands, water, sites, wāhi tapu and other taonga;

e the need for use or development to occur in the particular location;

f the sensitivity or vulnerability of a natural feature or landscape to change, and its capacity to accommodate change, without compromising the values of the feature or landscape;

g the degree of existing modification of the natural feature or landscape from its natural character;

h the degree to which financial contributions associated with any subdivision, use and development can be used to offset actual or potential adverse effects arising from those activities.

In regards to NFL Policy 3:

- The upper Mangapepeke Valley is of moderate to high natural character value due to the unmodified stream corridor and indigenous vegetation cover combined with relatively strong ridge and spur landforms (refer Section 9.9). The lower Mangapepeke Valley is more modified. On the other side of the ridge, the Upper Mimi Valley is considered to have moderate natural character value.
- Section 9.9 describes the values and presents an assessment of landscape, natural character and visual effects (refer Technical Report 8a for details), along with the measures to avoid, remedy, mitigate or offset these effects. These resources are incorporated in the LEDF (Technical Report 8b) and the mitigation and biodiversity

offset package and ELMP (refer Section 9.8.9). These measures are considered to appropriately address the level of adverse effects anticipated as a result of construction.

- As set out previously, SH3 is the key transport connector for Taranaki to Waikato and further north. Improving the connection is anticipated to result in regional benefits to people's way of life (through greater resilience in the road network to accidents and natural hazards, and improved capacity and ease of movement for both freight and people), growth and development and wellbeing including through the improvement in journey experience.
- The relationship of Ngāti Tama to the land affected by the Project has been central to the development of the Project. Consultation is ongoing and will remain so throughout the Project.
- A number of locations were examined throughout a detailed alternatives assessment process. The Project route was selected as the preferred location for a variety of reasons (see Section 6 of the AEE and Volume 4).
- The landscape, natural character and visual assessment (refer Section 9.9) found that the Project is predominantly within a contained valley system that has a moderate capacity to accommodate landscape change.
- Financial contributions are not proposed. However, the mitigation and biodiversity offset package proposed is extensive, including for pest management over 560ha.This package will offset the residual effects and result in long-term ecological enhancement.

11.4.8 Land disturbance and soil conservation

Protecting Taranaki soil from accelerated erosion is identified as a key issue in Section 5.1 of the RPS. The Project is located in inland hill country, which is identified as erosion-prone in the RPS.

Best erosion and sediment control practises will be employed by the Project during construction, in accordance with the Transport Agency Erosion and Sediment Control Guidelines for State Highway Infrastructure, as set out in the CWMP. Areas with slopes exceeding 30% will be subject to a high level of detailed erosion and sediment control planning design and ongoing contractor monitoring (with responses as necessary). Overall, it is considered that practices that cause accelerated erosion will be avoided where practicable and remedied and mitigated using best practice where avoidance is not practicable. This is considered to be consistent with AER Objective 1 and AER Policy 1, which seek to maintain and enhance the soil resource of the Taranaki region, encourage the sustainable use and development of land and soil resources, and minimise soil erosion.

Both the Mimi River and the Mangapepeke Stream (via Tongaporutu River) eventually discharge to the coastal marine area.

11.4.9 Historic heritage

Historic heritage provisions are contained in Section 10.2 of the RPS. HIS Objective 1 and HIS Policy 2 are relevant to this Project, and require that historic heritage values are protected from inappropriate subdivision, use and development.

No known archaeological or other historic heritage sites will be affected by the proposed construction of the Project (see Technical Report 9). An ADP is proposed to provide for the possibility of unrecorded archaeological sites being uncovered during construction.

11.4.10 Public health and amenity values

11.4.10.1 Public health

Public health related issues identified in the RPS include managing the effects of hazardous substances and contaminated sites (Section 5.3) and maintaining air quality (Section 7.1)

In relation to hazardous substances and contaminated sites, the PSI contained in Volume 3 of the AEE (Technical Report 12) has identified potential contaminated land along the Project footprint, although a large portion of the proposed alignment has not been subject to potential contaminating activities. Provided the procedures set out in the CLMP attached in Volume 5 are adopted, the potential for environmental effects from contaminated land are expected to be less than minor.[92]

Management of hazardous substances associated with the construction period, including the storage, use, transportation and disposal of these substances, will be undertaken in a manner which avoids, remedies or mitigates adverse environmental effects as set out in the CEMP (and the CWMP in relation to non-sediment contaminant management).

In relation to maintaining air quality, existing air quality in the vicinity of the Project is good. Modelling has found that operational vehicle emission discharges will not affect air quality (see Technical Report 11). The Project will not generate contaminants in a manner than has adverse effects on human health or the environment, and odour is not considered to be an issue.

The potential effects of dust generated during construction works has been assessed (refer Section 9.15.2). Three potential receptors have been identified in proximity to the works. Any dust effects will be appropriately managed via a DMP (see Volume 5).

In summary, dust can be appropriately managed to ensure there any effects are no more than minor. With DMP measures in place the Project is considered to be consistent with the relevant air quality provisions (AQU Objective 1, AQU Policy 1, AQU Policy 2).

11.4.10.2 Amenity values

Section 10.3 of the RPS sets out provisions relating to maintaining and enhancing amenity values. AMY Policy 1 states:

"*The adverse effects of resource use and development on rural and urban amenity values will be avoided, remedied or mitigated and any positive effects on amenity values promoted. Any positive effects of appropriate use and development will be fully considered and balanced against adverse effects. Those qualities and characteristics that contribute to amenity values in the Taranaki region include:*

a *safe and pleasant living environment free of nuisance arising from excessive noise, odours and contaminants, and from traffic and other risks to public health and safety;*

[92] See HZC Objective 1, HZC Policy 4. HAC Policy 5

a *scenic, aesthetic, recreational and educational opportunities provided by parks, reserves, farmland, and other open spaces, rivers, lakes, wetlands and their margins, coastal areas and areas of vegetation;*

b *a visually pleasing and stimulating environment;*

c *efficient, convenient and attractive urban forms; and*

d *aesthetically pleasing building design, including appropriate landscaping and signs*."

Effects of the Project on the qualities and characteristics listed above are as follows:

a Construction noise and vibration, air quality and traffic effects have been assessed and are considered to be less than minor. Construction noise in proximity to the dwelling at 2397 Mokau Road may require specific measures to management noise effects (see Section 9.15.3 and Technical Reports 10). Once operational, the road will operate at a similar level to the existing SH3 but will be safer and easier to drive.

b The existing recreational opportunities will be maintained and enhanced (with safer access provided), particularly to the Mimi River and surrounds via the Kiwi Road track. The wider scenic amenity qualities of the surrounding environment have also been maintained through route selection and keeping the road low in the landscape. In addition, the new route is likely to provide road users with a scenic wilderness and amenity experience.

c The design principles set out in the LEDF include "*creating an aesthetically pleasing experience for travellers that derives from the highway following and 'fitting in' with the natural landscape patterns*" and "*creating a straight-forward and uncluttered aesthetic to the highway by such means as attention to the details of the highway edge, and a refined and pared-back suite of elements (such as barriers, signs, drainage structures)*". The key mitigation measures proposed as a core part of the Project (integration of earthworks and batters with natural landforms, naturalised stream diversions, mitigation plantings and ecological restoration) are anticipated to result in a visually pleasing and stimulating connection between Taranaki and the north.

d (Not applicable as the route is located in a rural area.)

e Buildings associated with the Project include hydrant tanks and a tunnel control building. These will be screened, and the tunnel control building set into the landscape. Details of landscape design and treatment, including the hydrant tank and tunnel control building, are set out in Section 5 of the LEDF.

Overall, the Project will a minor adverse effects on amenity values, and will enhance values once mitigation planting is established.

11.5 Regional plans assessment

The Regional Council has prepared four regional plans to assist the Council to carry out its functions under the RMA. Of these, the Regional Fresh Water Plan for Taranaki (Fresh Water Plan), the Regional Soil Plan for Taranaki (Soil Plan) and the Regional Air Quality Plan for

Taranaki (Air Quality Plan) are relevant to this proposal[93]. Each plan identifies the specific resource management issues to be addressed by the Council within the particular scope and purpose of that plan, and each contains objectives and policies in relation to those issues and detailed methods to implement the policies. The plans are intended to be read in an integrated fashion.

The relevant objectives and policies of the regional plan provisions are addressed in full in Appendix A. The following sections provide a summary of the assessment against the provisions of each plan.

11.5.1 Regional Fresh Water Plan for Taranaki 2001

The purpose of the Fresh Water Plan is to assist the Regional Council to promote the sustainable management of the fresh water resources of the region. Of particular relevance to this Project, the Mimi River and the Tongaporutu River (which the Mangapepeke Stream discharges into) are identified as a stream of value in Appendix IA of the Fresh Water Plan. As set out in Appendix 1A, the values identified in relation to these catchments are as follows:

- The Mimi River has recreational and fishery values associated with whitebaiting and a good diversity of native aquatic fauna including eels, whitebait, bullies and torrent fish. The stream has aesthetic and scenic values associated with good scenic values, steep cliffs with puketea forest, high ecological values in upper reaches and the estuary is considered to be an area of outstanding coastal value.
- The Tongaporutu River has recreational and fishery values associated with a good diversity of native aquatic fauna including eels, whitebait, bullies and torrent fish and presence of threatened species, and recreational uses which include canoeing and whitebaiting. The Tongaporutu River is highly rated for aesthetic and scenic values, and the estuary is considered to be an area of outstanding coastal value. Water quantities and flows contribute significantly to high recreational, scenic and aesthetic values, and native forest is present in the upper reaches.

Table 11.1 below sets out a summary assessment of the plan provisions against key themes. Overall the Project is consistent with the objectives and policies of the Fresh Water Plan.

[93] The fourth plan, the Regional Coastal Plan for Taranaki, is applicable to activities within the coastal marine area only and is not relevant to this Project.

Table 11.1 - Regional plan provisions

Key theme	Provision reference	Comment
Enabling appropriate use and development of fresh water	Objective 5.1.1 Policy 5.1.1	SH3 connects Taranaki's primary sectors to markets in the north, tourist routes and access to health, cultural and other services. The Project, including associated use and development of the freshwater resources within the Project footprint and the water take locations, will ultimately provide for social, economic, and cultural wellbeing for the people and communities of Taranaki by enhancing driver safety and travel experience along this part of the route. The Project provides regionally significant positive benefits to people and communities, including greater resilience in the road network to accidents and natural hazards, and significantly improved capacity and ease of movement for both freight and people which is beneficial for regional growth and development and wellbeing (see the Social Impact Assessment, Technical Report 5).
Treaty of Waitangi, tangata whenua and cultural heritage	Objective 4.1.1 Policy 4.1.1 Policy 4.1.2 Policy 4.1.3 Policy 4.1.5 Policy 6.1.3 Policy 6.2.1 Policy 6.6.9	The Transport Agency recognises Ngāti Tama's mana whenua and the significant cultural values of the wider Parininihi area (refer Section 8.4.1 and 9.7). As described in Section 7.7, the Transport Agency has undertaken extensive consultation with Ngāti Tama. This process has significantly influenced route selection and design, including avoiding the western Parininihi land, setting the Project back from Mt Messenger, and using a tunnel under the ridge. Section 9.7 of the AEE describes how the Transport Agency has taken into account the principles of the Treaty of Waitangi, and provided for Ngāti Tama's rangitiratanga and kaitiaki responsibilities in relation to the Project area, the route selection process, development of the Project designs, monitoring of construction, and Ngāti Tama's ongoing relationship with the Project through the operational phase of the highway. Consultation and collaboration with Ngāti Tama is ongoing and will continue throughout the resource consent process and beyond, including input into detailed design where it is anticipated there will be opportunities for cultural expressions to be explored and embedded within the landscape of Mt Messenger and the Mangapepeke valley. The Project design, the management measures set out in Volume 5, the LEDF and the ecological mitigation and biodiversity offset package have sought to protect the area from the adverse effects of the proposed activities as far as practicable, and to remedy, mitigate and offset those residual effects where avoidance has not been possible.

Key theme	Provision reference	Comment
		The cultural values and relationship of Ngāti Tama to the area (including the watercourses) will be acknowledged and incorporated into the final Project design. The Transport Agency has also consulted with Ngāti Maniapoto and Ngāti Mutunga. Engagement and collaboration with iwi is ongoing and will be continued through the Project.
Indigenous biodiversity	Fresh Water Plan: Objective 3.1.2 Objective 3.1.4 Objective 3.1.6 Policy 3.1.2 Policy 3.1.3 Policy 3.1.4 Policy 5A.1.1 Policy 6.1.3 Policy 6.1.4 Policy 6.1.5 Policy 6.2.1 Policy 6.2.2 Objective 6.3.2 Policy 6.6.1 Policy 6.6.2 Policy 6.6.9	As described in Section 9.8 (and in Technical Report 7b), an estimated 3.47km of stream in the Mangapepeke and Mimi catchments will be diverted, culverted or substantially altered as a result of the Project. Other potential effects on water courses considered in Section 9.8 and in Technical Report 7b include construction discharges, water takes during construction, fish passage effects and effects of stormwater discharge from the operational highway The proposed methods to avoid, mitigate or offset the adverse effects of the Project are set out in Section 9.8.9 and Section 10. Restoration of 8.9km of riparian margin is proposed following the completion of works. Stream restoration work will consist mostly of planting of a 10m buffer on each side of the channel and fencing of the stream and buffer plantings from livestock. The proposed mitigation and offset methods appropriately avoid, mitigate and remedy the adverse effects resulting from the construction of the Project and will result in a net positive effect in the short-medium term. In addition, in order to avoid or mitigate adverse effects of the proposed water takes, the proposed take is restricted to no more than 20% of the water depth at the time of the take. Allowing for these mitigation and biodiversity offset measures, the life supporting capacity of water and aquatic ecosystems affected by the Project will be maintained and enhanced.

Key theme	Provision reference	Comment
Natural character of water bodies	Objective 3.1.2 Objective 3.1.3 Policy 3.1.2 Policy 3.1.4 Objective 3.1.2 Policy 6.1.3 Policy 6.6.9	Natural character and water quality characteristics vary between the catchments affected by the Project. It is acknowledged that there are residual adverse effects of the Project particularly in the upper Mangapepeke Valley which has moderate-high natural character values. Mitigation and biodiversity offset package that is included as a core part of the Project. The package has a high likelihood of substantially reversing the diminished state of the ecology in those areas where the mitigation is targeted, and achieving a net gain in biodiversity within 10 to 15 years following construction. This is considered to be an overall improvement to natural character values, and a sustainable approach to a project of this scale and nature.
Water allocation		There are no consented water takes downstream of the Project construction water takes. There may be permitted activity takes related to agricultural use however the proposed water takes associated with construction are unlikely to affect the water available for this use. As described in Section 9.8.7 (and in Technical Report 7a), the approach to restrict water takes to no more than 20% of the water depth at the time of the take is considered to be conservative and would offer a high level of protection considering the climate, and short term use. The water intakes will also be appropriately designed to exclude fish.
Avoiding and mitigating natural hazards (flooding and erosion)	Objective 6.6.2 Policy 6.6.1 Policy 6.6.3 Policy 6.6.8	Issue 6.6 relates to adverse effects on the environment from uses of river and lake beds. This section contains provisions specifically relating to flooding and erosion, including the unintentional impoundment of water, reductions in the capacity of river channels to convey flood flows, adverse effects of flooding on adjacent properties or uses and erosion or accretion of river and lake beds or banks. The Project has been designed to convey flow as a minimum for the extended detention flow, as defined by the Transport Agency's Stormwater Treatment Standard and, where no acceptable alternative overland flow path is available, the 100 year Average Recurrence Interval flow. Sediment control devices will be located outside the 20-year ARI flood level where this can be practically achieved. It is recognised there will be limited ability within the lower valley floor locations to achieve this. In that case where sediment control devices are required within the 20-

Key theme	Provision reference	Comment
		year ARI flood level, they will be designed to capture the minimum catchment area and will be subject to an increased inspection and maintenance regime.
Public access and amenity values	Objective 3.1.2 Objective 3.1.5 Policy 3.1.2 Policy 3.1.4 Objective 3.1.2 Policy 6.1.3 Policy 6.6.9	Public access and amenity are considered in Section 9.6 and 9.9. Existing public access will be maintained, except if there are health and safety issues with keeping the Kiwi Road track open during construction of that part of the Project. The Kiwi Road track will be re-directed under the new SH3 bridge once this is completed and safe access to it from SH3 will be provided. It is noted that there are also opportunities to consolidate the track access areas for better amenity for the start of both the Kiwi Road and Mt Messenger Tracks once construction is complete. The net recreational effects of the Project are positive. Aesthetic and scenic values of the Project footprint have been taken into account as part of the design process, including alternatives assessment. The design and mitigation package set out in the LEDF (Appendix 8b) and ELMP is an appropriate response to the nature and scale of the Project and associated adverse effects.

11.5.2 Regional Soil Plan for Taranaki 2001

The purpose of the Soil Plan is to assist the Taranaki Regional Council to carry out its soil conservation functions under the RMA. Issue 1 is identified as being accelerated erosion (soil loss) as a result of inappropriate land management practices.

The Soil Plan identifies that in the hill country (where this Project is located), natural erosion rates vary with higher rates occurring on the steep, wet hills further inland. The hill country makes up 55% of the region, or just over 400,000 hectares. Research has shown that slopes greater than 28° are particularly susceptible to mass movement erosion (slipping, slumping or flowing of the subsoil). Mass movement is often triggered by high rainfall events, and is accentuated by the sharp contact between the soil and the relatively impermeable sandstone, siltstone and mudstone bedrock.[94]

The CWMP contains measures focused on avoiding, remedying and mitigating erosion. Best practise erosion and sediment control practises will be employed by the Project during construction, in accordance with the Transport Agency Erosion and Sediment Control Guidelines for State Highway Infrastructure, as set out in the CWMP.

Erosion control will be the highest priority in the design of erosion and sediment control measures. Higher risk areas will be subject to a specific risk assessment and the implementation of appropriate best practice erosion and sediment control measures over and above those typically implemented for standard earthworks projects.

Areas with slopes exceeding 30% will be subject to a high level of detailed erosion and sediment control planning design and ongoing contractor monitoring, as defined through an adaptive monitoring programme. Overall, practices that cause accelerated erosion will be avoided where practicable and appropriately remedied and mitigated where avoidance is not practicable.

Overall the Project is consistent with the objectives and policies of the Soil Plan.

11.5.3 Regional Air Quality Plan for Taranaki 2011

The purpose of the Air Quality Plan is to assist the Taranaki Regional Council to carry out its functions under the RMA to promote the sustainable management of the air resource of the Taranaki region.

Provisions include direction to maintain the existing high standard of ambient air quality in the Taranaki region and to improve air quality in those instances or areas where air quality is adversely affected, whilst allowing for communities to provide for their economic and social wellbeing, and to safeguard the life-supporting capacity of air throughout the Taranaki region.

Overall, the existing standard of ambient air quality in the wider Project area and Taranaki more broadly will be maintained in the long-term. The key discharge to air during construction works will be dust. Dust will be managed with a particular focus on amenity and aesthetic qualities for sensitive receptors located near the construction site.

[94] Soil Plan, p19-20

High dust loadings, of a magnitude likely to cause adverse effects on vegetation, are unlikely to occur beyond around 10m from the construction footprint. Mitigation measures to address 'edge effects' on the bush margins are proposed in the Assessment of Ecological Effects – Vegetation (Technical Report 7a, Volume 3 of the AEE).

There is the possibility that construction activities may encounter old "farm dumps" containing potentially odorous material. While these may cause very localised odours, they are located some distance from sensitive receptors. On this basis, there is unlikely to be any offensive or objectionable effects of odour associated with the Project.

The operational phase of the Project will give rise to emissions of contaminants from motor vehicle exhaust and brake and tyre wear. As discussed in the Air Quality Assessment (Technical Report 11), the effects of operational discharges to air on human or animal health, or ecosystems, are predicted to be negligible.

Overall, the Project is consistent with the provisions of the Air Quality Plan, particularly with the implementation of the DMP attached in Volume 5.

11.6 New Plymouth Operative District Plan 2005

The New Plymouth Operative District Plan (District Plan) became operative in August 2005. It includes objectives, policies and rules that manage the adverse effects of activities on the environment in the New Plymouth District with a focus on land use and subdivision activities. The Project is zoned as Rural Environment under the District Plan. There are no relevant overlays.

Sections 11.6.1 to 11.6.10 below summarise the key themes of the relevant objectives and policies of the plan and provides an assessment against these themes, drawing on the assessment outlined in Appendix A of the AEE.

11.6.1 Efficient operation of the road transportation network

Objective 20 of the District Plan is:

> "*To ensure that the road transportation network will be able to operate safely and efficiently.*"

The main driver for the Project is to improve the operation, including the safety and efficiency, of SH3. As set out in the Strategic Transport Report (Technical Report 1), continued growth of the Taranaki region (and the importance of Auckland, Hamilton and Tauranga) has steadily added pressures and exposed shortcomings within the northern arterial connections serving New Plymouth and the wider Taranaki region. These pressures and the associated limitations are especially evident along the length of SH3 north from New Plymouth including Mt Messenger section, where the road is no longer fit for purpose. The safe and efficient operation of the road transportation network will be significantly improved by the Project compared to the existing Mt Messenger route, which will be upgraded from a Star Safety Rating of 2 to a Star Safety Rating of 3.

Policies 20.3 and 20.4 relate to the effects on the road transportation network by land use activities and signs. As set out above, the safe and efficient operation of the road transportation network will be improved by the Project. During construction, the CTMP will

manage traffic interactions with the existing SH3. Signs will be erected in accordance with the Transport Agency's Manual of traffic signs and markings.

Objective 22 is:

> "*To avoid the adverse effects of subdivision, use and development by ensuring appropriate and sufficient infrastructure, community facilities and new areas of open space are provided."*

The Project will assist in future-proofing SH3 to allow for future growth of the Taranaki region by providing fit for purpose infrastructure. While strategically important, the existing road does not currently provide an adequate level of service. The Project will significantly improve the connectivity of vehicles freight to and from the Taranaki region, appropriately reflecting the Regional Route classification of SH3.

Overall the Project will be consistent with the objectives and policies relating to the road transportation network and infrastructure.

11.6.2 Natural hazards

Objective 12 is:

> "*To avoid or mitigate any actual or potential adverse effects of natural hazards on people, property and the environment."*

Policy 12.1 further states:

> *"Subdivision, land use and development should be designed and located to avoid or mitigate the adverse effects of natural hazards on human life, property, infrastructure and the environment."*

The Project will enhance the resilience of SH3 by providing a new, modern, fit for purpose and resilient route. The present route is substandard and not resilient to natural hazards. The Project will provide better reliability for businesses and the wider community, district and region both in reducing the effects of natural hazards on the SH3 corridor and proving a resilient lifeline route north in the event of a natural hazard (including connecting to Waikato hospital).

The alternatives assessment used resilience as one of the assessment criteria, which highlighted options where resilience of the road would be decreased, or significant works required to address resilience to natural hazards (namely landslides). The Project route will improve the resilience of the Mt Messenger section of SH3, and therefore the robustness of the broader regional transport network to natural hazards.

The Project will not increase the likelihood or magnitude of natural hazard events. In particular, construction activities will be undertaken in accordance with the CEMP and the CWMP to manage potential for increased natural hazard events eg erosion or exacerbation of flooding event consequences. The Project has been designed to reduce the area of vegetation being removed, such as by reducing the footprint of the works and by constructing tunnels and bridges.

Overall, the Project will have a net positive effect on regional and district resilience to natural hazards, particularly by reducing the possibility of SH3 closures due to natural hazards (eg landslips).

Overall the Project will be consistent with these objectives and policies.

11.6.3 Tangata whenua values

Objective 19 states:

> *"To recognise and provide for the cultural and spiritual values of tangata whenua in all aspects of resource management in the district in a manner which respects and accommodates Tikanga Maori."*

Parininihi and the surrounding area have profound cultural significance to Ngāti Tama. The Agency acknowledges the strong and longstanding connection between Ngāti Tama and the area within and around the corridor, the role of Ngāti Tama as kaitiaki of the area, and the centrality of the principles of Te Tiriti o Waitangi to this Project.[95]

As set out above in relation to the RPS, in its ongoing engagement with mana whenua and particularly Ngāti Tama, the Transport Agency has taken into account the principles of the Treaty of Waitangi especially the principle of partnership, along with recognition of the spiritual relationship that tangata whenua have with the environment and acknowledgement of Ngāti Tama's rangitiratanga and kaitiaki responsibilities in relation to the Project area.[96] The Transport Agency has acted (and will continue to act) co-operatively with iwi to facilitate an inclusive and responsive engagement process based on good faith and mutual respect.

Ngāti Tama representatives were involved in the design process throughout the Project, including the options assessment process, providing valuable understanding of the natural and physical resources in the area in addition to providing input on the options assessment and the design process. The alignment avoids directly affecting the western Parininihi land, but there remain significant potential cultural effects from the location of the road within Ngāti Tama land.[97] The process of identifying methods for mitigating the cultural effects of the Project will be iterative, involving ongoing consultation and collaboration between Ngāti Tama and the Transport Agency, and will incorporate input and discussions on land acquisition, design development, the mitigation package, construction and operation as set out in the effects assessment in Section 9.7 of the AEE.

Overall the Project will be consistent with the objective and policies relating to tangata whenua values.

11.6.4 Indigenous vegetation

Objective 16 is:

> *"To sustainably manage, and enhance where practical, indigenous vegetation and habitats".* The related Policy 16.2 states, *"Land use, development and subdivision should not result in adverse effects on, and should enhance where practical, the quality and intrinsic values of areas of indigenous vegetation and habitats."*

The ecological values present in the Project footprint and adjacent forested and wetland areas are high, although considerably diminished from their full potential because of the

[95] Policy 19.4

[96] Policy 19.3

[97] Policy 19.2

long term and largely unchecked impact of farm livestock and animal pests (and the effects of previous logging and fires).

The focus throughout the Project has been to avoid, remedy, mitigate or offset potential effects, including effects on indigenous vegetation. In the first instance, a Project option has been selected that minimises ecological effects by avoiding particularly significant habitat (particularly the western Parininihi land).

A core part of the Project has been to develop a robust ecological mitigation and biodiversity offset package. This package achieves a net gain in biodiversity within 10 to 15 years following construction, which is consistent with the intent of this objective and policy.

11.6.5 Natural character

Objective 14 is:

> *"To preserve and enhance the natural character of the coastal environment, wetlands, and lakes and rivers and their margins."* Objective 14.2 states, "*The natural character of wetlands and rivers and lakes and their margins should not be adversely affected by inappropriate subdivision, use or development and should, where practicable, be restored and rehabilitated."*

The road alignment has been located to avoid directly affecting the natural character values of the Mimi swamp forest in the upper Mimi Valley. There will be some adverse effects on the natural character values of streams/wetland areas particularly in the Upper Mangapepeke Valley as a result of diversions and culverting under the road, which will be offset through riparian planting.

As set out in Technical Report 8a, the Project addresses adverse natural character effects on rivers and wetlands by:

- Seeking to minimise the steam and valley crossings throughout the alignment;
- Maintaining and enhancing natural stream environments where practically possible;
- Mitigating stream disturbance within the upper Mangapepeke valley and developing appropriate stream diversions of comparable natural character where practical; and
- Offering a significant opportunity to enhance the natural character of the entire Mangapepeke Stream corridor and valley through the ecological mitigation and biodiversity offset package (see Technical Report 7h).

In order to restore and rehabilitate the natural character of streams affected by the proposal, riparian planting and fencing is proposed alongside pest control and restoration of the swamp forest, which will enhance the natural character of this area.

Technical Report 7g concludes that there will be no measurable adverse effects on the coastal environment, noting that there is a robust construction management regime proposed for the Project.

Overall, the Project is consistent with these provisions.

11.6.6 Public access to waterbodies

The Project will be consistent with Objective 18 and Policy 18.1, which set out provisions for maintenance and enhancement of public access to and along waterbodies.

Both the Mimi River and Tongaporutu River are identified as priority waterbodies in Appendix 18 of the District Plan. Public access to the Tongaporutu River will not be affected by the Project. Access to the Mimi River via the Kiwi Road Track is likely to be affected during construction due to human health and safety reasons. Access to this area will be made available as soon as it is safe to do so. Existing public access to streams in the area (namely the Mimi River via Kiwi Road Track) will be maintained and enhanced once construction is complete, with the Kiwi Road Track to be diverted under the new road bridge to avoid pedestrians crossing the highway.

11.6.7 Rural character

Issue 1 of the District Plan concerns the adverse effects of activities on the character of areas and on other activities.[98] Generally, the wider Project area is rural in nature and has been modified by agriculture and the presence of the existing road.

Issue 4 relates to the loss or reduction of rural amenity and character, with Objective 4 being *"To ensure the subdivision, use and development of land maintains the elements of rural character."* SH3 is an existing and expected part of the rural character in this location, acknowledging that the Project will affect an area which is not currently developed.

Policy 4.3 sets out ways in which the District Plan controls density, scale, location (including on-site location) and design of activities. In relation to this policy:

- The Project's scale and location have been determined following extensive environmental and engineering investigations, which were canvassed during the alternatives assessment process and public engagement sessions. Buildings associated with the Project will be either temporary and associated with the construction period, or small-scale ie the hydrant tanks and a tunnel control building, which will be set back from the road and screened.
- Rural character will be maintained through the design principles set out in the LEDF, including keeping low in the landscape at either end of the Project footprint, noting that the Project will tie into the existing SH3 which runs through rural land on either end of the alignment.
- Of particular relevance to the Project, large scale cuts and fills are proposed along the route alignment. The proposed alignment has been designed to optimise a balance of cut and fill volumes. However cut faces are an inevitable effect of a project of this nature in this terrain. The Landscape, Natural Character and Visual Assessment (Technical Report 8a) considers this to be a consistent and expected element in a highway environment. Based on the evidence of the existing SH3 corridor it is anticipated that these rock cuts will become a naturalised geological feature of the alignment over time mitigating their effects. Further discussion on the design treatment of cuts and fills is set out in the LEDF (and in Section 4.2 also).

To further integrate the Project into the environment,[99] including the rural character at the northern and southern ends of the alignment, the following design principles are proposed:

[98] Objective 1, Policy 1.1

[99] Policy 4.5

- Simplicity – setting the road low in the landscape and allowing the landscape to 'speak';
- Cultural context – interpretation and celebration of the cultural context of this location;
- Integration – with the natural and ecological landscape patterns; and
- Future proofing – responding to future growth in Taranaki and surrounding areas.

These principles are detailed further in the LEDF. This is consistent with the intent of Policy 4.5.

The Project has been developed to minimise the areas of vegetation clearance required, including by tunnelling and bridging sections of the realignment. The Ecological Mitigation and Offset Report (Technical Report 7h) provides details of the planting proposed to mitigate and fully offset the effects of the Project.[100]

Construction traffic movements will take place within the context of the existing levels of traffic on SH3, and will be safely and efficiently managed through the CTMP including stop/go operations where necessary.[101]

Overall, the adverse effects of the Project have been considered in a comprehensive and holistic manner. The Project is consistent with these objectives and policies.

11.6.8 Amenity values, including noise and lighting

A number of provisions[102] in the District Plan relate to amenity values, including noise and lighting which are particularly relevant to the Project

In relation to noise, there are very few dwellings in the general vicinity of the Project footprint. The Project will be contained within the Mimi and Mangapepeke Valleys, and affects few properties.

The Environmental Noise and Vibration Report (Technical Report 10) provides details of the level of noise to be generated both during construction and operation. Some mitigation will be required in relation to the dwelling adjoining the southern disposal site location however, in general noise and vibration are predicated to comply with the relevant standards.

Temporary construction lighting will be required at construction yards and active working areas to enable construction during the hours of darkness, especially during the winter period. Glare from any lighting will be kept below the recommendations in AS 4282 – 1997 "Control of the Obtrusive Effects of Outdoor Lighting".

Permanent lighting will be provided at the two local road intersections and the tunnel, which will be lit at all times to provide for the safe and efficient operation of the network. Lighting will be designed to avoid adverse effects on receptors, which will include the properties at either end of the alignment. Lighting will be designed to meet AS/NZS 1158 'Category V' requirements.

[100] Policy 4.6

[101] Policy 4.8

[102] Policy 1.2, Objective 2, Policy 2.1, Policy 2.2, Policy 2.3, Objective 4, Policy 4.3

Overall the Project will be consistent with the objectives and policies relating to amenity, including noise and lighting.

11.6.9 Public health and safety

The existing route has a poor safety record, with poor route resilience (common closures, with no suitable alternative routes) and poor road geometry and low speeds. The Project provides a number of safety benefits and will therefore improve the health and safety of the road users.[103]

Construction of the Project will be undertaken in accordance with the relevant health and safety legislation and procedures. Due to the remoteness of the site, interactions with the public during construction are likely to be low, and concentrated at the SAPs and potentially with users of the Kiwi Road Track. In order to avoid compromising public health and safety, the CTMP (Volume 5) sets out how construction traffic will be managed. The Kiwi Road Track may be temporarily closed at least partially when construction works are occurring in this location. Similarly, noise will be managed via a CNMP (Volume 5).[104]

As set out above, glare from any lighting (which may have adverse impacts on human health and safety) will be kept below the recommendations in AS 4282 – 1997 "Control of the Obtrusive Effects of Outdoor Lighting". Permanent lighting will be provided at the two local road intersections and the tunnel, which will be lit at all times to provide for the safe and efficient operation of the network.[105]

Hazardous substances and contaminated land are also public health and safety risks. Hazardous substances used on site include fuel and oil and other construction related substances. These will be managed in accordance with best practise and health and safety legislation. The CLMP attached in Volume 5 sets out the management and mitigation procedures for contaminated land within the Project footprint (noting that a DSI will be required to locate contaminated sites in an exact manner).[106]

Overall, it is considered that health and safety risks to the public can be managed appropriately during construction, and once complete, the Project will improve road safety in this area. The Project will be consistent with these objectives and policies.

11.6.10 Heritage

Objective 11 is:

> *"To recognise the district's heritage resources, provide for their protection and promote their enhancement*." Policy 11.3 specifically relates to archaeological sites, stating, "*Archaeological sites should be protected from destruction and alteration that will adversely affect their archaeological values."*

The District Plan states that cultural heritage consists of heritage items such as archaeological and waahi taonga/sites of significance to Maori.

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[103] Objective 3. Policy 3.1

[104] Objective 2, Policy 2.3

[105] Objective 2, Policy 2.3

[106] Objective 10, Policy 10.3

The Project will be consistent with this objective and policy.

In relation to archaeological sites, the Historic Heritage Assessment (Technical Report 9) finds that there is some potential to encounter remains within the Project footprint, but the risk is low. The possibility of unrecorded archaeological sites is provided for by putting procedures in place ensuring that the District Council and Heritage NZ are contacted should this occur (see ADP, Volume 5).

In relation to waahi taonga/sites of significant to Maori, as noted previously the entire Project footprint and surrounding area holds special significance to Ngāti Tama. As set out in Section 11.6.3 above and in preceding sections, the Transport Agency recognises this and will continue to engage on an ongoing basis with Ngāti Tama to address adverse effects on cultural heritage.

11.7 Other matters

11.7.1 Ngāti Tama Claims Settlement Act 2003

As set out in Section 2.6.1, the Ngāti Tama Claims Settlement Act 2003 provided for the redress of historic breaches of the Treaty of Waitangi, and included commercial and cultural redress items. Part of this redress was the return of the Parininihi lands to Ngāti Tama which provides the base for restoring Ngāti Tama sustenance and connection to the whenua, awa and moana. The Project traverses this land.

As set out in the preceding Sections 0, 7.7, 8.4.1, 9.7, and 11.3 to 11.6, the Transport Agency acknowledges the cultural, spiritual, historical, and traditional importance of the Project area to Ngāti Tama and has engaged on an early and ongoing basis. Discussions will continue throughout the consenting and implementation of the Project. .

11.7.2 Strategic documents

In addition to the statutory documents that have been addressed in 11.7.1 above, there are a number of national and regional strategic documents that have guided the coastal management response outlined in this AEE report. The key strategic direction arising from these documents is summarised in Table 11.2 below.

Table 11.2 - Key strategic direction

Strategic document	Key direction
"Tapuae Roa: Make Way for Taranaki": Taranaki Regional Economic Development Strategy 2017	The Taranaki Regional Economic Development Strategy (August 2017) provides direction for economic development, feeding into Long Term Plans in the future, influencing private sector investment decision making and contributing to the future activities and investment decisions of Ngā Iwi o Taranaki. The vision of Tapuae Roa is "Taranaki – where talent becomes enterprise: Kia eke panuku". Major hard infrastructure including the northern highway is identified as a 'one-off regional game-changer'. Tapuae Roa states that, *"The roads to the south are good, but the vital SH3 link to the north is significantly sub-standard, as*

Strategic document	Key direction
	is SH43 to the east. [The Transport Agency] is well advanced in planning for improvements to SH3 to the north."
Taranaki Regional Council Long Term Plan 2015-2025	The Taranaki Regional Council Long Term Plan 2015/2025 (LTP) focusses on ensuring there is efficient infrastructure and movement of people and goods vital to economic development and the region's natural environment and physical resources are sustainably managed. The LTP states that the Council's mission is to work for a thriving and prosperous Taranaki. Transport is one of six 'Groups of Activities' that contribute to achieving the Mission. The Transport group of activities promotes an affordable, integrated, safe, responsive and sustainable transport system that assists economic development and safety and personal security, improves access and mobility, protects and promotes public health and ensure environmental sustainability. The Project is consistent with this direction, given the social and economic benefits associated with improving the connectivity for freight and other vehicles from New Plymouth to the north.
Regional Land Transport Plan for Taranaki 2015-2021	The Taranaki RLTP establishes the strategic vision and outcomes for transport in the region. The RLTP identifies that SH3, a strategic corridor, is important to the viability of industries in Taranaki being able to compete in the North Island market and in overseas export markets, for regional tourism, and for access to other services and facilities in major centres outside Taranaki. The priority inter-regional issue for the Taranaki region is the future route efficiency, safety and reliability of SH3 travelling north over Mt Messenger, through the Awakino Gorge to Te Kuiti, Hamilton and beyond. The Project will assist in the removal of constraints to growth in freight, tourism and people movement, connecting Taranaki to important transport hubs in the north. The upgraded road corridor will also provide a fit for purpose experience for the tourism and productive sector. The Project will significantly improve the resilience of transport infrastructure, which would have a lifeline function in a state of emergency.
Regional Walkways and Cycleways Strategy for Taranaki 2007	This strategy sets out the vision, policies, implementation actions and outcomes for walking and cycling in the region. The vision is "To provide greater transport choice and

Strategic document	Key direction
	opportunities for people to discover and enjoy Taranaki's unique environment through walking and cycling." The Strategy recognises the increasing role of tourist and long-distance cycling. The Project will significantly improve the connection from the north to New Plymouth, enhancing the driving and visitor experience of tourists visiting Taranaki. The safety and quality of access to the walking tracks and the safety of cyclists who may use this remote section of the State highway will be improved compared to the existing Mt Messenger corridor.
New Plymouth District Council Long Term Plan 2015-2025	The Long Term Plan is a requirement of the Local Government Act 2002. Key directions in the Long Term Plan relevant to the Project include: • Environment – enhance the natural environment with biodiversity links and clean waterways; • Communities – strengthen and connect local communities; • Industry – strengthen and manage rural economy, industry, the port and the airport; • Talent – grow and diversify new economies that attached and retain entrepreneurs, talented workers and visitors; and • Destination – become a world-class destination. The Project responds to these directions by providing for enhancement of the strategic cross-boundary transport link leading to the north and on to the key economic hubs of Hamilton, Tauranga and Auckland. The Project will contribute to enhancing Taranaki industry, including freight connectivity, encourage the growth and economic strength of all of the Taranaki region, provide positive social impacts for the local and regional community and enhance the entrance from the north for visitors to the region.
New Plymouth District Council Economic Development Strategy 2014-2024	The Economic Development Strategy was informed by the LTP 2012-2022 and the Region's Economic Development Strategy 2010-2035. While the Strategy focusses on 'active economic development', a strategic priority is to 'Improve our connections within New Zealand and with the world'. The identified issue with achieving this is that the district is '*distant from markets for our goods and services and other urban centres. Distance increases transport and trade costs and means that firms are unable to achieve the same economies of scale as those in the same industries in larger*

Strategic document	Key direction
	markets, and hence constrains productivity' and an outside perception that the district and region are isolated. Improving connections includes physical connections within the district and between the district, region, other districts and regions and offshore markets. The Project will significantly improve connectivity of freight to and from the Taranaki region. Connectivity is a key matter that was raised during consultation along with the perception that the region is isolated. The Social Impact Assessment (Technical Report 5) considers the connectivity changes (way of life) that will occur at a local and regional scale and therefore the benefits (growth and development) that may arise. The Project is consistent with this strategy.

11.7.3 Public notification

Due to the nature and extent of the Project, the Transport Agency requests that the NoR and applications for resource consent for the Project be publicly notified.[107]

[107] For the resource consents, sections 95A(2)(a) and 95A(3)(a) of the RMA together mean that the applications must be publicly notified if the applicant requests public notification. For the NoR, the equivalent provisions are sections 169(1) and 149ZCB(2)(b).

Appendices

Appendix A: Objectives and policies assessment

Regional Policy Statement for Taranaki 2010

Reference	Objective/policy	Assessment
Use and development of resources: Recognising the role of resource use and development in Taranaki		
UDR Objective 1	To recognise the role of resource use and development in the Taranaki region and its contribution to enabling people and communities to provide for their social, economic and cultural wellbeing.	The Taranaki region is heavily reliant on primary industry, including agriculture and oil and gas. As set out in Section 3 of the AEE, SH3 is a key connection from the Taranaki region through to the Waikato and on to Hamilton, Tauranga and Auckland. The route connects Taranaki's primary sectors to markets in the north, and provides vital tourism linkages and access to health, cultural and other services. Enhancement of the SH3 connection, specifically the Project, is therefore directly linked to providing for social, economic, and cultural wellbeing for the people and communities of Taranaki.
UDR Policy 1	Recognition will be given in resource management processes to the role of resource use and development in the Taranaki region and its contribution to enabling people and communities to provide for their economic, social and cultural wellbeing.	The Project will enable improved connections for Taranaki's oil and gas, agricultural, forestry and engineering sectors to the north. Overall the Project is considered to be consistent with the intent of this policy, which recognises the role of resource use and development in Taranaki and its contribution to the social, economic and cultural wellbeing of people and communities.
Land and soil: Protecting our soil from accelerated erosion		
AER Objective 1	To maintain and enhance the soil resource of the Taranaki region by avoiding, remedying or mitigating the adverse effects of accelerated erosion on soil resources.	The Project is located in inland hill country, which is identified as erosion-prone in the RPS. Comprehensive management and mitigation measures proposed in the CWMP will avoid, remedy or mitigate the adverse effects of accelerated erosion on soil resources within the works footprint.
AER Policy 1	Encourage land use and management practices that will promote the sustainable use and development of land and soil resources and minimise soil erosion by: (a) avoiding, where practicable, practices that cause accelerated erosion; and (b) remedying or mitigating the adverse effects of accelerated erosion where it occurs.	Best erosion and sediment control practices will be employed by the Project during construction, in accordance with the Transport Agency *Erosion and Sediment Control Guidelines for State Highway Infrastructure* (September 2014) (Erosion and Sediment Control Guidelines), as set out in the CWMP. Areas with slopes exceeding 30% will be subject to a higher level of detailed erosion and sediment control planning design and ongoing contractor monitoring, as defined through a responsive monitoring programme. In the first instance, erosion will be avoided by managing construction. Overall, it is considered that practices that cause accelerated erosion will be avoided where practicable and remedied and mitigated where avoidance is not practicable.
Land and soil: Managing the effects of hazardous substances and contaminated sites		
HZC Objective 1	To avoid, remedy, or mitigate adverse environmental effects arising from the storage, use, transportation and disposal of hazardous substances in the Taranaki region, including adverse environmental effects arising from existing contaminated sites.	The Contaminated Land Assessment contained in Volume 3 of the AEE (Technical Report 12) has identified potential contaminated land along the Project footprint, although a large portion of the proposed alignment has not been subject to potential contaminating activities. Provided the procedures set out in the CLMP attached in Volume 5 are adopted, the potential for environmental effects from contaminated land will be no more than minor. Management of hazardous substances associated with the construction period, including the storage, use, transportation and disposal of these substances, will be undertaken in a manner which avoids, remedies or mitigates adverse environmental effects as set out in the CEMP (and the CWMP in relation to non-sediment contaminant management). The Project is therefore considered to be consistent with the direction in HZC Objective 1.

Reference	Objective/policy	Assessment
HZC Policy 4	All known and potentially contaminated sites in the Taranaki region will be identified and managed in a manner that: (a) avoids or mitigates potential adverse environmental effects; (b) mitigates or remedies actual adverse environmental effects; and (c) avoids or mitigates potential adverse effects on human health.	The procedures set out in the CLMP provide for the appropriate management of adverse environmental and human health effects from potential contaminated land.
Fresh water: Sustainable allocation of surface water resources		
WAL Objective 1	To sustainably manage the taking, use, damming or diversion of fresh water in the Taranaki region to enable people and communities to meet their needs for water while safeguarding the life-supporting capacity of water and related ecosystems and avoiding, remedying or mitigating any adverse effects on the environment arising from that use.	The Project proposes water takes and use for construction purposes, and temporary and permanent diversion both during construction and following completion. Temporary dams may also be required to aid water takes during periods of low stream flow. The effects of these activities on water quality and quantity are assessed in Section 9 of the AEE. The proposed water takes are temporary and small scale, and will not affect the ability of people and communities to continue meeting their needs for water. The life-supporting capacity of water will be safeguarded through the steps outlined in the Freshwater Ecology Assessment (Technical Report 7b), which finds that potential adverse effects on streams during the construction period can be minimised and mitigated by implementing good practice with respect to erosion and sediment control, fish recovery, vegetation clearance, water takes and undertaking monitoring during the construction period; and through the CWMP. Long-term effects on fresh water will be addressed through mitigation measures and the proposed riparian restoration as set out in the Ecological Mitigation and Offset Report (Technical Report 7h). Again, that assessment concludes that long-term effects will be appropriately addressed.
WAL Objective 2	To protect the natural character of water bodies from inappropriate subdivision, use and development.	A robust and extensive alternatives assessment was undertaken prior to confirmation of the route that is subject to this application. This assessment avoided areas where there the construction of a road would cause significant effects on natural character (particularly in the Waipingao Valley). In relation to this application, the landscape, natural character and visual assessment (Technical Report 8a) considers the natural character of the area to be moderate-low (Lower Mangapepeke Valley), moderate-high (Upper Mangapepeke Valley) and moderate (northern part of the Mimi catchment). Adverse effects on the natural character of these three areas are considered to be moderate, moderate-high and moderate-low respectively. This is an overall assessment, not relating solely to water bodies. In particular, works in the Upper Mangapepeke Valley will require filling and diversion of the natural stream in this location. Measures to mitigate adverse effects on natural character including minimising construction effects on natural stream environments where possible, constructing stream diversions with naturalised elements where impacts are unavoidable and riparian restoration and restoration of swamp forest along the Mangapepeke Stream corridor within the designation. Overall, the proposal is considered to be an appropriate use and development, and adverse effects on natural character have been managed to the extent that adverse effects are acceptable, particularly taking into account the ecological restoration proposed via along the Mangapepeke Stream.

Reference	Objective/policy	Assessment
WAL Policy 2	Natural water levels and flows: (a) will be maintained and/or enhanced as far as practicable in all those water bodies, or parts of them, identified as having high quality or high value for their natural character and in-stream values; however (b) may be reduced in other water bodies to provide for the needs of water users provided that any reductions in water levels and flows are minimised, that as far as practicable, any adverse effects on natural character and in-stream values are avoided, remedied or mitigated and the life-supporting capacity is safeguarded.	The Mimi River and the Tongaporutu River catchments are identified in Appendix I of the RPS as being 'river and stream catchments of high quality or high value for their natural, ecological and amenity values'. These values are identified as being: • The Mimi River has recreational and fishery values associated with whitebaiting and a good diversity of native aquatic fauna including eels, whitebait, bullies and torrent fish. The stream has aesthetic and scenic values associated with good scenic values, steep cliffs with puketea forest, high ecological values in upper reaches and the estuary is considered to be an area of outstanding coastal value. Native vegetation has been retained within the catchment. • The Tongaporutu River has recreational and fishery values associated with a good diversity of native aquatic fauna including eels, whitebait, bullies and torrent fish and presence of threatened species, and recreational uses which include canoeing and whitebaiting. The Tongaporutu River is highly rated for aesthetic and scenic values, and the estuary is considered to be an area of outstanding coastal value. Water quantities and flows contribute significantly to high recreational, scenic and aesthetic values, and native forest is present in the upper reaches. • During construction, water takes from Mimi River catchment and the Mangapepeke Stream (a sub-catchment of the Tongaporutu River catchment) are proposed. In order to protect these in-stream values, it is proposed that water takes are restricted to no more than 20% of the flow at the time of the take, noting that the take will be temporary and utilised during construction only. It is considered that this amounts to maintaining water levels as far as is practicable during construction of the Project.
WAL Policy 3	The in-stream values and life supporting capacity of water bodies will be maintained, and the natural character of rivers, streams, and lakes and their margins protected from inappropriate subdivision, use and development. Matters to be considered in determining the quantities, levels or flow of water necessary to maintain instream values and life supporting capacity and to protect natural character will include: (a) the natural character, ecological and amenity values associated with the water body and its margin, including indigenous biodiversity values, fishery values and the habitat of trout; (b) the relationship of tangata whenua with the water body; (c) the importance of the water body to and community water supplies, agricultural, industrial, hydroelectric power generation and other uses; (d) the effects of proposed water levels and flows on water quality and the assimilative capacity of the waterbody; (e) the hydrological characteristics of the catchment including flow variability, flow recession characteristics, the relationship to groundwater recharge, and the cumulative effects of land use and catchment development on stream hydrology; (f) the significance of flows and groundwater recharge to the maintenance or enhancement of downstream flows;	In relation to the matters set out in WAL Policy 3: (a) Natural character values vary from low-moderate to moderate-high over the Project footprint. Indigenous biodiversity values range from fair to excellent, as set out in the Freshwater Ecology Assessment (Technical Report 7b) which characterises the aquatic macroinvertebrate community. Fisheries values on both the Mimi and Tongaporutu catchments are associated with whitebaiting in the lower reaches of the catchments. The rivers do not provide trout habitat. (b) Ngāti Tama have a strong and significant relationship with the Project footprint as set out in the main body of the AEE. The Transport Agency is engaging on an ongoing basis to discuss and address the adverse effects of the Project on tangata whenua values. (c) There are no consented water takes downstream of the proposed Project construction water takes. There may be permitted activity takes related to agricultural use however the proposed water takes associated with construction are unlikely to affect the water available for this use. (d) Water takes are restricted to no more than 20% of the flow at the time of the take in order to avoid effects on in-stream values. (e) By restricting the water takes to no more than 20% of the flow at the time of take, it is anticipated that the effects of the water take will be less than minor. (f) Similarly, it is not anticipated that the water takes will impact the overall hydrological characteristics of the catchments where the takes are located. (g) The proposed water take locations are as near as practicable to the Project footprint in order to minimise the effects of transport/pumping.

Reference	Objective/policy	Assessment
	(g) the ability to abstract from the lower reaches of catchments to safeguard instream values of upper reaches where this will not adversely affect the special value of estuaries; (h) the significance of any historic heritage values associated with the water body; and (i) the cumulative effects of existing takes; (j) the extent to which any adverse effects of the taking, use, damming or diversion of water can be avoided, remedied or mitigated; and (k) the regional and national benefits to be derived from the allocation of water resources.	(h) The takes are not anticipated to affect historic heritage values associated with the Mimi and Mangapepeke Valleys. (i) There are no known existing consented takes, although there is likely to be permitted activity water takes in the catchments. However, it is unlikely that the take will cause cumulative effects. (j) In order to avoid or mitigate adverse effects of the water takes, it is proposed that the take is restricted to no more than 20% of the flow at the time of the take. The adverse effects of damming and diversion required for the Project will be appropriately addressed, as set out in the Freshwater Ecology Report. (k) The water take will support the construction of the Mt Messenger Bypass, which is a regionally significant route. Overall, taking the above matters into account, it is considered that in-stream values and life supporting capacity of water bodies will be maintained. As set out in relation to WAL Objective 2, mitigation measures are proposed to address adverse effects on the natural character of Mimi and Mangapepeke Rivers and their margins.
Fresh water: Maintaining and enhancing the quality of water in our rivers, streams, lakes and wetlands		
WQU Objective 1	To maintain and enhance surface water quality in Taranaki's rivers, streams, lakes and wetlands by avoiding, remedying or mitigating any adverse effects of point source and diffuse source discharges to water.	As set out in the CWMP (Technical Report 13), a range of structural and non-structural construction water management measures are proposed for the Project. Erosion control will be the highest priority in the design of erosion and sediment control measures as it prevents sediment generation in the first instance; and is particularly important when managing works on steep slopes. The CWMP concludes that overall, provided that appropriate construction water management measures are implemented, any adverse construction water related effects arising from the construction of the Project will be less than minor. This conclusion is supported in the Vegetation, Freshwater Ecology and Marine Assessment Reports (Technical Reports 7a, 7b and 7g respectively).
WQU Policy 1	Sustainable land management practices and techniques that avoid, remedy or mitigate adverse effects on surface water quality will be encouraged, including: (a) the retention and restoration of effective riparian buffer zones… (d) the development, recontouring and restoration of disturbed land to reduce diffuse source discharges of contaminants to water… (f) other land management practices, including the discharge of contaminants to land and the diversion of stormwater runoff to land, which avoid or reduce contamination of surface water. (NB: other clauses in this policy relate to agricultural activities)	In relation to the matters set out in WQU Policy 1: (a) As set out in the Ecological Mitigation and Offset Report (Technical Report 7h), restoration of 8.9km of riparian margin is proposed following the completion of works. Stream restoration work will consist mostly of planting of a 10m buffer on each side of the channel and fencing of the stream and buffer plantings from livestock. This is considered to provide an effective riparian buffer along these lengths of stream. (d) The CWAR and related CWMP set out the approach to construction water management, including management of disturbed soil with the primary purpose of controlling erosion (and then sediment discharges). (f) The CLMP sets out measures to manage contaminated soil should this be encountered when a Detailed Site Investigation is undertaken. Stormwater is proposed to be treated via constructed wetlands, which will avoid/reduce any contamination of surface water from the operation of the road.
WQU Policy 2	The retirement and planting of riparian margins throughout the Taranaki region will be promoted, with a particular focus on ring plain catchments.	The Project will lead to the retirement and replanting of riparian margins, through the proposed riparian restoration. None of the streams under consideration for offset planting are currently fenced. The Ecological Mitigation and Offset Report finds that the proposed offset riparian restoration will provide shade and organic matter to the stream channel to improve the quality of habitat for native fish and invertebrates, and a reduction of sediment and nutrient loads entering the streams.

Reference	Objective/policy	Assessment
		In addition, where the swamp forest restoration planting and stream restoration planting areas can coincide along the Mangapepeke Stream valley, the net ecological benefit will be substantial and considerably greater than if the swamp forest and riparian forest restoration plantings were undertaken in fragmented fashion.
WQU Policy 3	The water quality of the Stony (Hangatahua) River catchment and other rivers, streams, lakes and wetlands with high natural character, ecological and amenity values such as the Maketawa Stream catchment and parts of the Manganui River catchment will be maintained and enhanced as far as practicable.	The Mimi and Tongaporutu catchments are identified in Appendix I of the RPS as being of high quality or high value for their natural, ecological and amenity values. Water quality during construction will be managed via the CEMP and CWMP, which will maintain the water quality within these catchments. Enhancement of the water quality is likely as a result of riparian restoration and kahikatea swamp forest restoration, which will provide a buffer to the streams where it is located.
Fresh water: Groundwater flows and quality at sustainable levels		
GWR Objective 1	To sustainably manage the use of groundwater in the Taranaki region by: (a) enabling people and communities to take and use groundwater to meet their needs while avoiding, remedying or mitigating adverse effects arising from that use; and avoiding, remedying or mitigating adverse effects on groundwater quality from over abstraction, intensive agricultural land uses, the discharge of contaminants, and poor well and bore construction.	Groundwater diversions are anticipated as a result of the construction of cut batters and the tunnel. However, these diversions are anticipated to be small (10m^3/day to 30m^3/day for the cuts across the site, and 10m^3/day for the tunnel). This is not anticipated to affect the cumulative groundwater resource within the catchment.
GWR Policy 2	Groundwater allocations will be made having regard to: (a) the need to maintain a sustainable yield of the aquifer; (b) the need to ensure groundwater is available for reasonable domestic needs, stock watering requirements and fire fighting purposes; (c) the need for the volumes sought; (d) the need to use water efficiently and with a minimum of waste; (e) the need to avoid the inflow of poor quality water into aquifers; (f) the need to avoid saltwater intrusion into aquifers; (g) the need to avoid significant interference with existing lawfully established and sustainable water uses; (h) the cumulative effects of existing takes from the aquifer; (i) the degree to which the abstraction may impact on nearby surface water bodies and surface water takes; and (j) the need to install systems to accurately measure the volumes of water abstracted.	The volumes sought for diversion are as a result of construction (rather than an abstractive take) and are not anticipated to have adverse effects as listed in GWR Policy 2.
Freshwater: Protecting the natural character of wetlands		

Reference	Objective/policy	Assessment
WET Objective 1	To protect the natural character of Taranaki's wetlands from inappropriate subdivision, use and development and that any adverse effects of activities on wetlands are avoided, remedied or mitigated.	The Kahikatea swamp forest in the Upper Mimi Valley has high ecological values, although the northern part of the Upper Mimi Valley affected by the Project is considered to be of moderate landscape and natural character value due to the relative proximity of the existing SH3 corridor (see Technical Report 8a). The road alignment has been located to avoid directly impacting on the wetland, and includes a bridge to the west of the wetland area which preserves the natural landform of the steep gully that feeds directly into this wetland. It is understood that all road drainage will be diverted away from the system to stormwater treatment areas downstream of the wetland.
WET Policy 1	The protection of wetlands in the Taranaki region from inappropriate subdivision, use and development will be promoted.	As set out above, the Project avoids the Kahikatea swamp forest in the Upper Mimi Valley.
WET Policy 2	The enhancement and creation of wetland areas will be encouraged, where appropriate.	Three constructed wetlands are proposed to treat stormwater from the road once this is constructed. In addition, offset mitigation proposed includes 6ha of swamp forest restoration planting to fully offset the loss of the kahikatea and swamp maire forest affected by the Project.
Fresh water: Managing effects associated with the use and development of river beds		
RLB Objective 1	To enable appropriate use of and disturbance within river and lake beds in Taranaki while avoiding, mitigating or remedying any adverse effects of activities on the environment.	An estimated 3825m of stream in the Mangapepeke and Mimi catchments will be diverted, culverted or substantially altered as a result of the Project. The affected streams have moderate to high ecological values, and a diverse fish community. Potential long-term effects include permanent loss of stream habitat and functions, reduced fish passage and effects of road stormwater on stream hydrology and water quality. Of these effects, the Freshwater Ecology Assessment (Technical Report 7b) considers habitat loss to be the greatest effect on the freshwater ecology of the Project footprint. The proposed methods to avoid and mitigate the adverse effects of the proposed works are set out in the Freshwater Ecology Assessment and the Ecological Mitigation and Offset Report. These methods are considered to appropriately avoid, mitigate and remedy the adverse effects resulting from the construction of the bypass.
RLB Policy 1	The use of and disturbance to river and lake beds will be carried out in a manner that avoids, remedies or mitigates as far as practicable: (a) adverse effects on the natural character, ecological and amenity values, including indigenous biodiversity values and fishery values; (b) adverse effects on fish passage, fish spawning and aquatic habitats, including the habitat of trout; (c) adverse effects on the relationship of tangata whenua with the water body; (d) adverse effects on ecological values associated with river and lake beds through the spread of pest plants; (e) adverse effects on water quality and in-stream habitat, including the passage of fish; (f) erosion or accretion of river and lake beds or banks; (g) the exposure or destabilisation of existing structures within the bed; (h) the unintentional impoundment of water and adverse effects associated with flooding and erosion;	The matters set out in RLB Policy 1 have been considered as follows: (a) Adverse effects on natural character and amenity values have been addressed in Technical Reports 6 (recreation) and 8a (landscape, natural character and visual assessment), along with Section 10 of the AEE. Ecological effects are considered in Technical Reports 7a-7h. Overall, the Project has avoided adverse effects where practicable, and remedied, mitigated or offset remaining adverse effects on river and lake beds. (b) Adverse effects on upstream fish passage which could potentially be restricted during construction when culverts are installed and water is flowing through any temporary diversion pipes are considered to be negligible to low (see Technical Report 7b). Fish passage will be provided for permanent culverts. Further, it is likely that the riparian restoration and pest control proposed will improve ecosystem functions, by reducing streambank erosion and trampling of spawning sites. Trout are not present within the Project footprint. (c) Ngāti Tama have a strong and significant relationship with the Project footprint as set out in the main body of the AEE. The Transport Agency is engaging on an ongoing basis to address the adverse effects of the Project on tangata whenua values.

Reference	Objective/policy	Assessment
	(i) reductions in the capacity of river channels to convey flood flows; (j) adverse effects of flooding on adjacent properties or uses; and (k) adverse effects on historic heritage.	(d) Measures will be put in place through the CEMP and CWMP to prevent the spread of pest plants during construction. Pest control is proposed as part of the mitigation and offset package, including measures to deter the spread of pest plants during the construction period. (e) The CWMP addresses adverse effects on water quality during construction, and as noted above, adverse effects on fish passage during construction are considered to be negligible to low. Post-construction, operational stormwater will be treated via three construction wetlands. Fish passage is to be provided for. Long term effects on habitat will be addressed through mitigation measures and the proposal riparian enhancement. (f) Stormwater devices have been designed to minimise erosion of streams by providing extended detention and controlled release of runoff generated in a rainfall event of up to 36mm, discharged over a 24 hour period. (g) The Project does not affect any existing structures within the bed. (h) Stormwater devices associated with the road have been designed in order to convey reasonable flow during flood conditions. (i) Stormwater quantity is not anticipated to reduce the overall capacity of river channels to convey flood flows. Where stormwater ponds are planned in the lower Mangapepeke Stream, the impervious surface will be about 2.4% of the catchment; while in the Mimi River it will be 0.7% of the catchment after the Project completion. (j) Stormwater devices have been designed to avoid adverse effects of flooding (related to the construction of the road) on adjacent properties or uses. (k) The works within the river beds are not anticipated to affect historic heritage values associated with the Mimi and Mangapepeke Valleys.
Fresh water: Maintaining and enhancing public access to and along rivers and lakes		
WPA Objective 1	To maintain and enhance appropriate public access to and along rivers and lakes in the Taranaki region, while avoiding, remedying or mitigating any adverse effects that may arise from that access.	Existing public access will be maintained, except if there are health and safety issues with keeping the Kiwi Road track open during construction of that part of the Project. The Kiwi Road track will be re-directed under the new SH3 bridge once this is completed and safe access to it from SH3 will be provided. It is noted that there are also opportunities to consolidate the track access areas for better amenity for the start of both the Kiwi Road and Mt Messenger Tracks once construction is complete.
WPA Policy 1	Encourage, as far as is practicable, the maintenance and enhancement of public access to and along rivers and lakes, except where circumstances make restrictions necessary to: (a) preserve the natural character of rivers and lakes and their margins; (b) protect private property rights and infrastructure; (c) safeguard the ecological, intrinsic or recreational attributes of rivers and lakes; (d) avoid conflicts between competing uses; (e) protect cultural and spiritual values of tangata whenua; (f) protect public health and safety; (g) protect the integrity of river control works;	The Kiwi Road track (which leads to the Mimi River wetland) may be closed for health and safety reasons during construction, however once this is complete it will be re-opened and re-directed under the new SH3 bridge for safe access.

Reference	Objective/policy	Assessment
	(h) protect historic heritage; and (i) provide for other circumstances that are sufficient to justify the restriction, notwithstanding the national importance of maintaining access.	
Air and climate change: Maintaining air quality		
AQU Objective 1	To maintain the existing high standard of ambient air quality in the Taranaki region, to improve air quality in those instances or areas where air quality is adversely affected, and to avoid, remedy or mitigate adverse effects on people and the environment resulting from discharges to air.	Existing air quality in the vicinity of the Project is very good. Operational effects on air quality are considered to be negligible (see Technical Report 11). The main air quality issue associated with the Project is likely to be dust generated by construction works. This will be appropriately managed via a Dust Management Plan (see Volume 5).
AQU Policy 1	Discharges to air of contaminants should avoid, remedy or mitigate adverse effects by ensuring that: (a) any discharge to air of potentially hazardous, noxious, dangerous or toxic contaminants does not occur at a volume, concentration or rate or in such a manner that causes or is likely to cause a hazardous, noxious, dangerous or toxic effect on human or animal health, significant ecosystems or structures; (b) to the fullest extent practicable, any discharge to air of odorous contaminants does not create an offensive or objectionable effect beyond the boundary of the property of the discharger; and (c) any discharge to air of dust, smoke or hot air emissions and other particulate matter does not occur at a volume or rate or in a manner that causes or is likely to cause a hazardous, noxious, dangerous, offensive or objectionable effect beyond the boundary of the property of the discharger, including the significant restriction of visibility or the soiling of property.	The Project will not generate contaminants in a manner than has adverse effects on human health or the environment, and odour is not considered to be an issue. Dust generation will be managed via the Dust Management Plan.
AQU Policy 2	In considering policies or proposals in relation to discharges to air, matters to be considered will include: (a) recognition that some areas of the region have within them, uses or values that are more sensitive to the discharge of contaminants to air than other areas; (b) surrounding environmental conditions and the potential for adverse effects on other receiving environments; (c) the potential for cumulative effects; (d) measures to reduce the volume and toxicity of the contaminants; (e) measures to reduce the risk of unintended discharges of contaminants; (f) the requirement to discharge to air having regard to use of the best practicable option to prevent or minimise as far as practicable adverse effects on the environment from the discharge of contaminants to air; and	As set out above, the area is remote and has good air quality, and modelling has found that operational air discharges are not a concern. In relation to Clause (f), only three potential receptors have been identified as potentially affected by dust generation. It is likely that water will be used to dampen dust in the vicinity of the receptors however, dust generation will be accepted where there are no human receptors. This approach is proposed in order to reduce the water take required, as water will be pumped from the Mimi and Tongaporutu Catchments (identified as being of high natural value in Appendix 1 of the RPS). Given the circumstances, this is considered to be the best practicable option. Dust is considered to have less than minor effects on nearby vegetation, as set out in the Vegetation and Air Quality Assessments (Technical Reports 7a and 11).

Reference	Objective/policy	Assessment
	(g) the nature of the source or sources	
Air and climate change: Responding to the effects of climate change		
CCH Objective 1	To avoid, remedy or mitigate the adverse effects on the Taranaki environment arising from climate change.	A benefit of the new road is the predicted reduction in carbon dioxide emissions associated with a shorter length of road and a reduced climb with flatter grades (see Traffic and Transport Assessment, Technical Report 2).
CCH Policy 1	Avoid or mitigate adverse effects on the environment arising from climate change by recognising and providing for: (a) the development and protection of the built environment and infrastructure in a manner that takes into account the potential effects of rising sea levels and more variable and extreme weather patterns; (b) adaptation within agriculture, forestry and other primary industries to reduce the adverse effects of climate change on the use of natural and physical resources; (c) a potential increase in biosecurity risks to primary production and biodiversity values; and (d) possible adverse effects on ecosystems including those with conservation and biodiversity values and on public health.	The Resilience Report sets out that due to the location of the Project in Taranaki, drought conditions are relatively rare, and there would be limited effects on the Project from an extremely dry period. Groundwater levels within the valleys are inferred to be high (as discussed above). Drought conditions which lower permanent groundwater levels may encourage settlement along the route. This has been sufficiently designed for and will be mitigated by preloading of areas prone to groundwater fluctuations. It is noted that the Project will reduce carbon dioxide emissions associated with the operation of the road, as the grades will reduce leading to less fuel useage particularly for heavy vehicles.
Coastal environment: Maintaining and enhancing coastal water quality		
CWQ Objective 1	To maintain and enhance coastal water quality in the Taranaki region by avoiding, remedying or mitigating the adverse effects of discharges of contaminants to the coastal marine area.	Both the Mimi River and the Mangapepeke Stream (via Tongaporutu River) eventually discharge to the coastal marine area. Effects of discharges from the works on the coastal marine area (namely sediment) have been considered. The Project, with mitigation measures in place, is considered to have no measurable impact on marine ecology, noting the CWMP proposes to avoid erosion at source and control any discharge within the Project footprint.
CWQ Policy 3	Encourage sustainable land management practices that avoid, remedy or mitigate adverse effects on the water quality of rivers and streams discharging and impacting on coastal water quality.	Implementation of the proposed CWMP will address the very low risk of potential adverse effects from the Project on the coastal marine area.
Indigenous biodiversity: Maintaining and enhancing indigenous biodiversity		
BIO Objective 1	To maintain and enhance the indigenous biodiversity of the Taranaki region, with a priority on ecosystems, habitats and areas that have significant indigenous biodiversity values.	The ecological values present in the Project footprint and adjacent forested and wetland areas are high, although considerably diminished from their full potential because of the long term and largely unchecked impact of farm livestock and animal pests. The adverse effects are also considered to be high and therefore a comprehensive biodiversity offset and mitigation package has been developed (see the Ecological Mitigation and Offset Report). This is considered to result in a net ecological benefit.
BIO Policy 2	Adverse effects on indigenous biodiversity in the Taranaki region arising from the use and development of natural and physical resources will be avoided, remedied or mitigated as far as is practicable.	The Transport Agency recognises that this Project is located in a significant ecological area. In the first instance, the alternatives assessment presented a preferred option that minimises ecological effects by avoiding particularly

Reference	Objective/policy	Assessment
		significant habitat (particularly Parininihi), and modifying the road design to minimise effects. A comprehensive biodiversity offset and mitigation package has been developed to address adverse effects.
BIO Policy 3	Priority will be given to the protection, enhancement or restoration of terrestrial, freshwater and marine ecosystems, habitats and areas that have significant indigenous biodiversity values.	As set out above, adverse effects on the Parininihi area have been avoided by routing the road to the east of the existing SH3. As part of the application package, enhancement and restoration of important habitat is proposed including pest control, riparian restoration and restoration of kahikatea swamp forest previously found in this area.
BIO Policy 4	When identifying ecosystems, habitats and areas with significant indigenous biodiversity values, matters to be considered will include: (a) the presence of rare or distinctive indigenous flora and fauna species; or (b) the representativeness of an area; or (c) the ecological context of an area. Once identified as significant, consideration should be given to the sustainability of the area to continue to be significant in future when deciding on what action (if any) should reasonably and practicably be taken to protect the values of the area.	Policy 4 sets out criteria considered in determining and identifying ecosystems, habitats and areas with significant indigenous biodiversity values. To be considered significant, a site must have values that meet at least one of the first three criteria (criterion (a), (b) or (c)) and be sustainable (criterion (d)), which takes into account the quality of the area, its naturalness and inherent ecological viability. In this case, the Project area is recognised as having some significant ecological values. As far as practicable, effects have been avoided. The comprehensive mitigation and offset package has been developed to address the adverse effects of the Project and ensure the ongoing sustainability of biodiversity values.
BIO Policy 5	The maintenance, enhancement or restoration of indigenous biodiversity will be promoted in ecosystems, habitats and areas not covered by Policies 3 and 4 above, but still important for the continuing functioning of ecological processes, including those aspects important for the maintenance, enhancement or restoration of: (a) connections within, or corridors between, habitats of indigenous flora and fauna; (b) ecosystems, habitats and areas that provide buffering of habitats of indigenous flora and fauna; (c) botanical, wildlife, fishery and amenity values; (d) biological and genetic diversity; (e) water quality, water levels and flows; and (f) soils, substrate, minerals, nutrients or other physical factors or processes necessary for the survival of any indigenous flora or fauna species or community	The Project footprint includes areas of grassed pasture and grazed bush area (particularly in the northern part of the Project) which are not covered by Policies 3 and 4 above. However, the ecology reports still consider effects on these areas and the habitat values they provide. These effects have been factored into the biodiversity offset and mitigation package. These areas are potential targets for improvement through the implementation of the biodiversity offset and mitigation package, including for example as potential buffer areas to the Core Pest Management Area, and the location for the proposed area of kahikatea swamp forest restoration.
BIO Policy 7	In the maintenance and enhancement of indigenous biodiversity in Taranaki consideration will be given to the social and economic benefits of appropriate use and development of resources.	Indigenous biodiversity in Taranaki will be maintained and enhanced, in any event, through implementation of the Project's mitigation and offset package. This policy also requires consideration of the considerable social and economic benefits from the Project (described in Section 9 of this AEE), and from the use and development of natural and physical resources in the area. The enhancement of safety, resilience and journey time reliability of travel on SH3 will benefit the whole of Taranaki, and in particular the growing proportion of heavy traffic carrying freight to and from key economic and transportation hubs.

Reference	Objective/policy	Assessment
BIO Policy 8	When re-establishment or restoration of indigenous vegetation and habitat is carried out, preference should be given to the use of local genetic stock.	The Ecology and Landscape Management Plan will contain local sources of seed from which the swamp forest and wetland seedlings will be propagated.
Natural features and landscapes, historic heritage and amenity value: Natural features and landscapes		
NFL Objective 1	To protect the outstanding natural features and landscapes of the Taranaki region from inappropriate subdivision, use and development, and to appropriately manage other natural areas, features and landscapes of value to the region.	There are no outstanding natural features or landscapes within the Project footprint. However, the Project area does have other natural areas, features and landscapes of some value as set out in the landscape, natural character and visual assessment (Technical Report 8a and the Ecological Reports 7a-7h). The Project seeks to manage appropriately the adverse effects on these values. The mitigation proposed as set out in the Landscape Environmental Design Framework (LEDF) and Ecological Mitigation and Offset Report is considered to be an appropriate response to the nature and scale of the Project and the effects on these landscape values.
NFL Policy 2	Recognition shall be given to the appropriate management of other natural areas, features or landscapes not covered by Policy 1 above, but still of value to the region for one or more of the following reasons: (a) the maintenance of water quality and quantity; (b) soil conservation; (c) the avoidance or mitigation of natural hazards; (d) natural character amenity and heritage values and scientific and educational significance; (e) geological and geomorphological, botanical, wildlife and fishery values; (f) biodiversity and the functioning of ecosystems; (g) 'sinks' or 'pools' for greenhouse gases; and (h) cultural features of significance to tangata whenua.	The landscape and area surrounding the Project footprint could be characterised as having a number of the values listed in NFL Policy 2, including: • high water quality, particularly in the headwaters of the Mangapepeke and Mimi Rivers • vegetated, steep hill country which is prone to erosion • moderate-high natural character values associated with the Upper Mangapepeke Valley • the alluvial and swamp forest vegetation communities present within the northern tributary of the Mimi River and the Mangapepeke Stream including kahikatea forest, kahikatea swamp maire forest, swamp maire forest, and kahikatea treeland has a high ecological value • the entire area is culturally significant to Ngāti Tama. As set out above in relation to NFL Objective 1, the Project appropriately manages adverse effects on these values.
NFL Policy 3	The protection of outstanding and where appropriate, other natural features and landscapes of value shall be achieved by having regard to the following criteria in determining appropriate subdivision, use and development: (a) the value, importance or significance of the natural feature or landscape at the local, regional or national level; (b) the degree and significance of actual or potential adverse effects on outstanding natural features and landscapes or other important natural features and landscapes, including cumulative effects, and the efficacy of measures to avoid, remedy or mitigate such effects; (c) the benefits to be derived from the use and development at the local, regional and national level; (d) the extent to which the subdivision, use or development recognises or provides for the relationship of tangata whenua and their culture and traditions with their ancestral lands, water, sites, wāhi tapu and other taonga;	The Project is an appropriate development, by reference to the various criteria in Policy 3 (as follows): (a) From a botanical perspective, the alluvial and swamp forest vegetation communities present within the northern tributary of the Mimi River and the Mangapepeke Stream have regional significance (see Technical Report 7a). Technical Report 8a considers the Upper Mangapepeke Valley to be of moderate to high landscape value due to the unmodified stream corridor and indigenous vegetation cover combined with relatively strong ridge and spur landforms. On the other side of the ridge, the Upper Mimi Valley is considered to have moderate landscape value. (b) The degree and significance of the actual or potential adverse effects is set out in the landscape, natural character and visual assessment (Technical Report 8a), along with measures to avoid, remedy or mitigate these effects, which are also incorporated in the LEDF (Technical Report 8b). These measures are considered to appropriately address the level of adverse effects anticipated as a result of construction. (c) As set out previously, SH3 is a key connector for Taranaki to Waikato and further north. Improving the connection is anticipated to result in significant regional benefits to people's way of life (through greater resilience in the road network to accidents and natural hazards, and improved capacity and ease of movement for both freight and people), growth and development and wellbeing including through the improvement in journey experience.

Reference	Objective/policy	Assessment
	(e) the need for use or development to occur in the particular location; (f) the sensitivity or vulnerability of a natural feature or landscape to change, and its capacity to accommodate change, without compromising the values of the feature or landscape; (g) the degree of existing modification of the natural feature or landscape from its natural character; (h) the degree to which financial contributions associated with any subdivision, use and development can be used to offset actual or potential adverse effects arising from those activities.	Additional environmental benefits will arise from implementation of the generous biodiversity offset and mitigation package. (d) The relationship of Ngāti Tama to the land affected by the Project has been central to the development process. Engagement is ongoing and will remain so throughout the Project. (e) The location of the Project is constrained by the location of SH3. Within that constraint, a broad range of options are subject to a thorough alternatives assessments, which lead to the selection of the proposed location for the Project (see Section 6 and Volume 4 of the AEE). (f) The landscape, natural character and visual assessment finds that the Project is predominantly within a contained valley system that has a moderate capacity to accommodate landscape change. (g) Technical Report 8a considers the Upper Mangapepeke Valley to be of moderate to high natural character value due to the unmodified stream corridor and indigenous vegetation cover combined with relatively strong ridge and spur landforms. The Lower Mangapepeke Valley is more modified. On the other side of the ridge, the Upper Mimi Valley is considered to have moderate natural character value. (h) Financial contributions are not proposed however, the mitigation and offset package proposed is extensive, including pest management over 560ha in perpetuity (or until such time as pest management in the form we know of it today is no longer necessary to sustain the levels of biodiversity created). Overall, the Project is considered to be consistent with Policy 3.
Natural features and landscapes, historic heritage and amenity value: Protecting our historic heritage		
HIS Objective 1	To protect the historic heritage values in the Taranaki region from inappropriate subdivision, use and development, and where practical enhance those values.	Historic heritage values have been assessed. Based on the assessment completed to date, there should be no constraints on the proposed construction of the Project on archaeological or historic heritage grounds, as no known archaeological or other historic heritage sites will be affected by the proposed construction of the Project (see Technical Report 9).
HIS Policy 2	Historic heritage will be protected from inappropriate subdivision, use and development, and the maintenance, conservation and restoration of historic heritage sites, places and values will be encouraged as far as possible.	An Accidental Discovery Protocol is proposed to provide for the possibility of unrecorded archaeological sites being encountered during construction.
Natural features and landscapes, historic heritage and amenity value: Maintaining and enhancing amenity values		
AMY Objective 1	To recognise the positive contributions of appropriate use and development in terms of providing for the maintenance and enhancement of amenity values in the Taranaki region, while avoiding, remedying or mitigating the adverse effects of inappropriate use and development on amenity values.	The Project will maintain existing amenity values. It also presents a number of opportunities to enhance amenity values in the vicinity, including opportunities to consolidate the track access areas for better amenity for the start of both the Kiwi Road and Mt Messenger Tracks and possible opportunities for stopping places (rest areas, viewing places, cultural places, or composite places) across the Project which may enhance amenity along the alignment (within the constraints of traffic safety arrangement).
AMY Policy 1	The adverse effects of resource use and development on rural and urban amenity values will be avoided, remedied or mitigated and any positive effects on amenity values promoted. Any positive effects of appropriate use and development will be fully considered and balanced	Effects of the Project on the qualities and characteristics listed in AMY Policy 1 are as follows: (a) Construction noise and vibration, air quality and traffic effects have been assessed and are considered to be less than minor, with the possible exception of 2397 Mokau Road, which is in close proximity to a spoil disposal area

Reference	Objective/policy	Assessment
	against adverse effects. Those qualities and characteristics that contribute to amenity values in the Taranaki region include: (a) safe and pleasant living environment free of nuisance arising from excessive noise, odours and contaminants, and from traffic and other risks to public health and safety; (b) scenic, aesthetic, recreational and educational opportunities provided by parks, reserves, farmland, and other open spaces, rivers, lakes, wetlands and their margins, coastal areas and areas of vegetation; (c) a visually pleasing and stimulating environment; (d) efficient, convenient and attractive urban forms; and (e) aesthetically pleasing building design, including appropriate landscaping and signs.	during construction and may require management to avoid unnecessary noise (see Section 10 of the AEE and Technical Reports 10 and 11). A CNMP will manage construction noise effects. Once operational, the road will operate at a similar level to the existing SH3 but will be safer and easier to drive. (b) The existing recreational opportunities will be maintained, particularly to the Mimi River and surrounds via the Kiwi Road track. The wider scenic amenity qualities of the Project's surrounding environment have also been maintained through route selection and keeping the road low in the landscape. In addition, the new route is likely to be a scenic drive. (c) The design principles set out in the LEDF including 'creating an aesthetically pleasing experience for travellers that derives from the highway following and 'fitting in' with the natural landscape patterns' and 'creating a straight-forward and uncluttered aesthetic to the highway by such means as attention to the details of the highway edge, and a refined and pared-back suite of elements (such as barriers, signs, drainage structures)'. (d) Not applicable as the route is located in a rural area. (e) Building associated with the Project include hydrant tanks and a tunnel control building. These will be screened, and the tunnel control building set into the landscape. Appropriate landscaping will be developed in the detailed design phase. .
Natural hazards: Reducing the risk to the community from natural hazards		
HAZ Objective 1	To avoid or mitigate natural hazards within the Taranaki region by minimising the net costs or risks of natural hazards to people, property and the environment of the region.	The construction of the Project will result in a significant improvement in resilience over the existing SH3 route, ie it will lower the risk of natural hazards on the route (see Technical Report 3). The improvement to resilience will be achieved through major improvements to grades and curves throughout the proposed route as well as design and construction of cuttings and embankments, engineered structures including retaining walls, stormwater culverts and a bridge and tunnel.
HAZ Policy 2	New subdivision, use and development should be so located and designed that the need for hazard protection works is avoided.	The alternatives assessment process took resilience into consideration, particularly geotechnical and hydrological resilience. Options which required hazard protection works (significant retaining walls etc) were discarded.
HAZ Policy 6	To recognise the importance of air, land and sea transportation and associated navigation systems and infrastructure as essential services that should have priority in a state of emergency.	Given the strategic significance of the SH3 connection north of New Plymouth, having a safe, reliable and resilient route is critical. This is a key benefit of the Project.
The built environment: Providing for regionally significant infrastructure		
INF Objective 1	To provide for the continued safe and efficient operation of the region's network utilities and other infrastructure of regional significance (including where this is of national importance), while avoiding, remedying or mitigating adverse effects on the environment.	SH3 through Taranaki is a regionally significant piece of infrastructure, being classified as a Regional Road in the Transport Agency's One Network Road Classification (ONRC). This means that the road that makes a major contribution to the social and economic wellbeing of a region and connect to regionally significant places, industries, ports or airports. Regional Roads are also major connectors between regions. The Project will significantly improve the safety and efficient operation of SH3, while mitigating (and offsetting) the adverse effects on the environment associated with construction of the road in this location.

Reference	Objective/policy	Assessment
INF Policy 1	Provision will be made for the efficient and effective establishment, operation, maintenance and upgrading of network utilities and other physical infrastructure of regional significance (including where this is of national importance) and provision for any adverse effects of their establishment to be avoided, remedied or mitigated as far as is practicable	The mitigation and management measures set out in Section 11 of the AEE, the various technical reports and management plans including the CEMP (Volume 5) sets out the framework for efficient and effective construction of this regionally significant road, while providing for adverse effects of the establishment of a new bypass in a manner which will avoid, remedy or mitigate adverse effects as far as practicable, noting that the mitigation and offset package proposed intends to provide a net ecological benefit within 10-15 years.
Resource management issue of significance to iwi authorities: Taking into account the principles of the Treaty of Waitangi		
TOW Objective 1	To take into account the principles of the Treaty of Waitangi in the exercise of functions and powers under the Resource Management Act.	In its ongoing engagement with Mana Whenua and particularly Ngāti Tama, the Transport Agency has taken into account the principles of the Treaty of Waitangi especially the principle of partnership, along with recognition of the spiritual relationship that tangata whenua have with the environment and acknowledgement of Ngāti Tama's rangatiratanga and kaitiaki responsibilities in relation to the Project area.
TOW Policy 1	Act cooperatively and in good faith, showing flexibility and responsiveness and a desire to engage with Māori for the good governance of the Taranaki region.	The Transport Agency has acted (and will continue to act) co-operatively with iwi to facilitate an inclusive and responsive engagement process based on good faith and mutual respect.
TOW Policy 2	Management of natural and physical resources in the Taranaki region will be carried out in a manner that takes into account the principles of the Treaty of Waitangi, including the principles of kawanatanga, rangatiratanga, partnership, active participation, resource development and spiritual recognition.	As set out above, the Transport Agency is fully cognisant of the principles of the Treaty of Waitangi, and the significant values that the Project area has for Ngāti Tama. Ngāti Tama have actively participated in the development of the options to lodgement and the Transport Agency will continue to facilitate active participation and exercise of rangatiratanga in relation to the Project acknowledging the significant effects that this development has on cultural values in this location.
Resource management issue of significance to iwi authorities: Recognising kaitiakitanga		
KTA Objective 1	To have particular regard to the concept of kaitiakitanga in relation to managing the use, development and protection of natural and physical resources in the Taranaki region, in a way that accommodates the views of individual iwi and hapu.	Ngāti Tama have kaitiaki responsibilities in the Project area and have inputted into the Project throughout the alternatives assessment and consent level design. Kaitiaki input will continue throughout the detailed design and implementation phase.
KTA Policy 1	Iwi and hapu will be consulted on an individual basis to determine how kaitiakitanga can be recognised and integrated in the management of the use, development and protection of natural and physical resources in the Taranaki region.	The Transport Agency has consulted with iwi of the wider area around the Project footprint, noting Ngāti Tama is the primary stakeholder in this location.
Resource management issue of significance to iwi authorities: Recognising and providing for the relationship of Māori with ancestral lands, water, sites, wāhi tapu and other taonga		
REL Objective 1	To recognise and provide for the cultural and traditional relationship of Māori with their ancestral lands, water, air, coastal environment, wāhi tapu and other sites and taonga within the Taranaki region.	The Transport Agency acknowledges the strong connection between Ngāti Tama and the area within and surrounding the Project footprint, and has provided for this via ongoing engagement and input into the consent process.
REL Policy 1	The development, use or protection of iwi and hapu land will be supported in a manner, which is consistent with the purpose of the Act.	The Project footprint has huge cultural significance to Ngāti Tama, and this has been acknowledged throughout the process. In particular, the Project requires the use of Ngāti Tama land, and the Transport Agency is actively engaging with Ngāti Tama in relation to this. The Project design, the management measures set out in Volume 5, the LEDF and the ecological mitigation and offset package have sought to protect the area from the adverse effects of the proposed

Reference	Objective/policy	Assessment
		activities as far as practicable, and to remedy, mitigate and offset adverse effects where avoidance has not been possible.
REL Policy 3	Wāhi tapu and other sites or features of historical or cultural significance to iwi, and hapu and the cultural and spiritual values associated with ancestral lands, fresh water, air and the coast, will be protected from the adverse effects of activities, as far as is practicable and in a manner, which is consistent with the purpose of the Act.	The entire Project footprint and surrounding area holds special significance to Ngāti Tama. The Transport Agency recognises this and will continue to engage on an ongoing basis with Ngāti Tama to address adverse effects on cultural heritage.
REL Policy 5	The cultural perspectives of iwi in relation to the identification and protection of outstanding natural features and landscapes will be recognised and provided for.	The options assessment process was key to avoiding adverse effects on the Waipingao catchment/Parininihi and Mt Messenger which are significant locations for Ngāti Tama, as the proposed route has been directed out of this catchment and into the eastern side of the existing SH3. A large cut through of near the peak of Mt Messenger has also been avoided through the alternatives assessment process, as sought by Ngāti Tama.
REL Policy 7	The maintenance and enhancement of rivers, streams, lakes and other water bodies, which have special significance to iwi will be provided for in a manner respectful of tikanga Māori.	As set out in the LEDF (Technical Report 8b), the cultural values and relationship of Ngāti Tama to the area (including the watercourses) will be acknowledged and incorporated into the final Project design.
Resource management issue of significance to iwi authorities: Recognising cultural and spiritual values of tangata whenua in resource management processes		
CSV Objective 1	Management of natural and physical resources in the Taranaki region will be carried out in a manner that takes into account the cultural and spiritual values of Iwi o Taranaki and in a manner which respects and accommodates tikanga Māori.	Providing for cultural expression and recognition is a guiding principle within the LEDF, and this provides a basis for ongoing engagement with Ngāti Tama.
CSV Policy 1	The special relationship that Taranaki tangata whenua have with te taiao (the environment), as reflected in their respect for the spiritual integrity of te taiao as a living system infused with qualities of wairua (spirituality), mauri (life principle), wehi (reverence), mana (authority), tapu (sacredness) and noa (nontapu), will be given particular consideration in the promotion of the sustainable management of the region's resources.	The relationship of Mana Whenua and te taiao has driven discussions between the Transport Agency and local iwi. The Transport Agency places great weight on Mātauranga Māori and sought the views of Mana Whenua as experts in tikanga Māori during the alternatives assessment and consent design process. Particular consideration has been given to the mana of tangata whenua, the importance of maintaining mauri, managing effects on wāhi tapu and taonga, and respecting the spiritual integrity of Parininihi.

Regional Fresh Water Plan for Taranaki 2001

Reference	Objective/policy	Assessment
Issue 3.1: Protection and enhancement of the natural, ecological and amenity values of fresh water		
Objective 3.1.5	To maintain and enhance amenity values and the quality of the environment of Taranaki's rivers, lakes and wetlands and their margins.	The Project will have adverse effects on watercourses within the Project footprint, including diversion and installation of culverts under the road footprint. Riparian restoration and restoration of kahikatea swamp forest is proposed to offset the adverse effects of the Project, alongside pest control. This will ultimately enhance the amenity values and the quality of those streams and their margins where it is located, and create an overall "net positive" in terms of effects on rivers and wetlands.
Objective 3.1.6	To manage the fresh water resources of the Taranaki region in a way that promotes the sustainable management of natural and physical resources, by recognising and providing for the differences in and between rivers, streams, lakes and wetlands in the region.	The natural character and water quality characteristics vary between the catchments affected by this proposal however, it is acknowledged that there are adverse effects particularly in the Upper Mangapepeke Valley which has moderate-high natural character values. Therefore, the mitigation and offset package is included as part of the application. This package has a high likelihood of substantially reversing the diminished state of the ecology in those areas where the mitigation is targeted, and achieving a net gain in biodiversity within 10 to 15 years following construction. This is considered to be a sustainable approach to a project of this scale and nature.
Policy 3.1.2	The adverse effects of activities on the natural character, ecological and amenity values of all rivers, lakes and wetlands and their margins in the Taranaki region will be avoided, remedied or mitigated, having regard to: (a) the topography and form of the river, lake or wetland; (b) the natural flow characteristics, hydrological functions and natural water levels and their fluctuations in rivers, lakes and wetlands; (c) ecosystems, habitats and species; (d) existing water quality and the need to maintain or enhance that quality; (e) recreational, fishery, aesthetic and scenic values.	The proposal takes into account the matters set out in Policy 3.1.2 as follows: (a) Consideration of the topography and form of the watercourses within the Project footprint is incorporated into the road design. (b) Where possible, adverse effects on the natural flow characteristics, hydrological functions and natural water levels including fluctuations in rivers and wetlands affected by the Project have been avoided, and if this is not possible then they have been remedied or mitigated. (c) The Freshwater Ecology Assessment (Technical Report 7b) sets out the freshwater ecosystems, habitats and species affected by the proposal. Adverse effects have been addressed through the mitigation and offset package. (d) The aquatic macroinvertebrate community (an indicator of water quality) is characterised as fair to excellent in the Freshwater Ecology Assessment (Technical Report 7b). This water quality will be maintained during construction through the management measures set out in the CWAR, and during operation via the proposed stormwater treatment (constructed wetlands). Riparian restoration proposed as part of the mitigation package will improve water quality by providing a buffer and shading to the streams where planting occurs. Fisheries values of both the Mimi and Tongaporutu catchments are associated with whitebaiting in the lower reaches of the catchments. Effects on whitebait are considered in the freshwater ecology assessment (Technical report 7b) and are anticipated to be managed via, for example, the control of construction activities, culvert design and habitat restoration. The net recreational effects of the Project are positive. Aesthetic and scenic values of the Project footprint have been inherently taken into account as part of the design process, including alternatives assessment. The design and mitigation package set out in the LEDF (Appendix 8b) is considered to be an appropriate response to the nature and scale of the Project and associated adverse effects.

Reference	Objective/policy	Assessment
Policy 3.1.3	The life-supporting capacity of fresh water will be safeguarded and the adverse effects of activities on aquatic habitats and fresh water ecosystems will be avoided, remedied or mitigated having regard to: (a) the maintenance of biological and physical processes; (b) the existing and potential productivity, diversity, importance and variability of aquatic ecosystems; (c) habitat characteristics, including habitats for aquatic species at different stages of their life cycle, habitats of threatened, vulnerable or rare species, and habitats for terrestrial life that use the water body; (d) the significance of indigenous flora and fauna, including the habitat of indigenous fish; (e) the habitat of trout.	Technical Report 7b sets out the short-term and long-term adverse effects on streams within the Project footprint e.g. sedimentation, direct removal of fish from the stream during construction, temporary and permanently reduced fish passage, loss of stream ecological functions and habitat, and potential effects of road stormwater on stream hydrology and water quality. In relation to the matters set out in Policy 3.1.3: (a) Biological and physical process will be maintained as far as possible however, the Project will have some adverse effects on streams within the Project footprint. These will be managed as set out in the relevant technical reports. (b) Representativeness, rarity/distinctiveness, diversity and the ecological context have been considered as part of the Stream Ecological Valuation (SEV) assessment contained in the Freshwater Ecology Report. (c) The aquatic macroinvertebrate community indicated 'excellent' water quality/habitat near the headwaters. In the Mangapepeke Stream Macroinvertebrate Community Index scores reduced downstream to values indicative of 'fair' to 'good' conditions, but in the main stem of the Mimi River the scores remained high. (d) Both streams had a high diversity of fish. (e) No trout have been recorded within the Project footprint. Taking the above into account, the potential effects on streams during the construction period and once the road is complete, can be minimised and mitigated by implementing good practice as set out in Technical Report 7b. The long-term effects of stream diversions required for the Project will be addressed by implementing offset compensation. Overall, the effects of the Project on freshwater ecology can be appropriately managed and mitigated, and the loss of habitat can be adequately offset to result in 'no net loss' of stream values.
Policy 3.1.4	The high natural, ecological and amenity values of those rivers and streams listed in Appendix IA will be maintained and enhanced as far as practicable. Adverse effects of activities on these values will be avoided as far as practicable, or remedied or mitigated.	The Tongaporutu and Mimi catchments are listed in Appendix IA of the Fresh Water Plan. Activities in close proximity to the streams in this catchment will be managed to minimise sediment loading and adverse effects on hydrology and aquatic ecology. The long-term effects of stream diversions will be addressed through the riparian restoration offsetting. Overall, the adverse effects on the natural, ecological and amenity values of the Mimi River and Tongaporutu River catchments will be appropriately addressed.
Issue 3.2: Maintenance and enhancement of public access to and along rivers and lakes		
Objective 3.2.1	To maintain and enhance public access to and along rivers and lakes.	Currently, public access to the wetland associated with the Mimi River is via the existing Kiwi Road track. This may be affected by construction. However, this will be temporary and once safe access is available through the area, this will be re-opened, with an improved safer access point.
Policy 3.2.1	Public access to and along rivers and lakes will be maintained and enhanced as far as practicable, except where restrictions are necessary to: (a) preserve the natural character of rivers and lakes and their margins; (b) protect private property rights; (c) safeguard ecological or intrinsic attributes of rivers and lakes; (d) avoid conflicts between competing uses;	Existing public access will be maintained, except if there are health and safety issues with keeping the Kiwi Road track open during construction. Following construction, safety of access will be enhanced to the Kiwi Road track.

Reference	Objective/policy	Assessment
	(e) protect cultural and spiritual values of Tangata Whenua; (f) protect human health and safety; (g) protect the integrity of river and flood control works; (h) provide for other exceptional circumstances that are sufficient to justify the restriction, notwithstanding the national importance of maintaining access.	
Policy 3.2.3	Provision shall be made, where appropriate and practicable, to improve the ability of public to reach and use rivers and lakes to which access is limited for any reason, provided that this is not inconsistent with Policy 3.2.1.	The Kiwi Road track will be re-directed under the new SH3 bridge once this is completed. Once construction is complete, safety or access to the wetland in the Kiwi Road track will be improved.
Issue 4.1: Recognising and providing for the relationship of Tangata Whenua and Iwi and hapu of Taranaki and their culture and traditions with their water, sites, wāhi tapu and other taonga		
Objective 4.1.1	To recognise and provide for the cultural relationship and values of Iwi and hapu of Taranaki with water, and with ancestral land and sites, wāhi tapu and other taonga associated with fresh water, and the beds of rivers and lakes, in a manner reflective of their status as Tangata Whenua and in accordance with Tikanga Māori.	The Transport Agency has collaborated with Ngāti Tama throughout the Project development, including throughout the options assessment process, and will continue to do so. As set out in the LEDF (Technical Report 8b), the cultural values and relationship of Ngāti Tama to the area (including the watercourses) will be acknowledged and incorporated into the final Project design.
Policy 4.1.1	Wāhi tapu and other sites or features of historical or cultural significance to Iwi and hapu of Taranaki, and the cultural and spiritual values associated with fresh water, will be protected from the adverse effects of activities, as far as practicable.	The Project footprint has huge cultural significance to Ngāti Tama, and this has been acknowledged throughout the process. The Project design, the management measures set out in Volume 5, the LEDF and the ecological mitigation and offset package have sought to protect the area from the adverse effects of the proposed activities as far as practicable, and to remedy, mitigate and offset those adverse effects where avoidance has not been possible. In this context, the options assessment process was key to avoiding adverse effects on the Waipingao catchment/Parininihi and Mt Messenger which are significant locations for Ngāti Tama.
Policy 4.1.2	Adverse effects of activities on mahinga kai and the habitats of species harvested by Tangata Whenua, will be avoided or mitigated to the fullest extent practicable.	Ngati Tama has identified that the tracks from the coastline into the bush in the vicinity of the Project footprint are important pathways to mahinga kai, although specific locations within the Project footprint have not been identified. The ecological mitigation and offset package addresses adverse effects on habitats and species, and is considered to address issues likely to affect mahinga kai species.
Policy 4.1.3	Access to mahinga kai and identified areas of historical or cultural significance to Iwi and hapu of Taranaki associated with fresh water, will be maintained or enhanced, except where restrictions are appropriate to achieve the purpose of the Act, the Regional Policy Statement for Taranaki and this Plan.	The Mt Messenger to Whitecliffs track will not be affected by the works. There may be temporary disruption of the Kiwi Road track however, following the completion of the works, overall access will be maintained or enhanced.
Policy 4.1.5	Opportunities for incorporating the customary knowledge of Iwi and hapu of Taranaki about river and lake resources, and for involving kaitiaki, as a means of promoting sustainable management or protecting taonga of fresh water, will be recognised and utilised by the Taranaki Regional Council where appropriate.	Ngāti Tama have been involved in the options assessment process, which provided an opportunity for the Project team to learn from their detailed local knowledge of the area. Engagement and collaboration with Ngāti Tama is ongoing and will continue through the consenting and construction process.
Issue 5.1: Enabling appropriate use and development of fresh water		

Reference	Objective/policy	Assessment
Objective 5.1.1	To enable people and communities to use and develop fresh water resources and the beds of rivers and lakes to provide for their social, economic and cultural wellbeing and for their health and safety, in accordance with the sustainable management of those resources.	SH3 connects Taranaki's primary sectors to markets in the north, tourist routes and access to health, cultural and other services. The Project, including associated use and development of the freshwater resources within the Project footprint and the water take locations, will ultimately provide for social, economic, and cultural wellbeing for the people and communities of Taranaki by enhancing driver safety and travel experience along this part of the route.
Policy 5.1.1	When managing the use and development of fresh water and the beds of rivers and lakes, the Taranaki Regional Council will recognise: (a) the need for all activities to avoid, remedy, or mitigate adverse environmental effects in accordance with the objectives and policies of this Plan; (b) the positive benefits to people and communities arising from the use or development; (c) existing uses of physical resources including any human-made resources that have a specific-use purpose; (d) the effects on existing lawfully established activities; (e) the need to allow existing users to progressively upgrade their environmental performance, where improvements are necessary to meet the provisions of this Plan.	In relation to Policy 5.1.1: (a) The Project incorporates a mitigation and offset package, recognising that there are effects that cannot be avoided or remedied. This is considered to be part of the proposal, and has been assessed against the objectives and policies of the Plan as set out in Section 11 of the AEE and in this appendix. (b) The Project provides regionally significant positive benefits to people and communities, including greater resilience in the road network to accidents and natural hazards, and improved capacity and ease of movement for both freight and people which is beneficial for regional growth and development and wellbeing (see the Social Impact Assessment, Technical Report 5). (c) The Project is not anticipated to affect other existing uses of physical resources outside of the public footprint, including water takes. (d) Activities in the vicinity of the Project footprint are largely rural. Effects will be largely confined to effects on the nearby dwellings, of which there are three, which is considered to be manageable. There are no known consented water takes which would be affected by the proposal. (e) Not applicable to this Project as construction will not be an existing use.
Transitional policies – NPS on Freshwater Management. **NPS 5.1: Water quality**		
Policy 5A.1.1	When considering any application for a discharge the consent authority must have regard to the following matters: (a) the extent to which the discharge would avoid contamination that will have an adverse effect on the life-supporting capacity of fresh water including on any ecosystem associated with fresh water and (b) the extent to which it is feasible and dependable that any more than minor adverse effect on fresh water, and on any ecosystem associated with fresh water, resulting from the discharge would be avoided.	This application includes discharges of stormwater and sediment deriving from soil disturbance activities during construction. In relation to this: (a) The CWAR and the CWMP consider that the first step is to avoid erosion, and then where this is not possible, erosion and sediment controls are proposed. Higher risk areas will be subject to a specific risk assessment and the implementation of appropriate erosion and sediment control measures over and above those typically implemented for standard earthworks projects. (b) Provided that the CWMP and associated management plans are implemented fully and correctly, more than minor adverse effects on fresh water resulting from sediment discharges will be avoided.
Policy 5A.1.2	When considering any application for a discharge the consent authority must have regard to the following matters: (a) the extent to which the discharge would avoid contamination that will have an adverse effect on the health of people and communities as affected by their secondary contact with fresh water; and	This application encompasses the discharge of contaminants, including sediment, to land and water. Controls will be in place to ensure discharges do not occur of contaminants which could have a more than minor adverse effect on the health of people and communities. As such, the proposed discharges are consistent with Policy 5A.1.2.

Reference	Objective/policy	Assessment
	(b) the extent to which it is feasible and dependable that any more than minor adverse effect on the health of people and communities as affected by their secondary contact with fresh water resulting from the discharge would be avoided.	
Policy 5A.1.3	Policies 5A.1.1 and 5A.1.2 applies to the following discharges (including a diffuse discharge by any person or animal): (a) a new discharge or (b) a change or increase in any discharge – of any contaminant into fresh water, or onto or into land in circumstances that may result in that contaminant (or, as a result of any natural process from the discharge of that contaminant, any other contaminant) entering fresh water.	Policies 5A.1.1 and 5A.1.2 are applicable to this application (for a new discharge) and are assessed above.
Transitional policies – NPS on Freshwater Management. **NPS 5.2: Water Quantity**		
Policy 5A.2.1	When considering any application the consent authority must have regard to the following matters: (a) the extent to which the change would adversely affect safeguarding the life supporting capacity of fresh water and of any associated ecosystem and the extent to which it is feasible and dependable that any adverse effect on the life-supporting capacity of fresh water and of any associated ecosystem resulting from the change would be avoided.	In relation to the matters set out in Policy 5A.2.1: (a) The adverse effects on freshwater ecology are set out in Technical Report 7b. These include temporary and permanent adverse effects during construction on sedimentation, direct removal of fish from the stream, short-term loss of fish passage in some areas and short-term loss of stream habitat from temporary culverts. Potential long-term effects include reduced fish passage, loss of stream ecological functions and habitat, and potential effects of road stormwater on stream hydrology and water quality. These effects have the potential to affect the life supporting capacity of the fresh water systems, and will therefore be avoided, remedied or mitigated as set out in the CWMP, Freshwater Ecology Assessment Report, and Ecological Mitigation and Offset Report. (b) Adverse effects will be avoided where practicable and avoided, remedied or mitigated/offset where this is not practicable. Implementation of good practice with respect to erosion and sediment control, fish recovery, vegetation clearance, water takes and undertaking monitoring during the construction period will minimise and mitigate many of the short-term effects. Similarly, many of the long-term effects from the road footprint can be minimised and mitigated by good culvert design to ensure fish passage, stormwater management, and design of stream diversions. Remaining adverse effects will be addressed by riparian restoration (8724m^2 of stream habitat).
Policy 5A.2.2	Policy 5A.2.1 applies to: (a) any new activity and (b) any change in the character, intensity or scale of any established activity that involves any taking, using, damming or diverting of fresh water or draining of any wetland which is likely to result in any more than minor adverse change in the natural variability of flows or level of any fresh water, compared to that which immediately preceded the commencement of the new activity or the change in the established activity (or in the case of a change in an intermittent or seasonal activity, compared to that on the last occasion on which the activity was carried out).	The water take associated with the Project is not considered to have more than minor adverse effects, as it will be set at 20% of the mean flow at the time of take. However, there are a number of new diversions associated with the Project which will result in more than minor adverse effects on the natural variability and levels of fresh water flows within the catchment and therefore Policy 5A.2.1 applies. These are addressed through the SEV process (providing for riparian restoration) as set out above.
Issue 6.1: The adverse effects of the taking, use, damming and diversion of surface water		

Reference	Objective/policy	Assessment
Objective 6.1.1	To promote the sustainable management of the surface waters of Taranaki while avoiding, remedying or mitigating any actual or potential adverse effects from the taking, use, damming or diversion of surface water.	The water takes and use, and the temporary and permanent diversion of surface water as a result of the road construction, will be carried out in a manner that avoids, remedies or mitigates adverse effects. Effects resulting from the diversion and culverting of natural watercourses will be offset through riparian restoration.
Policy 6.1.3	Notwithstanding Policy 6.1.4, when assessing the quantity of water that may be taken, used, dammed or diverted from any surface water body, the Taranaki Regional Council will have particular regard to: (a) the natural, ecological and amenity values of the water body; (b) the relationship of Tangata Whenua with the water body; (c) the importance of the water body to meet existing or reasonably foreseeable needs for community water supplies, agricultural, industrial or other use; (d) the effects of water levels and flows on water quality; (e) the hydrological characteristics of the catchment including flow variability, flow recession characteristics and the relationship to groundwater recharge; (f) the significance of flows and groundwater recharge for the maintenance or enhancement of downstream flows; (g) the extent to which the adverse effects of the taking, use, damming or diversion of water can be avoided, remedied or mitigated.	In relation to the matters set out in WAL Policy 3: (a) Natural character values vary from low-moderate to moderate-high over the Project footprint. Indigenous biodiversity values are fair to excellent as set out in the Freshwater Ecology Assessment (Technical Report 7b) which characterises the aquatic macroinvertebrate community. Fisheries values on both the Mimi and Tongaporutu catchments are associated with whitebaiting in the lower reaches of the catchments. The rivers do not provide trout habitat. (b) Ngāti Tama have a strong and significant relationship with the Project footprint as set out in the main body of the AEE. The Transport Agency is engaging on an ongoing basis to address the adverse effects of the Project on tangata whenua values. (c) There are no consented water takes downstream of the proposed Project construction water takes. There may be permitted activity takes related to agricultural use however the proposed water takes associated with construction are unlikely to affect the water available for this use. (d) Water takes will be restricted to no more than 20% of the flow at the time of the take. Diversions will be mitigated either through good culvert design to ensure fish passage, stormwater management, and design of stream diversions or through offset mitigation (riparian restoration). (e) It is not anticipated that the water takes will impact the overall hydrological characteristics of the catchments where the takes are located. (f) By restricting the water takes to no more than 20% of the flow at the time of take, it is anticipated that the effects of the water take will be less than minor, including on downstream flows. (g) Water takes are restricted to no more than 20% of the flow at the time of the take in order to avoid effects on in-stream values. The water intakes will also need to be appropriately designed to exclude fish. Diversions will be mitigated through good culvert design to ensure fish passage, stormwater management, and design of stream diversions; or offset mitigation through riparian restoration.
Policy 6.1.4	Subject to Policy 6.1.3, when assessing resource consents and imposing conditions for the taking, use, damming or diversion of surface water the Taranaki Regional Council will require quantities, levels and flows of water in rivers and streams (excluding those in Policies 6.1.1 and 6.1.2), that retain at least 2/3 habitat at mean annual low flow.	As set out in the Freshwater Ecology Assessment (Technical Report 7a), the approach to restrict water takes to no more than 20% of the flow at the time of the take is considered to be conservative and would offer a high level of protection considering the climate, and short term use..
Policy 6.1.5	When assessing resource consent applications for the taking, use, damming or diversion of water, the Taranaki Regional Council will consider: (a) the need to ensure that surface water is available for reasonable domestic needs, stock drinking water requirements, and fire fighting purposes;	In relation to the matters set out in Policy 6.1.5: (a) It is not anticipated that the water takes associated with construction will diminish supply for domestic needs, stock drinking water requirements, and fire fighting purposes. (b) As such, competing uses are not anticipated. (c) Construction of the road will require a water source for a number of construction activities, the bulk of which will be used for dust suppression.

Reference	Objective/policy	Assessment
	(b) where there are competing uses for water, or in catchments identified in Policy 6.1.2, the degree of community or regional benefit from the taking, use, damming or diversion as distinct from private or individual benefit; (c) the need for the volumes of water sought; (d) the need to use water efficiently and with a minimum of waste; (e) what alternative sources of water or water collection or storage methods have been considered; (f) possible mitigation measures including the maintenance of adequate minimum flows or flow regimes, the reduction or suspension of takes, the location, timing, duration and rate of the abstraction, the maintenance of fish passage, the application of riparian planting, use of gradient control for diversions, or other measures; (g) the need to install systems to accurately measure the volumes of water abstracted and to reduce or suspend abstractions.	(d) The proposed water take volumes are based on previous experience on construction sites of a similar size and nature. The water will be used as efficiently as practicable, noting that the volume sought can be reduced if dust suppression is only required in the vicinity of sensitive receptors (e) Groundwater and rainwater sources have been considered but are not likely to be able to provide the volume of water required. Potable water will be trucked onto site. (f) The takes during construction will be temporary and of a volume required for the construction processes. Where takes are not required e.g. when dust suppression is not necessary, the takes can be reduced or suspended. The restriction of water takes to no more than 20% of the flow at the time of the take is considered to be a conservative means of avoiding any adverse effects. The take will be designed to exclude fish but will not prevent fish passage through the main watercourse where the take is located. (g) The water take will be measured in accordance with the Resource Management (Measurement and Reporting of Water Takes) Regulations 2010.
Issue 6.2: Adverse effects on surface water quality from the discharge of contaminants from point sources		
Objective 6.2.1	To maintain and enhance the quality of the surface water resources of Taranaki by avoiding, remedying or mitigating the adverse effects of contaminants discharged to land and water from point-sources.	The primary point source discharges associated with the construction will be the primary sediment control devices (i.e. sediment retention ponds). The locations of these are shown within the CWMP. Discharges will be managed in accordance with best practice and industry guidelines.
Policy 6.2.1	In managing point-source discharges to land and water, the Taranaki Regional Council will recognise and provide for the different values and uses of surface water including: (a) natural, ecological and amenity values; (b) the relationship of Tangata Whenua with water; (c) the maintenance and enhancement of aquatic ecosystems, and water quality for fisheries and fish spawning; (d) use of water for water supply purposes; (e) use of water for contact recreation.	In relation to these matters: (a) Adverse effects on natural character and amenity values have been addressed in Technical Reports 6 (recreation) and 8a (landscape, natural character and visual assessment), along with Section 10 of the AEE. Ecological effects are considered in Technical Reports 7a-7h. Overall, the Project has avoided adverse effects where possible, and remedied, mitigated or offset remaining adverse effects on surface water and associated values. (b) Ngāti Tama have a strong and significant relationship with the Project footprint as set out in the main body of the AEE. The Transport Agency is engaging on an ongoing basis to address the adverse effects of the Project on tangata whenua values. (c) Adverse effects on upstream fish passage which could potentially be restricted during construction when culverts are installed and water is flowing through any temporary diversion pipes are considered to be negligible to low (see Technical Report 7b). Fish passage will be provided for permanent culverts. Further, it is likely that the riparian restoration and pest control proposed will improve ecosystem functions, by reducing streambank erosion and trampling of spawning sites. Trout are not present within the Project footprint. (d) There are no consented water takes immediately downstream of the proposed takes that will be affected. Given the conservative limit on water takes (20% of the flow at the time of take), it is unlikely that water supply will be affected. (e) Contact recreation is more likely at the mouths of the Tongaporutu River and Mimi River, which are a significant distance from the works and is therefore unlikely to be affected.

Reference	Objective/policy	Assessment
Policy 6.2.2	Discharges of contaminants or water to land or water from point sources should: (a) be carried out in a way that avoids, remedies or mitigates significant adverse effects on aquatic ecosystems; (b) maintain or enhance, after reasonable mixing, water quality of a standard that allows existing community use of that water for contact recreation, and water supply purposes, and maintains or enhances aquatic ecosystems; (c) be of a quality that ensures that the size or location of the zone required for reasonable mixing does not have a significant adverse effect on community use of fresh water or the life supporting capacity of water and aquatic ecosystems.	As set out in the CWMP, all construction related runoff discharges will either be to a land environment or direct to freshwater systems. Discharges to land are considered beneficial, as a land-based buffer zone will have a 'polishing' effect on the discharged runoff. Where discharges are direct to freshwater systems, the outlet will be protected with geotextile and riprap material (if necessary) to minimise erosion of the stream bank and bed at that point. This will avoid significant adverse effects on aquatic ecosystems, existing community use of that water for contact recreation, and water supply purposes. NB: Stormwater discharges from the road once operational will be compliant with permitted activity standards and are considered to have less than minor adverse effects on these values.
Policy 6.2.4	The Taranaki Regional Council may, where appropriate, require the adoption of the best practicable option to prevent or minimise adverse effects on the environment from the discharge of contaminants to land or water. When considering what is the best practicable option, the Taranaki Regional Council will give consideration to the following factors, in addition to those contained in the definition in the Act of best practicable option: (a) the capital, operating and maintenance costs of relative technical options, the effectiveness and reliability of each option in reducing the discharge, and the relative benefits to the environment offered by each option; (b) the weighing of costs in proportion to any benefits to the receiving environment to be gained by adopting the method or methods; (c) maintaining and enhancing the existing water quality in the area as far as practicable.	The CWMP propose best practise measures which apply a risk based approach which is consistent with the Erosion and Sediment Control Guidelines.
Issue 6.3 Adverse effects on surface water quality from diffuse source discharges		
Objective 6.3.1	To maintain and enhance the quality of the surface water resources of Taranaki by avoiding, remedying or mitigating the adverse effects of contaminants discharged to water from diffuse sources.	Uncontrolled erosion from construction would be a diffuse source discharge. However, best practice measures will avoid erosion where possible, and apply sediment control measures to direct any residual sediment discharge into sediment retention ponds or similar.
Objective 6.3.3	The Taranaki Regional Council will promote the restoration of riparian margins where riparian vegetation will provide net water quality benefits.	Restoration, including riparian planting, is proposed as part of the offset package, which is predicated to achieve net positive effects in the short to medium term.
Issue 6.6: Adverse effects on the environment from uses of river and lake beds		
Objective 6.6.1	To promote the sustainable management of the beds of rivers and lakes by avoiding, remedying or mitigating any adverse effects of the use of the beds of rivers or lakes.	The Project requires both temporary and permanent culverts constructed in the beds of the Mimi River, Mangapepeke Stream and tributaries. An estimated 3825m of stream in the Mangapepeke and Mimi catchments will be diverted, culverted or substantially altered as a result of the Project. The proposed methods to avoid and mitigate / offset the adverse effects of the proposed works are set out in the Freshwater Ecology Assessment and the Ecological Mitigation and Offset Report. These methods are considered to appropriately avoid, mitigate / offset and remedy the adverse effects resulting from the construction of the bypass.
Objective 6.6.2	To avoid, remedy or mitigate the adverse effects of flooding and erosion on land uses in floodplains.	The CWMP sets out the management measures which will be implemented during construction to manage construction water relating to the Project.

Reference	Objective/policy	Assessment
		Stormwater quantity will be designed to convey flow as a minimum for the extended detention flow, as defined by Transport Agency's *Stormwater Treatment Standard for State Highway Infrastructure* (May 2010) (Stormwater Treatment Standard) and, where no acceptable alternative overland flow path is available, the 100 year Average Recurrence Interval (ARI) flow; and minimise erosion of streams by providing extended detention and controlled release of runoff generated in a rainfall event of 36mm, discharged over a 24 hour period. This is will manage adverse effects of stormwater arising from the operation of the road.
Policy 6.6.1	The placement or maintenance of structures within river and lake beds will be managed so as to avoid, remedy or mitigate: (a) adverse effects on the habitat of aquatic and terrestrial flora and fauna, including the passage of fish; (b) erosion or accretion of river and lake beds or banks; (c) the exposure or destabilisation of existing structures within the bed; (d) the effects of flooding and erosion; (e) adverse effects on water quality and aquatic life.	The matters set out in Policy 6.6.1 have been considered as follows: (a) Adverse effects on aquatic flora and fauna are considered in Technical Report 7b, and terrestrial effects of the Project considered in the other ecological reports. Overall, the Project has avoided adverse effect where possible, and remedied, mitigated or offset remaining adverse effects on river and lake beds, including fish passage as required. Adverse effects on upstream fish passage during construction are considered to be negligible to low (see Technical Report 7b). Fish passage will be provided for in permanent culverts where necessary. (b) The intent of the CWMP is to avoid erosion in the first instance, and to minimise effects through appropriate and responsive management where erosion cannot be avoided. (c) Existing structures within the Project footprint will be removed as part of construction works. Construction water and operational stormwater will be managed appropriately to avoid exposure or destabilisation of existing structures downstream of the works. (d) As set out above, effects associated with construction water will be managed via the CWMP, and once operational, stormwater will be managed via appropriately designed devices. (e) Adverse effects on water quality during construction are addressed in the CWAR. Longer term effects and consideration of adverse effects on aquatic life is contained in the Freshwater Ecology Assessment (Technical Report 7b). Overall, adverse effects will be avoided, remedied or mitigated either through good construction management or offset via riparian restoration where permanent culverting of watercourses is proposed.
Policy 6.6.2	Structures in or on river and lake beds will be required to provide for the unrestricted passage of fish, or will be required to contain suitable facilities to enable fish passage through or past the structure.	Fish passage will be provided for where necessary during construction. Permanent culverts will be designed to allow for fish passage as set out in the Freshwater Ecology Assessment, which provides a number of options in this regard. Further detail is included in the CWMP in relation to structures in or on river beds.
Policy 6.6.3	The Taranaki Regional Council will require that structures in river and lake beds be designed, placed and maintained to avoid reducing the capacity of river channels to convey flood flows, the unintentional impoundment of water and adverse effects of flooding on adjacent properties and other structures within river beds.	The Project has been designed to convey flow as a minimum for the extended detention flow, as defined by the Transport Agency's Stormwater Treatment Standard and, where no acceptable alternative overland flow path is available, the 100 year ARI flow.
Policy 6.6.8	The Taranaki Regional Council will advocate and promote the avoidance and mitigation of the adverse effects of flooding on land use in floodplains, as a natural hazard of regional significance.	The Transport Agency acknowledges the presence of floodplains both in the direct road footprint and in surrounding areas. The design and options assessment processes have taken into account resilience to flooding, and flooding is assessed in the Resilience Assessment Report (Volume 3 of the AEE). Along with locating the proposed footprint, where practicable, away from flood hazard areas, design of culverts has factored in the potential for flood waters to be conveyed and for debris to prevent conveyance. In addition, sediment control devices will be located outside the 20year ARI flood level where this can be practically achieved. It is recognised there will be limited ability within the lower valley floor locations to achieve this. In that case where sediment control devices are required within the 20year ARI flood level, they will be designed to capture the minimum catchment area and will be subject to an increased inspection and maintenance regime.

Reference	Objective/policy	Assessment
Policy 6.6.9	When assessing resource consent applications for uses of river and lake beds, the Taranaki Regional Council will consider: (a) the natural, ecological and amenity values of the water bodies; (b) the relationship of Tangata Whenua with the water body; (c) adverse effects on water quality and aquatic life and instream habitat; (d) possible mitigation measures including appropriate timing of works, provision of fish passage and provision of alternative access.	The matters set out in Policy 6.6.9 have been considered as follows: (a) Adverse effects on natural character and amenity values have been addressed in Technical Reports 6 (recreation) and 8a (landscape, natural character and visual assessment), along with Section 10 of the AEE. Ecological effects are considered in Technical Reports 7a–7h. Overall, the Project has avoided adverse effect where possible, and remedied, mitigated or offset remaining adverse effects on river and lake beds. (b) The Project footprint holds significant cultural value for Ngāti Tama. The Transport Agency is engaging with Ngāti Tama on an ongoing basis to address the adverse effects of the Project on tangata whenua values. (c) As set out in Technical Report 7a, the potential effects of the Project on streams include short term effects related to the construction phase and long term effects that continue well after the construction phase. Potential short term effects include sedimentation, direct removal of fish from the stream, short-term loss of fish passage in some areas and short-term loss of stream habitat from temporary culverts. Potential long-term effects include reduced fish passage, loss of stream ecological functions and habitat, and potential effects of road stormwater on stream hydrology and water quality. (d) The potential effects on streams during the construction period will be minimised and mitigated by implementing good practice with respect to erosion and sediment control, fish recovery, vegetation clearance, water takes and undertaking monitoring during the construction period. Similarly, many of the long-term effects from the road footprint can be minimised and mitigated by good culvert design to ensure fish passage, stormwater management, and design of stream diversions. Remaining adverse effects will be offset via riparian restoration.

Regional Soil Plan for Taranaki 2001

Reference	Objective/policy	Assessment
Objective 1	To maintain and enhance the soil resource of the Taranaki region by avoiding, remedying or mitigating accelerated erosion.	The CWMP contains measures focused on avoiding, remedying and mitigating erosion. Erosion control will be the highest priority in the design of erosion and sediment control measures, and higher risk areas will be subject to a specific risk assessment and the implementation of appropriate erosion and sediment control measures over and above those typically implemented for standard earthworks projects.
Policy 1.1	The Taranaki Regional Council will encourage sustainable land management practices that control the adverse effects of soil and vegetation disturbance activities on erosion-prone land throughout the Taranaki region, with particular focus on: (a) Accelerated erosion of soil on hill country land…	Best practise erosion and sediment control practises will be employed by the Project during construction, in accordance with the Erosion and Sediment Control Guidelines, as set out in the CWMP. Areas with slopes exceeding 30% will be subject to a higher level of detailed erosion and sediment control planning design and ongoing contractor monitoring, as defined through an responsive monitoring programme. Overall, it is considered that practices that cause accelerated erosion will be avoided where practicable and remedied and mitigated where avoidance is not practicable.

Regional Air Quality Plan for Taranaki 2011

Reference	Objective/policy	Assessment
Objective 1	To maintain the existing high standard of ambient air quality in the Taranaki region and to improve air quality in those instances or areas where air quality is adversely affected, whilst allowing for communities to provide for their economic and social wellbeing.	Overall, the existing standard of ambient air quality in the wider Project area and Taranaki more broadly will be maintained. The key discharge to air during construction works will be dust, which will be managed via water cart. Any dust effect should be considered in light of the contribution the Project will make to the economic and social wellbeing of Taranaki.
Objective 2	To safeguard the life-supporting capacity of air throughout the Taranaki region.	The Project is not anticipated to affect the life-supporting capacity of air throughout the Taranaki region.
Objective 3	To provide for activities discharging to air.	The construction period will generate dust and potentially uncover farm dumps which generate odour. Discharges to air will be managed appropriately, particularly through the Dust Management Plan.
Objective 4	To avoid, remedy or mitigate the adverse effects of activities discharging contaminants to air in the Taranaki region, including adverse effects on the amenity and aesthetic qualities of air.	Dust will be managed with a particular focus on amenity and aesthetic qualities for sensitive receptors located near the construction site.
Policy 1.1	Discharges to air of contaminants should avoid, remedy or mitigate adverse effects of potentially hazardous, noxious, dangerous or toxic contaminants by ensuring that any such discharge does not occur at a volume, concentration or rate or in such a manner that causes or is likely to cause a hazardous, noxious, dangerous or toxic effect on human or animal health, significant ecosystems or structures.	The potential effects of discharges to air from construction activities are limited to nuisance effects of dust and effects on vegetation adjacent to the construction area. Discharges of dust will not give rise to any hazardous, noxious, dangerous or toxic effect on human or animal health. High dust loadings, of a magnitude likely to cause adverse effects on vegetation, are unlikely to occur beyond around 10m from the construction footprint. Mitigation measures to address 'edge effects' on the bush margins are proposed in the Assessment of Ecological Effects – Vegetation (Technical Report 7a, Volume 3 of the AEE). The operational phase of the Project will give rise to emissions of contaminants from motor vehicle exhaust and brake and tyre wear. As discussed in the Air Quality Assessment (Technical Report 11), the effects of operational discharges to air on human or animal health, or ecosystems, are predicted to be negligible.

Reference	Objective/policy	Assessment
Policy 1.2 Odour	Ensure that, (to the fullest extent practicable), any discharges to air of odorous contaminants do not cause odours beyond the boundary of the property of the discharger that are offensive or objectionable.	There is the possibility that construction activities may encounter old "farm dumps" containing potentially odorous material. These sites may cause very localised odours, however they are located some distance from sensitive receptors. On this basis, there are unlikely to be any offensive or objectionable effects of odour associated with the Project.
Policy 1.3	Ensure that any discharge to air of dust, smoke and other particulate matter beyond the boundary of the property, and on the electricity transmission network, does not occur at a volume, concentration, or rate or in a manner that causes or is likely to cause a hazardous, noxious, dangerous, offensive or objectionable effect, including the significant restriction of visibility or the soiling of property, to the extent that the restriction of visibility or the soiling of property causes or is likely to cause the above effects	Construction activities will give rise to discharges to air of dust. Discharges of dust will not give rise to any hazardous or noxious effects. As outlined in the Air Quality Assessment (Technical Report 11), with a separation distance from receptors of at least 30m and the use of standard dust control measures (see the Air Quality Assessment), the discharges of dust are not expected to give rise to any offensive or objectionable effects of dust, including restriction of visibility or soiling. The nature and scale of dust emissions from construction activities would not cause any effects on the electricity transmission network.
Policy 2.3	Air quality management in Taranaki will be carried out in a way that recognises that some areas of the region have within them, uses or values or activities that are more sensitive to the discharge of contaminants to air than other areas. In particular, recognition will be given to any adverse effects from the discharge of contaminants to air on: (a) people and property in urban areas, residences and places of public assembly and on the safe and efficient operation of roads, airports and flight paths and other infrastructure; (b) sensitive crops or farming systems, domestic and community water supplies and other water bodies including wetlands; (c) sensitive commercial or industrial systems and activities; (d) the special scenic, visual, recreational, conservation, scientific and other values associated with Mt Taranaki and Egmont National Park; (e) the scenic, aesthetic and recreational values associated with Taranaki's parks, reserves, rural landscapes, seascape, coastal areas and other amenity areas; (f) the heritage values of the region including places or areas of special historical, cultural, archaeological, architectural, scientific, ecological, intrinsic or amenity value; (g) places, areas or features of significance to tangata whenua for spiritual, cultural or historical reasons; and (h) the electricity transmission network.	Sensitive receptors in the vicinity of the Project are described in the Air Quality Assessment. The assessment has paid particular attention to the effects of discharges on residential houses, including potential for effects on roof supply drinking water, and sensitive ecosystems. The assessment concluded that any adverse air quality effects, including on sensitive receptors and adjacent vegetation, are expected to be no more than minor.
Policy 2.4	The potential for the discharge of contaminants to air to adversely affect other alternative receiving environments (i.e. land and water) should be taken into account.	The relatively small scale of discharges to air from the Project means that there will be no adverse effects to alternative receiving environments, such as from deposition of dust onto surface water or land.
Policy 2.6	Discharges of contaminants to air should not occur at a rate or in a manner that contribute to a cumulative effect which over time, or in combination with other effects, is likely to have an	Existing air quality in the Project area is very good. The assessment of the operational effects of the Project on air quality explicitly considers the cumulative effects of the discharges along with background concentrations of contaminants. The effects are predicted to be negligible.

Reference	Objective/policy	Assessment
	adverse effect on human health and safety, ecosystems, property or other aspects of the environment.	
Policy 2.7	The Taranaki Regional Council may, when provided for in the Rules of the Plan, require the adoption of the best practicable option to prevent or minimise adverse effects on the environment from the discharge of contaminants to air arising from the process under consideration. When considering what is the 'best practicable option' to reduce the effects of the discharge, the Taranaki Regional Council will give consideration to the following factors when applying the definition in the Act, of best practicable option: (a) The implementation of Policies 1.1, 1.2 and 1.3, when having regard to the nature of the discharge; (b) Any sensitive receiving environments (areas) as described in Policy 2.3; (c) The capital, operating and maintenance costs of relative technical options to reduce the effects of the discharge, the effectiveness and reliability of each option, and the relative benefits to the receiving environment offered by each option; (d) The weighing of costs in proportion to any benefits to the receiving environment to be gained by adopting the method or methods; and (e) Maintaining and enhancing existing air quality in the neighbourhood as far as practicable.	The Air Quality Assessment outlines good practice dust control methods for the construction phase of the Project, including the preparation of a Dust Management Plan (contained in Volume 5 of this AEE). These control methods are consistent with the best practicable option for managing construction dust, taking into account the sensitivity of the receiving environment. Specific mitigation measures for the operational phase of the Project are not warranted as the potential adverse effects are negligible.
Policy 3.2	The adverse effects of the discharge of contaminants to air on wāhi tapu and other places, areas or features of significance to iwi o Taranaki should be avoided, remedied or mitigated to the fullest extent practicable.	Mt Messenger and the Parininihi area have high significance to Tangata Whenua. The management measures in the CEMP will ensure any adverse effects of air discharges on places of significance are avoided, remedied or mitigated to the fullest extent practicable.
Policy 6.1	The discharge of contaminants to air from site development, earthworks or the application of soil conditioners, including the rate and concentration of the discharge will be managed to avoid remedy or mitigate any significant off site adverse effects on the environment arising from the discharge.	The assessment of effects of both the construction and operational discharges to air from the Project demonstrates that there will be no significant adverse effects on the environment arising from the discharges.
Policy 6.2	In considering the effects of any discharge of contaminants to air from site development, earthworks or the application of soil conditioners, particular regard will be had to the following effects: (a) Any actual or potential effects on the health and functioning of ecosystems, plants and animals including indigenous ecosystems and plants and animals of commercial significance; (b) Any actual or potential effects on amenity values, including any effects of odour or particulate matter arising from the discharge, and any nuisance effects; (c) Any actual or potential adverse effects on areas, places, sites or features identified in Policy 2.3; (d) Any actual or potential adverse effects on other receiving environments; (e) Any actual or potential adverse effects on human health, safety and well-being;	An assessment of construction dust effects is provided in the Air Quality Assessment. The identified matters are addressed as follows: (a) Actual or potential effects of discharges from site development and earthworks on the health and functioning of ecosystems, etc. are addressed in Section 6.1.3 of the Air Quality Assessment. (b) Actual or potential effects on amenity values arising from the discharge of particulate matter of discharges from site development and earthworks are addressed in Section 6.1.2 of the Air Quality Assessment. (c) The assessment specifically addresses effects of dust emissions from site development and earthworks on residential houses and domestic water supply (Section 6.1.2 of the Air Quality Assessment) and sensitive ecosystems (Section 6.1.3 of the Air Quality Assessment). (d) There will be no actual or potential effects of discharges from site development and earthworks on other receiving environments.

Reference	Objective/policy	Assessment
	(f) any cumulative adverse effects identified in Policy 2.6; (g) Any adverse effects of low probability but high potential impact; and (h) Any positive effects of the discharge, including social and economic benefits of activities using air resources.	(e) The potential effects of discharges to air of dust from site development and earthworks are restricted to nuisance effects. Given the scale of the proposed activities and the separation distance to residential houses, there are no potential adverse effects on human health, safety and well-being. (f) Existing air quality in the Project area is very good. There is not expected to be any cumulative adverse effects of dust discharges from site development and earthworks. (g) Positive effects are addressed in Section 9 of the AEE and include wider regional benefits.
Policy 6.3	In considering the effects of any discharge of contaminants to air from site development, earthworks or the application of soil conditioners, matters that will be taken into account include: (a) The nature, volume, composition and concentration of the contaminant and the frequency, rate and manner of the discharge; (b) Surrounding environmental conditions that may affect the frequency, duration, intensity and degree of environmental effects including topography, wind speed and direction, and other climatic or weather conditions; and (c) The best practicable option to prevent or minimise any adverse effects on the environment in accordance with Policy 2.7.	The nature of dust discharges from site development and earthworks activities, and the factors affecting generation are described in Section 4.1 of the Air Quality Assessment. The Air Quality Assessment describes the wind and rainfall conditions in the Project Area. Section 6.1.2 of the Air Quality Assessment sets out a detailed assessment of the frequency, duration and intensity of environmental effects of dust emissions, taking into account the prevalent weather conditions, terrain and the proximity of sensitive receptors. The Air Quality Assessment outlines good practice dust control methods for the construction phase of the Project, including the preparation of a Dust Management Plan. These control methods are consistent with the best practicable option for managing construction dust, taking into account the sensitivity of the receiving environment.

New Plymouth Operative District Plan 2005

Reference	Objective/policy	Assessment
Issue 1: The adverse effects of activities on the character of areas and on other activities		
Objective 1	To ensure activities do not adversely affect the environmental and amenity values of areas within the district or adversely affect existing activities.	The adverse effects of the Project have been considered in a comprehensive and holistic manner. The approach to addressing adverse effects on the environment and amenity values in the area are set out in the various technical reports in Volume 3.
Policy 1.1	Activities should be located in areas where their effects are compatible with the character of the area.	Generally, the wider Project area is rural in nature and has been modified by agriculture and the presence of the existing road. SH3 is an existing and expected part of the rural character in this location, acknowledging that the bypass will affect an area which is not currently developed.
Policy 1.2	Activities within an area should not have adverse effects that diminish the amenity of neighbouring areas, having regard to the character of the receiving environment and cumulative effects.	The bypass will be contained within the Mimi and Mangapepeke Valleys, and affects the amenity of few properties.
Issue 2: Adverse effects on amenity, health and safety due to LIGHT OVERSPILL, GLARE, noise, dust and the consumption of liquor		
Objective 2	To avoid, remedy or mitigate the adverse effects of LIGHT OVERSPILL and GLARE, noise, and the consumption of liquor on amenity values and health.	There are very few dwellings in the general vicinity of the Project footprint. The Environmental Noise and Vibration Report (Technical Report 10) provides details of the level of noise to be generated both during construction and operation. Some mitigation will be required in relation to the dwelling adjoining the southern disposal site location however, in general noise and vibration are predicated to comply with the relevant standards. Temporary construction lighting will be required at construction yards and active working areas to enable construction during the hours of darkness, especially during the winter period. Glare from any lighting will be kept below the recommendations in AS 4282 – 1997 "Control of the Obtrusive Effects of Outdoor Lighting". Permanent lighting will be provided at the two local road intersections and the tunnel, which will be lit at all times to provide for the safe and efficient operation of the network. Lighting will be designed to meet AS/NZS 1158 'Category V' requirements.
Policy 2.1	LIGHT OVERSPILL should not result in adverse effects on amenity values and community health.	Lighting will be designed to avoid adverse effects on receptors, which will include the properties at either end of the alignment.
Policy 2.2	Activities should not result in adverse effects on amenity values, community health and safety due to GLARE from artificial light, flaring or reflected light.	Lighting is proposed just at the tunnel (where there are no receptors) and at either end of the alignment. It is considered that the lighting can be designed to avoid glare on nearby properties.
Policy 2.3	Noise that results in adverse effects on health or amenity should be avoided, remedied or mitigated.	Based on the findings of the Environmental Noise and Vibration Report (Technical Report 10), noise associated with construction and operation of the road will have a no more than minor effect on the environment and people and communities, provided the spoil disposal site is managed in accordance with best practice. The implementation of the CNMP will ensure adverse noise effects are appropriately managed.
Issue 3: Adverse effects on health and safety from public works and NETWORK UTILITIES		

Reference	Objective/policy	Assessment
Objective 3	To ensure public works and NETWORK UTILITIES do not adversely affect the health and safety of the community.	The definition of 'network utilities' includes roads, and the development of the road constitutes public works. The existing route has a poor safety record, with poor route resilience (common closures, with no suitable alternative routes) and poor road geometry and low speeds. The proposed bypass provides a number of safety benefits and will therefore improve the health and safety of the road users.
Policy 3.1	The establishment, operation, maintenance and upgrading of public works and NETWORK UTILITIES should not compromise public health or safety.	Construction of the bypass will be undertaken in accordance with the relevant health and safety legislation and procedures. Due to the remoteness of the site, interactions with the public during construction are likely to be low, and concentrated at the Site Access Points and potentially with users of the Kiwi Road Track. In order to avoid compromising public health and safety, the Construction Traffic Management Plan (CTMP) (Volume 5) sets out how construction traffic will be managed. The Kiwi Road Track may be closed at least partially when construction works are occurring in this location in order to protect health and safety.
Issue 4: Loss or reduction of rural amenity and character		
Objective 4	To ensure the subdivision, use and development of land maintains the elements of RURAL CHARACTER.	There are areas of rural land to the south and north of the wider Project area, including in the Mangapepeke Valley within and adjacent to the Project footprint. The definition of 'rural character' states that rural areas have a dominance of openness and rural practices, while acknowledging that rural infrastructure is part of this character. The introduction to Issue 4 notes the presence of State Highways with higher traffic levels in rural character areas. Rural character will be maintained through the design principles set out in the LEDF, including keeping low in the landscape at either end of the Project footprint, noting that the bypass will tie into the existing SH3 which runs through rural land on either end of the alignment.
Policy 4.3	Control the density, scale, location (including on-site location) and design of activities by; (a) Imposing a maximum HEIGHT for all buildings to allow for rural uses to operate. (b) Providing a maximum area that can be covered by BUILDINGS to control the effects of larger scale activities on small sites. (c) Requiring BUILDINGS to be setback from the ROAD BOUNDARY in order to maintain spaciousness. (d) Requiring BUILDINGS to be setback from the SIDE BOUNDARY to maintain separation between BUILDINGS and related activities. (e) Providing for the RELOCATION of BUILDINGS to ensure they are reinstated. (f) Requiring landscaping (planting and screening) to mitigate the effects of: (i) OUTDOOR STORAGE areas visible from an adjoining RESIDENTIAL ENVIRONMENT AREA or New Plymouth entrance corridor and; (ii) VEHICLE parking either visible from the ROAD or an adjoining RESIDENTIAL ENVIRONMENT AREA or New Plymouth entrance corridor; (iii) of large SUBSTATIONS and SWITCHING STATIONS.	The Project's scale and location have been determined following extensive environmental and engineering investigations, which were canvassed during the alternatives assessment process and public engagement sessions. Buildings associated with the Project will be either temporary and associated with the construction period, or small-scale ie the hydrant tanks and a tunnel control building, which will be set back from the road and screened as necessary. Of particular relevance to this policy, large scale cuts and fills are proposed in association with the Project. The proposed alignment has been designed to optimise a balance of cut and fill volumes however cut faces are an inevitable effect of a project of this nature in this terrain. The Landscape, Natural Character and Visual Assessment considers this to be a consistent and expected element in a highway environment. Based on the evidence of the existing SH3 corridor it is anticipated that these rock cuts will become a naturalised geological feature of the alignment over time mitigating their effects. Further discussion on the design treatment of cuts and fills is set out in the LEDF (Section 5.1).

Reference	Objective/policy	Assessment
	(g) Imposing controls on the size, HEIGHT, location, content, number and duration of ADVERTISING SIGNS. (h) Imposing controls on the quantity, composition and reinstatement of EXCAVATION and FILL to ensure adverse effects are mitigated.	
Policy 4.5	Ensure that the design of subdivision and development is sensitive to the surrounding environment. In particular the following design principles will be considered: (a) Ensure appropriate overall density by maintaining the level of built form expected in the rural environment. (b) Ensure the intensity and scale of the development is in keeping with RURAL CHARACTER (c) Ensure that ALLOTMENTS and BUILDINGS are in context with the surrounding environment and are positioned to recognise natural features in the landform. (d) Ensure that ALLOTMENTS and BUILDINGS are sited and designed in a manner that is integrated with the surrounding environment with minimal disturbance to the landform by considering: (i) softening with vegetation related to the area and treatment of boundary elements; (ii) BUILDING design of a form and scale that is in keeping with the landscape; (iii) the use of materials, that are in keeping with the environment, including consideration of colour and low reflectivity; (iv) low level INFRASTRUCTURE and services that is rural in nature. (e) Consistency of any full discretionary activity with design guidelines. (f) Consideration towards any recommendations from a design panel.	To integrate the Project into the environment, including the rural character at the northern and southern ends of the alignment, the following design principles are proposed: • Simplicity – setting the road low in the landscape and allowing the landscape to 'speak' • Cultural context – interpretation and celebration of the cultural context of this location • Integration – with the natural and ecological landscape patterns • Future proofing – responding to future growth in Taranaki and surrounding areas. These principles are detailed further in the LEDF. This is considered to be generally within the intent of Policy 4.5.
Policy 4.6	Retain vegetation, particularly indigenous vegetation and require the planting of new vegetation to mitigate the effects of activities.	The Project has been developed to minimise the areas of vegetation clearance required, including by tunnelling and bridging sections of the realignment. However, a substantial amount of indigenous vegetation will need to be cleared. This is being addressed through a comprehensive mitigation and offsetting scheme, focused on planting new vegetation and pest control that will improve existing areas of native vegetation. The Ecological Mitigation and Offset Report provides details of the planting proposed to mitigate and offset the effects of the Project.
Policy 4.8	Activities within the rural environment should not generate traffic effects that will adversely affect RURAL CHARACTER and the intensity of traffic generation should be of a scale that maintains RURAL CHARACTER.	Construction traffic movements will take place within the context of the existing levels of traffic on SH3, which are considered to be manageable through the CTMP including stop/go operations where necessary. Once constructed then operation of the bypass will be in accordance with the character of the area.
Issue 10: Adverse effects from the storage, use, disposal and transportation of HAZARDOUS SUBSTANCES on the environment		

Reference	Objective/policy	Assessment
Objective 10	To protect the quality of the environment, including the health and safety of people, from the adverse effects of the storage, use, disposal and transportation of HAZARDOUS SUBSTANCES.	Hazardous substances used on site include fuel and oil and other construction related substances. These will be managed in accordance with best practise and hazardous substances legislation.
Policy 10.3	CONTAMINATED SITES should not be used for activities where human health and safety could be adversely affected by that contamination.	The CLMP attached in Volume 5 sets out the management and mitigation procedures for contaminated land within the Project footprint (noting that a DSI will be required to locate contaminated sites in an exact manner).
Issue 11: Degradation of heritage resources		
Objective 11	To recognise the district's heritage resources, provide for their protection and promote their enhancement.	The Plan states that cultural heritage consists of heritage items such as archaeological and wāhi taonga/sites of significance to Māori. In relation to archaeological sites, the Historic Heritage Assessment finds that there is some potential to encounter settlement remains within the Project footprint, but these are unlikely to be significant. Engagement with Ngāti Tama is ongoing in order to manage effects on any wāhi taonga/sites of significance.
Policy 11.5	ARCHAEOLOGICAL SITES should be protected from destruction and alteration that will adversely affect their archaeological values.	No recorded archaeological sites will be affected by the Project. The possibility of unrecorded archaeological sites can be provided for by putting procedures in place ensuring that the New Plymouth District Council and Heritage NZ are contacted should this occur (see Accidental Discovery Protocol, Volume 5).
Issue 12: Actual and potential adverse effects of natural hazards on people, property and the environment		
Objective 12	To avoid or mitigate any actual or potential adverse effects of natural hazards on people, property and the environment.	The Project will enhance the resilience of SH3 including in relation to resilience to natural hazards. The Project will have a net positive effect on natural hazard risks and effects in the area, particularly by reducing the possibility of SH3 closures due to natural hazards (eg landslips).
Policy 12.1	Subdivision, land use and development should be designed and located to avoid or mitigate the adverse effects of natural hazards on human life, property, INFRASTRUCTURE and the environment.	The alternatives assessment used resilience as one of the assessment criteria, which highlighted options where resilience of the road would be decreased, or significant works required to address, resilience to natural hazards (namely landslides). The Project route will improve the resilience of the Mt Messenger section of SH3, and therefore the robustness of the broader regional transport network to natural hazards. The Project will not increase the likelihood or magnitude of natural hazard events. In particular, construction activities will be undertaken in accordance with the CEMP and the CWMP to manage potential for increased natural hazard events eg erosion or exacerbation of flooding event consequences.
Issue 13: Aggravation of natural hazard events by inappropriate land use practices and activities		
Objective 13	To ensure that land use activities do not increase the likelihood or magnitude of natural hazard events.	The Project will not increase the likelihood or magnitude of natural hazard events. In particular, construction activities will be undertaken in accordance with the CEMP and the CWMP to manage potential for increased natural hazard events eg erosion or exacerbation of flooding event consequences.
Policy 13.1	Subdivision, development and other land uses should not result in aggravation of natural hazards.	The Project will have a net positive effect on natural hazards in the area, particularly by reducing the possibility of SH3 closures due to natural hazards (eg landslips).
Issue 14: Adverse effects of subdivision, use and development on the natural character of the coastal environment, wetlands, lakes and RIVERS and their margins		

Reference	Objective/policy	Assessment
Objective 14	To preserve and enhance the natural character of the coastal environment, wetlands, and lakes and RIVERS and their margins.	The road alignment has been located to avoiding directly impacting on the natural character values of the Kahikatea swamp forest in the Upper Mimi Valley. There will be some adverse effects on the natural character values of streams particularly in the Upper Mangapepeke Valley as a result of diversions and culverting under the road, which are proposed to be offset through riparian restoration.
Policy 14.2	The natural character of wetlands and RIVERS and lakes and their margins should not be adversely affected by inappropriate subdivision, use or development and should, where practicable, be restored and rehabilitated.	In order to restore and rehabilitate the natural character of streams affected by the proposal, riparian planting and fencing is proposed alongside pest control and restoration of the Kahikatea swamp forest in the Mangapepeke Valley, which will enhance the natural character of this area. As set out in Technical Report 8a, the Project addresses adverse natural character effects by: • Seeking to minimise the stream and valley crossings throughout the alignment; • Maintaining and enhancing natural stream environments where practically possible; • Mitigating stream disturbance within the Upper Mangapepeke Valley and developing appropriate stream diversions of comparable natural character where practical; and • Offering a significant opportunity to enhance the natural character of the entire Mangapepeke Stream corridor and valley through the Ecological Mitigation and Offset Package (see Technical Report 7h).
Issue 16: Degradation and loss of INDIGENOUS VEGETATION and habitats of indigenous fauna		
Objective 16	To sustainably manage, and enhance where practical, INDIGENOUS VEGETATION and habitats.	The ecological values present in the Project footprint and adjacent forested and wetland areas are high, although considerably diminished from their full potential because of the long term and largely unchecked impact of farm livestock and animal pests (and the effects of previous logging and fires). The removal of vegetation and effects on habitats within the Project footprint will be avoided where possible, and remedied and mitigated / offset where this is not practicable.
Policy 16.2	Land use, development and subdivision should not result in adverse effects on, and should enhance where practical, the quality and intrinsic values of areas of INDIGENOUS VEGETATION and habitats.	In the first instance, the alternatives assessment presented a preferred option that minimises ecological effects by avoiding particularly significant habitat (particularly Parininihi), and modifying the road design to avoid and minimise adverse effects. The removal of vegetation and effects on habitats within the Project footprint will be avoided where possible, and remedied and mitigated where this is not practicable. However, the adverse effects of the Project remain high and therefore a comprehensive biodiversity offset and mitigation package has been developed as a core part of the Project. This is predicted to result in a net ecological benefit within the next 10-15 years, and significant enhancement thereafter. Offset and mitigation measures are described in the Ecological Mitigation and Offset Report.
Issue 18: Provision of public access to and along the coast, lakes and RIVERS		
Objective 18	To maintain and enhance public access to and along the coast, lakes and RIVERS.	Existing public access to streams in the area (namely the Mimi River via Kiwi Road Track) will be maintained once construction is complete, with the Kiwi Road Track to be diverted under the new road bridge to avoid pedestrians crossing the highway. There will likely be interruptions to access to the Kiwi Road Track during construction for health and safety purposes.

Reference	Objective/policy	Assessment
Policy 18.1	Public access should be provided to and along the coast and PRIORITY WATERBODIES except where such access should be restricted: • To preserve natural character. • To protect SIGNIFICANT COASTAL AREAS. • To protect SIGNIFICANT NATURAL AREAS. • To safeguard ecological, intrinsic or recreational attributes. • To avoid conflicts between competing uses. • To protect cultural and spiritual values of TANGATA WHENUA. • To protect human health and safety. • For reasons of security. • To prevent aggravation of a natural hazard. • To protect the integrity of RIVER and flood control works. • To provide for any other exceptional circumstances that are sufficient to justify the restriction, not withstanding the national importance of maintaining access.	Both the Mimi River and Tongaporutu River are identified as priority waterbodies in Appendix 18 of the District Plan. Public access to the Tongaporutu River will not be affected by the Project. Access to the Mimi River via the Kiwi Road Track is likely to be affected during construction for human health and safety reasons. Access to this area will be made available as soon as it is safe to do so, and will be maintained once construction is complete.
Issue 19: The traditional relationship of TANGATA WHENUA with the natural environment of the district		
Objective 19	To recognise and provide for the cultural and spiritual values of TANGATA WHENUA in all aspects of resource management in the district in a manner which respects and accommodates TIKANGA MAORI.	Parininihi and the surrounding area have profound cultural significance to Ngāti Tama. The Transport Agency acknowledges the strong and longstanding connection between Ngāti Tama and the area within and around the corridor. The Transport Agency is continuing a robust engagement process with Ngāti Tama, acknowledging their tikanga values in the land, water and air around the Project footprint. The Transport Agency has acted (and will continue to act) co-operatively with iwi to facilitate an inclusive and responsive engagement process based on good faith and mutual respect.
Policy 19.2	Subdivision, land use or development should not adversely affect the relationship, culture or traditions that TANGATA WHENUA have with WAAHI TAONGA/SITES OF SIGNIFICANCE TO MAORI	The Project has significant adverse effects on cultural values, which has been recognised throughout the Project. The options assessment resulted in avoidance of the Parininihi area and the locations where kōkako have been released. The process of identifying methods for mitigating the cultural effects of the Project will be iterative, involving ongoing consultation and collaboration between Ngāti Tama and the Transport Agency, and will incorporate input and discussions on land acquisition, design development, the mitigation package, construction and operation as set out in the effects assessment in Section 9 of the AEE.
Policy 19.3	The cultural and spiritual values of TANGATA WHENUA should be recognised and provided for in the resource management of the district.	In its ongoing engagement with Mana Whenua and particularly Ngāti Tama, the Transport Agency recognises the cultural and spiritual values of the area. Ngāti Tama representatives were involved in the design process throughout the Project, including the options assessment process, providing valuable understanding of the natural and physical resources in the area in addition to providing input on the options assessment and the design process. The alignment avoids directly affecting the Parininihi area, but there remain significant potential cultural effects from the location of the road within Ngāti Tama land. This is subject to ongoing discussion between the Transport Agency and Ngāti Tama.

Reference	Objective/policy	Assessment
Policy 19.4	The principles of the TREATY OF WAITANGI (TE TIRITI O WAITANGI) will be taken into account in the management of the natural and physical resources of the district.	In its ongoing engagement with Mana Whenua and particularly Ngāti Tama, the Transport Agency has taken into account the principles of the Treaty of Waitangi especially the principle of partnership, along with recognition of the spiritual relationship that tangata whenua have with the environment and acknowledgement of Ngāti Tama's rangitiratanga and kaitiaki responsibilities in relation to the Project area. The Project has taken into account the principles of Te Tiriti o Waitangi, including by including Ngati Tama representatives in key decision-making processes (such as the MCA workshops), acknowledging Ngāti Tama's understanding of the natural and physical resources in the area.
Issue 20: Adverse effects of activities on the safe and efficient operation of the district's ROAD TRANSPORTATION NETWORK		
Objective 20	To ensure that the ROAD TRANSPORTATION NETWORK will be able to operate safely and efficiently.	The main driver for the Project is to improve the operation, including the safety and efficiency, of SH3. As set out in the Strategic Transport Report (Technical Report 1), continued growth of Taranaki has steadily added pressures and exposed shortcomings within the northern arterial connections serving New Plymouth and the wider Taranaki region. These pressures and the associated limitations are especially evident along the length of SH3 north from New Plymouth including the Mt Messenger section, where the road is no longer fit for purpose. The safe and efficient operation of the road transportation network will be significantly improved by the Project compared to the existing Mt Messenger route, which will be upgraded from a Star Safety Rating of 2 to a Star Safety Rating of 3.
Policy 20.3	The safe and efficient operation of the ROAD TRANSPORTATION NETWORK should not be adversely affected by land use activities that have insufficient or substandard parking or loading areas.	The safe and efficient operation of the road transportation network will be improved by the Project. During construction, a CTMP is proposed to manage traffic interactions with the existing SH3.
Policy 20.4	SIGNS should be designed and located to avoid ROAD or footpath user obstruction, distraction or confusion.	Signs will be erected in accordance with the Transport Agency's Manual of traffic signs and markings.

Appendix B: Property information

Appendix B1: Schedule of properties

Number	Appellation	Title reference	Owner
1a	Section 38 Block VIII Mimi Survey District	G3/168	Gordon Andrew Thomas Keighley, Joy Keighley, Keighley Nominees Limited
1b	Section 50 Block VIII Mimi Survey District	G3/168	Gordon Andrew Thomas Keighley, Joy Keighley, Keighley Nominees Limited
2	Section 55 Block VIII Mimi Survey District	J1/249	Rodney John Barlow
3	Section 51 Block VIII Mimi Survey District	H1/1387	Debbie Ann Pascoe, Tony James Sofus Pascoe
4	Section 9 SO 457513	627642	Debbie Ann Pascoe, Tony James Sofus Pascoe
5	Section 1 Survey Office Plan 313242	149437	Ngati Tama Custodial Trustee Limited
6	Lot 1 Deposited Plan 5816	145/198	Kevin George Beard
7	Section 1 SO 313243	149437	Ngati Tama Custodial Trustee Limited
8a	Part Section 13 Block XII Mimi Survey District	G2/1020	Allan George Robin Thomson
8b	Section 16 Block XII Mimi Survey District	G1/1393	Allan George Robin Thomson
8c	Section 17 Block XII Mimi Survey District	G1/1394	Allan George Robin Thomson
8d	Section 18 Block XII Mimi Survey District	G3/57	Allan George Robin Thomson
8e	Section 19 Block XII Mimi Survey District	G2/1395	Allan George Robin Thomson
9	Section 35 Block VII Mimi Survey District	G2/238	Russell Alister Gordon
10	Section 20 Block XII Mimi Survey District	G2/1181	Janice Robyn Bonita Anglesey, William Arthur Anglesey
11	Lot 1 DP 16494	H4/333	Carol Joyce Scott, Timothy Charles Scott
12	State Highway 3	–	–

Schedule B2: Certificates of title

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

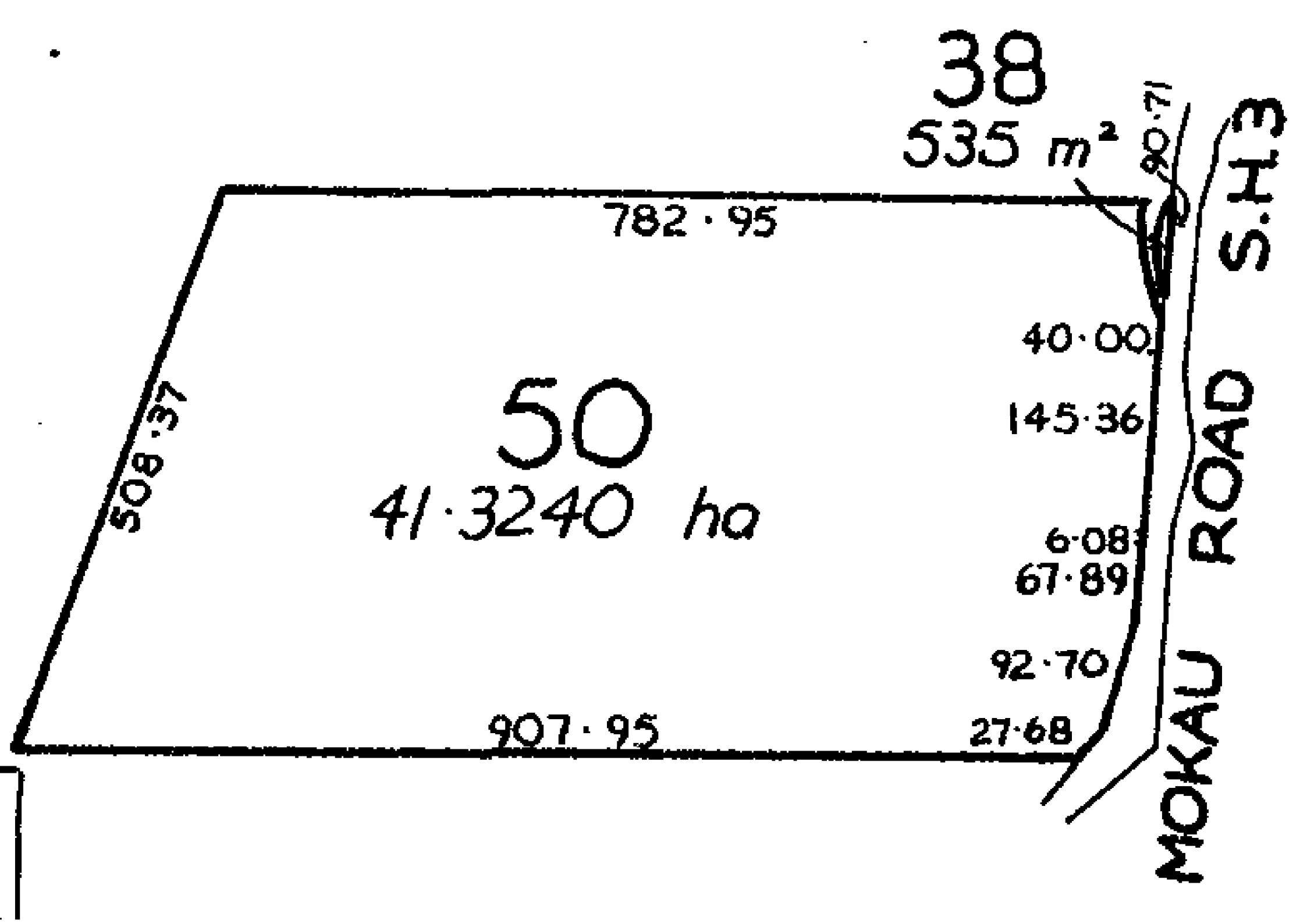
Identifier	**TNG3/168**
Land Registration District	**Taranaki**
Date Issued	17 September 1984

Prior References
TN44/22

Estate	Fee Simple
Area	41.3775 hectares more or less
Legal Description	Section 38 and Section 50 Block VIII Mimi Survey District

Proprietors
Gordon Andrew Thomas Keighley and Keighley Nominees Limited as to a 1/2 share
Joy Keighley and Keighley Nominees Limited as to a 1/2 share

Interests
Subject to Section 8 Mining Act 1971
Subject to Section 5 Coal Mines Act 1979


38
535 m²
8.71
S.H.3
782·95
40·00
145·36
6·08
67·89
92·70
27·68
907·95
508·37
50
41·3240 ha
MOKAU ROAD

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**TNJ1/249**
Land Registration District	**Taranaki**
Date Issued	21 January 1991

Prior References
TNG3/34

Estate	Fee Simple
Area	38.2106 hectares more or less
Legal Description	Section 55 Block VIII Mimi Survey District

Proprietors
Rodney John Barlow

Interests

Subject to Section 8 Mining Act 1971

Subject to Section 5 Coal Mines Act 1979

Subject to a right to convey water over part marked A on DP 19616 created by Transfer 445418 - 21.10.1997 at 11.25 am

5365144.1 Mortgage to (now) Westpac New Zealand Limited - 8.10.2002 at 9:00 am

MOKAU RD (S.H.3)
MANGAONGA RD
Mangaongaonga Strm
55
38·2106 ha
594·23

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**TNH1/1387**
Land Registration District	**Taranaki**
Date Issued	22 December 1986

Prior References
GN 333917.1 TNG3/33

Estate	Fee Simple
Area	99.9617 hectares more or less
Legal Description	Section 51, Section 57 and Part Section 52 Block VIII Mimi Survey District

Proprietors
Tony James Sofus Pascoe as to a 1/2 share
Debbie Ann Pascoe as to a 1/2 share

Interests

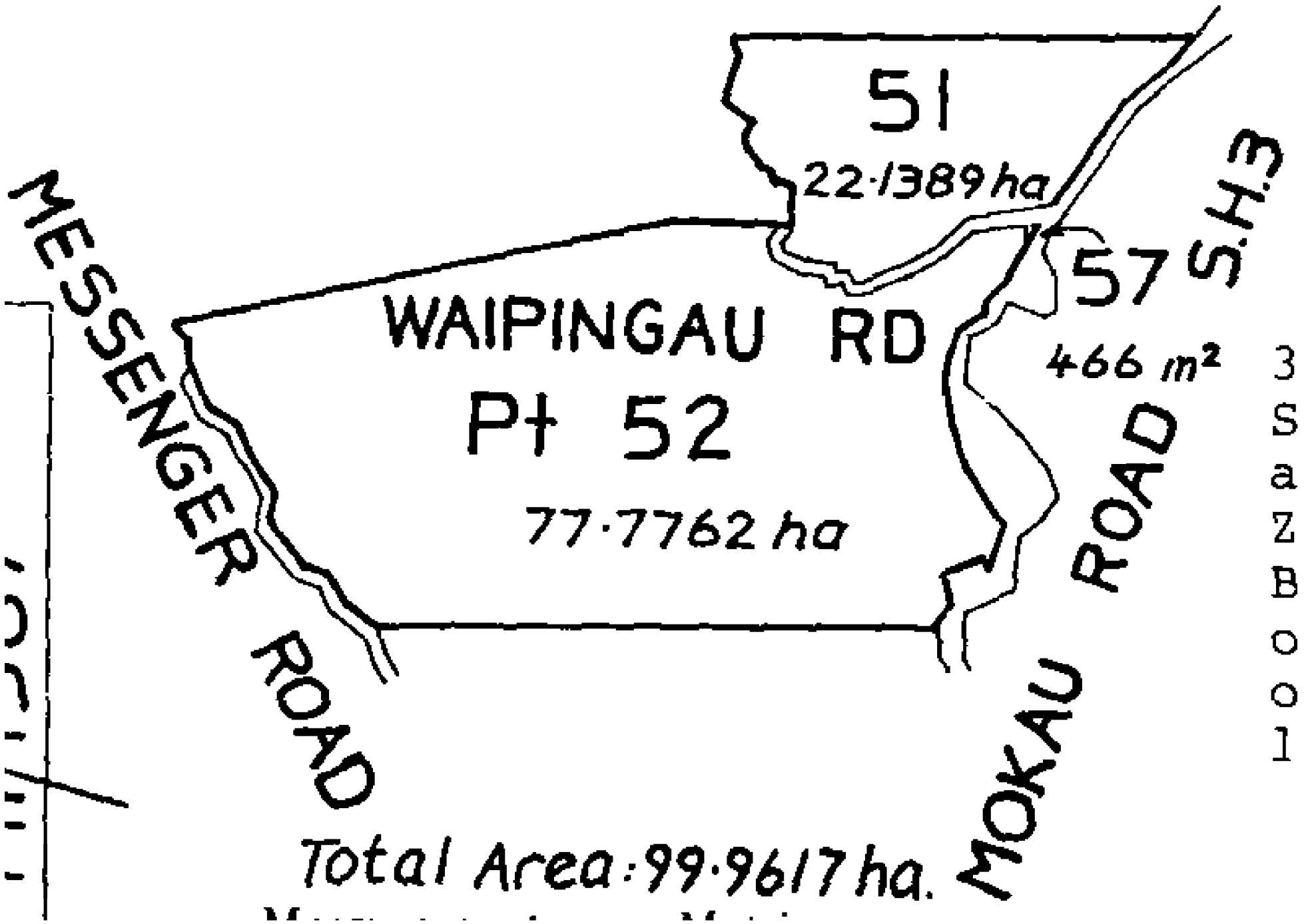
Subject to Section 8 Mining Act 1971 (affects Part formerly in CT TNG3/33)

Subject to Section 5 Coal Mines Act 1979 (affects Part formerly in CT TNG3/33)

7721587.1 Sustainable Forest Management Permit (No 5/03/1185) under Section 67K of the Forests Act 1949 for the term of 10 years from 21.2.2008 - 21.2.2008 at 9:00 am

10636845.1 Compensation Certificate pursuant to Section 19 Public Works Act 1981 by Her Majesty the Queen - 28.11.2016 at 11:43 am

10786524.1 Compensation Certificate pursuant to Section 19 Public Works Act 1981 by Her Majesty the Queen - 10.5.2017 at 12:17 pm


51
22·1389 ha
S.H.3
57
466 m²
WAIPINGAU RD
Pt 52
77·7762 ha
MESSENGER ROAD
MOKAU ROAD
Total Area: 99·9617 ha.
3 S a Z B o o l

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**627642**
Land Registration District	**Taranaki**
Date Issued	06 August 2013

Prior References
TNF3/7

Estate	Fee Simple
Area	155.6634 hectares more or less
Legal Description	Section 9 Survey Office Plan 457513

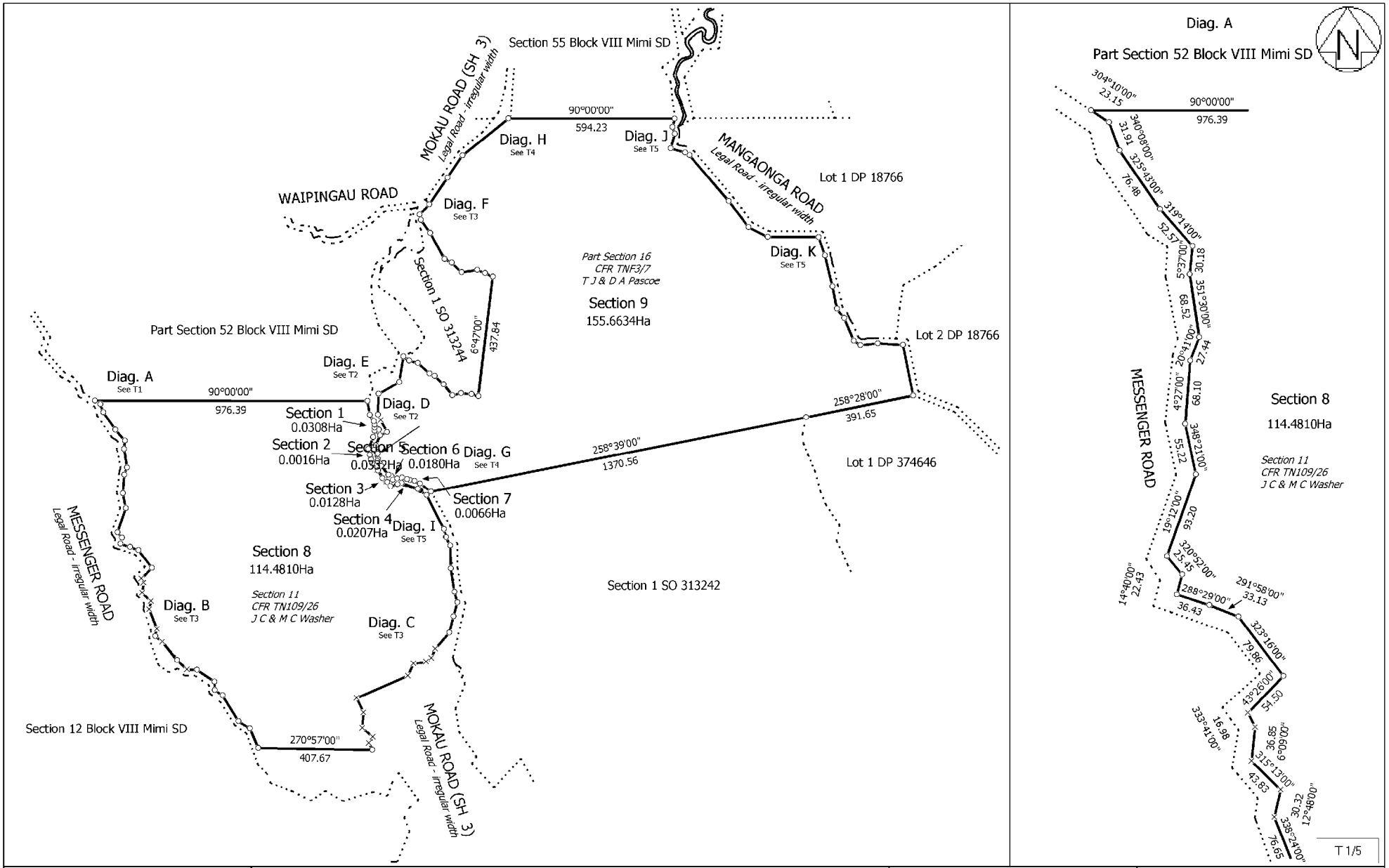
Proprietors
Tony James Sofus Pascoe as to a 1/2 share
Debbie Ann Pascoe as to a 1/2 share

Interests

7721587.1 Sustainable Forest Management Permit (No 5/03/1185) under Section 67K of the Forests Act 1949 for the term of 10 years from 21.2.2008 - 21.2.2008 at 9:00 am

10112494.2 Mortgage to ANZ Bank New Zealand Limited - 8.7.2015 at 9:02 am

10786524.1 Compensation Certificate pursuant to Section 19 Public Works Act 1981 by Her Majesty the Queen - 10.5.2017 at 12:17 pm



Land District: Taranaki Digitally Generated Plan Generated on: 03/12/2012 2:20pm Page 2 of 6	Sections 1 to 9	Surveyor: Vaughan Angus Maclean Firm: Bland & Jackson Surveyors Limited	Title Plan SO 457513 Approved on: 3/12/2012

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**149437**
Land Registration District	**Taranaki**
Date Issued	30 April 2004

Prior References

256256	294693.1	302208.1
342563.1	GN1900 p160	

Estate	Fee Simple
Area	294.4964 hectares more or less
Legal Description	Section 1 Survey Office Plan 313244 and Section 1 Survey Office Plan 313245 and Lot 1 Deposited Plan 5188 and Section 1 Survey Office Plan 313242 and Section 1 Survey Office Plan 313243

Proprietors

Ngati Tama Custodian Trustee Limited

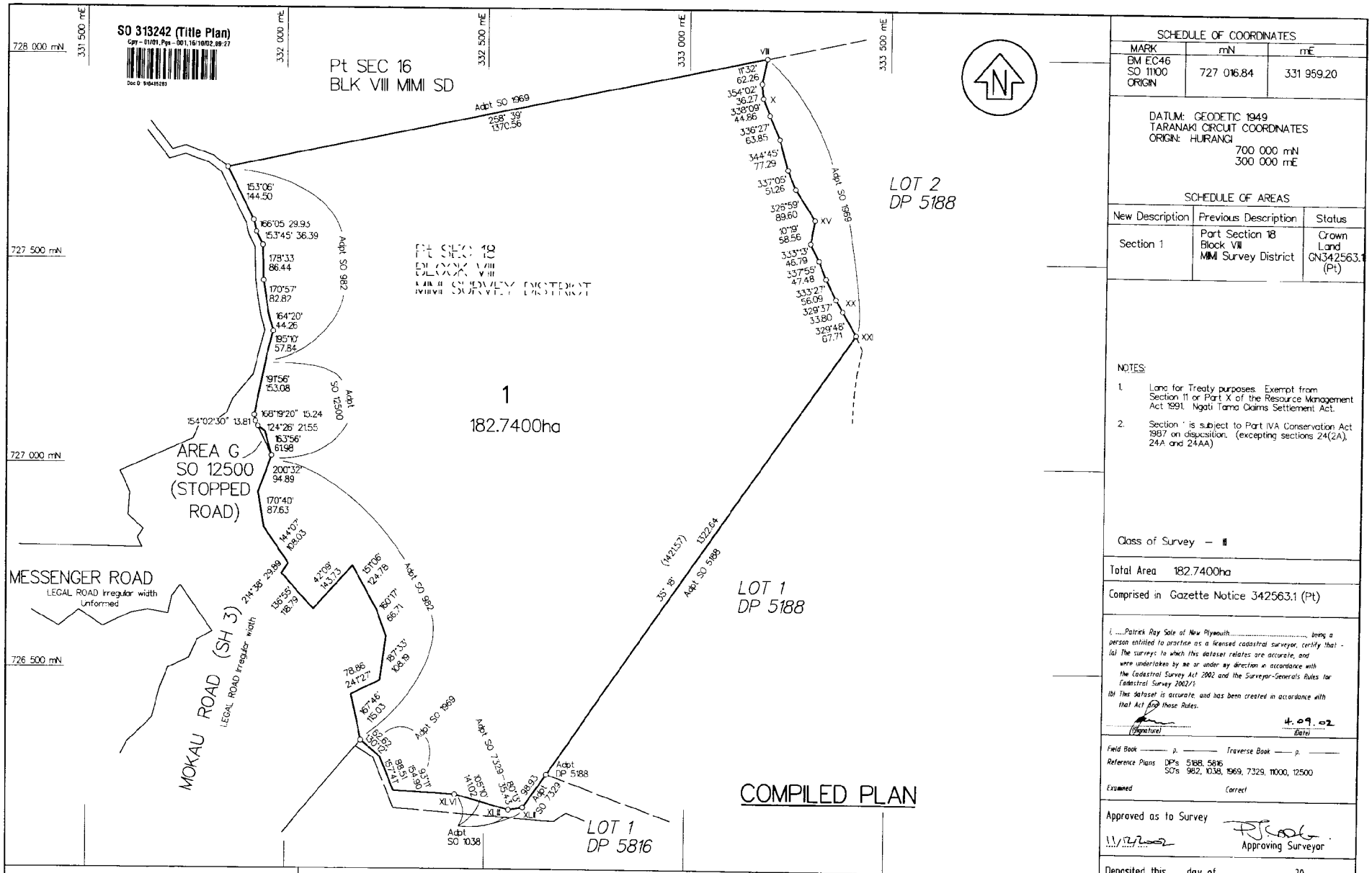
Interests

Subject to Part IVA of the Conservation Act 1987 (but subject to Section 38(5) Ngati Tama Claims Settlement Act 2003)

Subject to Section 11 Crown Minerals Act 1991

5987315.2 Conservation Covenant pursuant to Section 77 Reserves Act 1977 - 30.4.2004 at 9:00 am

Subject to a right (in gross) to a walkway easement pursuant to the New Zealand Walkways Act 1990 over parts marked G and H on DP 316324 in favour of Her Majesty the Queen created by Transfer 5987315.3 - 30.4.2004 at 9:00 am



SCHEDULE OF COORDINATES

MARK	mN	mE
BM EC46 SO 11100 ORIGIN	727 016.84	331 959.20

DATUM: GEODETIC 1949
TARANAKI CIRCUIT COORDINATES
ORIGIN: HURANGI
700 000 mN
300 000 mE

SCHEDULE OF AREAS

New Description	Previous Description	Status
Section 1	Part Section 18 Block VIII MIMI Survey District	Crown Land GN342563.1 (Pt)

NOTES:

1. Land for Treaty purposes. Exempt from Section 11 or Part X of the Resource Management Act 1991. Ngati Tama Claims Settlement Act.
2. Section 1 is subject to Part IVA Conservation Act 1987 on dispositon. (excepting sections 24(2A), 24A and 24AA)

Class of Survey – II

Total Area 182.7400ha

Comprised in Gazette Notice 342563.1 (Pt)

I, ...Patrick Ray Sole of New Plymouth....., being a person entitled to practice as a licensed cadastral surveyor, certify that -
(a) The survey to which this dataset relates are accurate, and were undertaken by me or under my direction in accordance with the Cadastral Survey Act 2002 and the Surveyor-Generals Rules for Cadastral Survey 2002/1;
(b) This dataset is accurate, and has been created in accordance with that Act and those Rules.

(Signature) 4.09.02 (Date)

Field Book — p. — Traverse Book — p. —
Reference Plans DP's 5188, 5816
SO's 982, 1038, 1969, 7329, 11000, 12500
Examined Correct

Approved as to Survey
Approving Surveyor

Deposited this day of 20.....
for Registrar General of Land

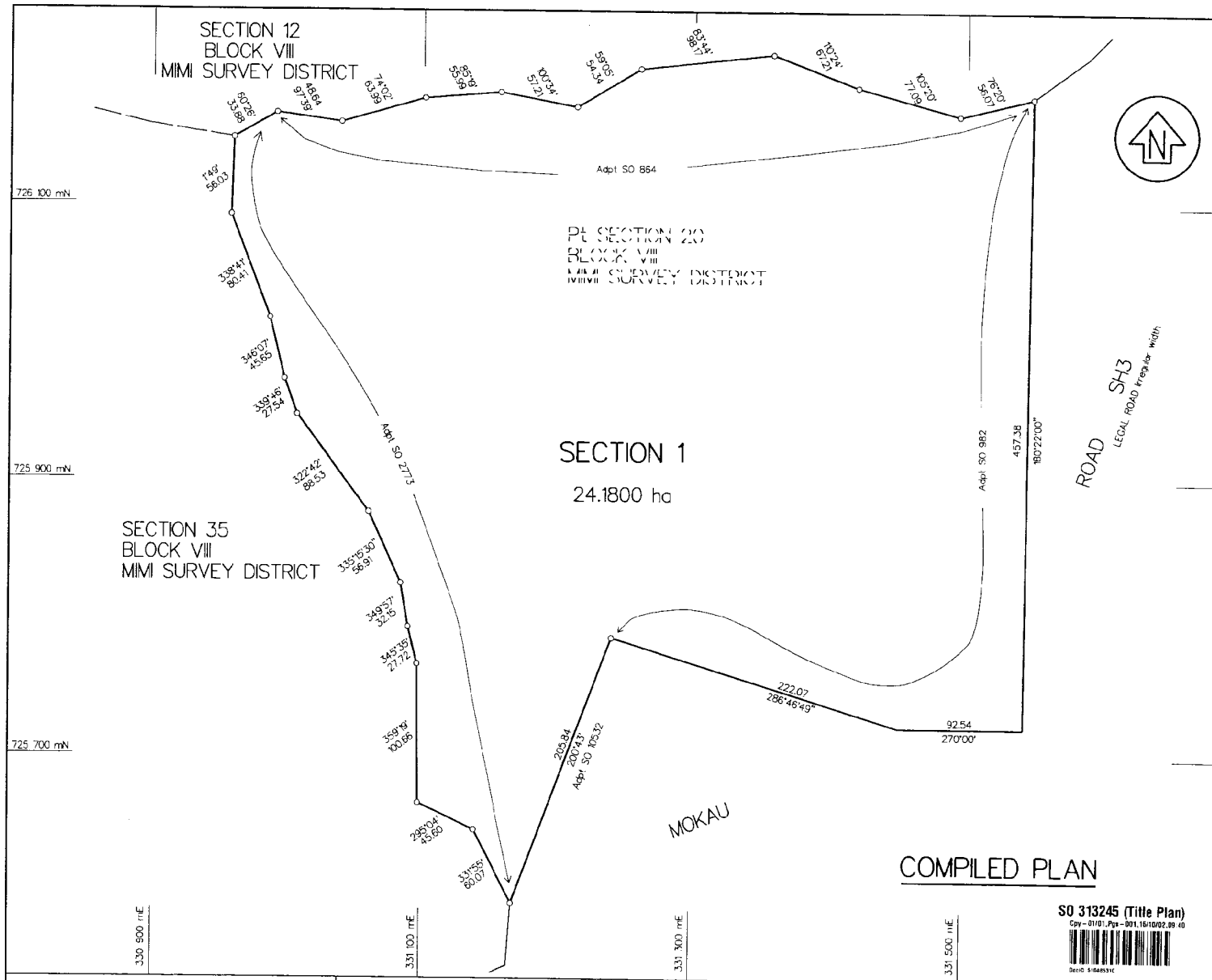
File 2002/02/1
Received 15-10-02
Instructions

SO 313242

LAND DISTRICT TARANAKI
Survey Blk. & Dist. BLK VIII MIMI SD
NZMS Sheet Rcd Map No.

SECTION 1

TERRITORIAL AUTHORITY New Plymouth District
Surveyed by Pat Sole Surveyors Ltd
Scale 1 : 6000 Date May 2002



SCHEDULE OF COORDINATES		
	mN	mE
RM6 SO 10546 ORIGIN	725 566.56	331 224.27

DATUM: GEODETIC 1949
TARANAKI CIRCUIT COORDINATES
ORIGIN: HUIRANGI
700 000 mN
300 000 mE

Schedule of Areas

New Description	Former Description	Status
Section 1	Part Section 20 Block VIII Mimi Survey District	Crown Land GN 256256 (Bal)

NOTES:
1. Land for Treaty Settlement purposes. Exempt from Section 11 and Part X of the Resource Management Act 1991.
Ngati Tama Claims Settlement Act.
2. Section 1 is subject to Part IVA Conservation Act 1987 on disposition. (Excepting sections 24(2A), 24A and 24AA.)

Class of Survey : III

Total Area 24.1800 ha

Comprised in Gazette Notice 256256 (Bal)

I ....Patrick Ray Sole of New Plymouth....., being a person entitled to practise as a licensed cadastral surveyor, certify that -
(a) The surveys to which this dataset relates are accurate, and were undertaken by me or under my direction in accordance with the Cadastral Survey Act 2002 and the Surveyor-Generals Rules for Cadastral Survey 2002/1.
(b) This dataset is accurate, and has been created in accordance with that Act and those Rules.

(Signature) 4.09.02 (Date)

Field Book —— p. —— Traverse Book —— p. ——
Reference Plans SO's 864, 982, 2773, 10532, 10546, 11536, 13158

Examined Correct

Approved as to Survey
11/12/2002 Approving Surveyor

Deposited this day of 20.....
for Registrar General of Land

File 2002/12/1
Received 15-10-02
Instructions

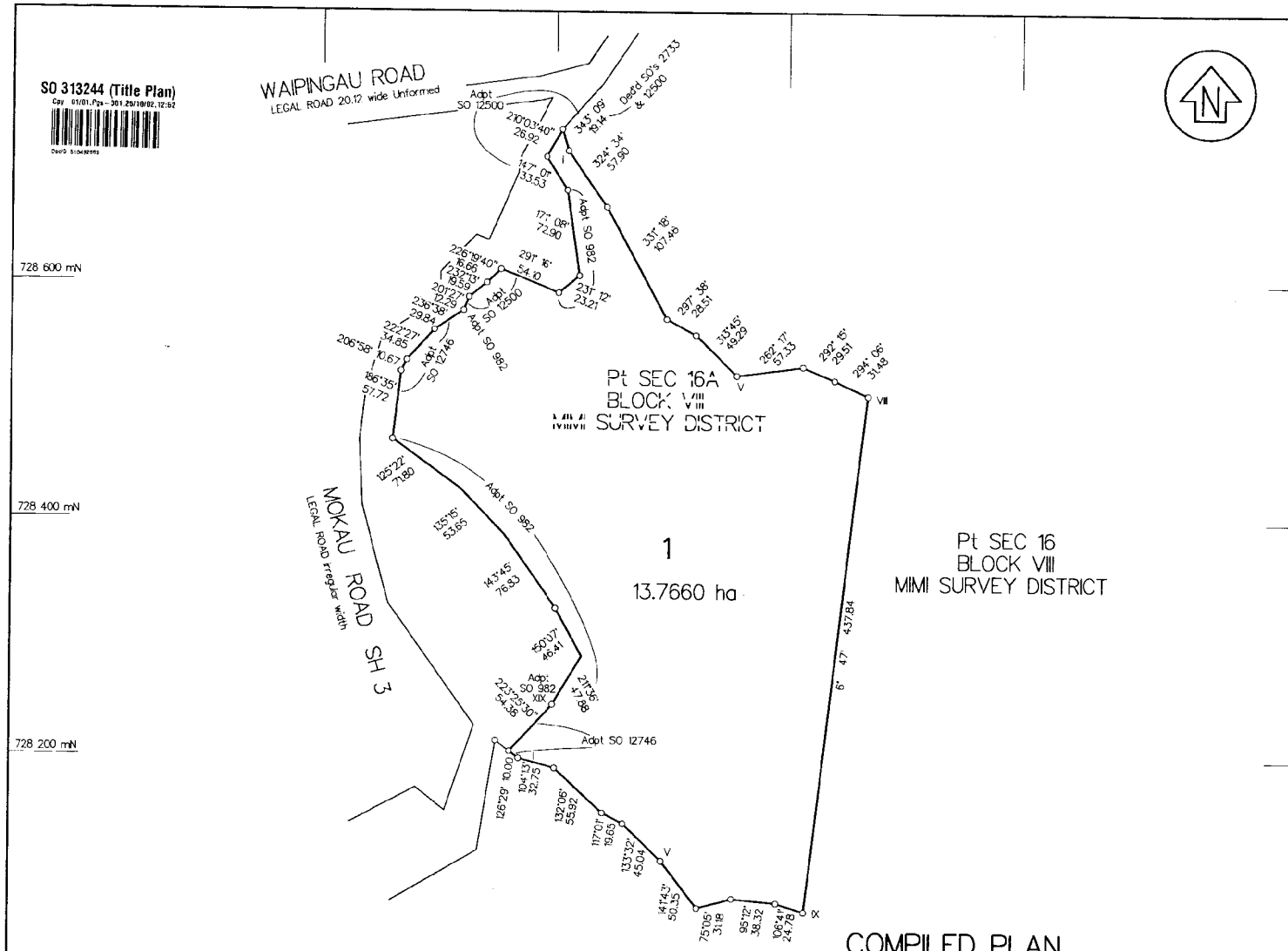
SO 313245

LAND DISTRICT TARANAKI
Survey Blk. & Dist. VIII MIMI
NZMS Sheet Rcd Map No.

SECTION 1

TERRITORIAL AUTHORITY New Plymouth District
Surveyed by Pat Sole Surveyors Ltd
Scale 1 : 2000 Date June 2002

SO 313244 (Title Plan)



SCHEDULE OF COORDINATES

	mN	mE
ITIX SO 12500 ORIGIN	728 953.85	331 945.55

DATUM: GEODETIC 1949
TARANAKI CIRCUIT COORDINATES
ORIGIN: HUIRANGI
700 000mN
300 000mE

SCHEDULE OF AREAS

New Description	Previous Description	Status
Section 1	Part Section 16A Block VIII MIMI Survey District	Crown Land GN 302208.1 (Bal)

NOTES:
1. Unless shown otherwise, adoptions are from SO 2733
2. Land for Treaty Settlement purposes. Exempt from Section 11 and Part X of the Resource Management Act 1991. Ngati Tama Claims Settlement Act.
3. Section 1 is subject to Part IVA Conservation Act 1987 on disposition. (excepting sections 24(2A), 24A and 24AA)

Class of Survey — III

Total Area 13.7660 ha

Comprised in Gazette Notice 302208.1 (Bal)

I, ...Patrick Pat Sole of New Plymouth....., being a person entitled to practise as a registered surveyor, certify that -
(a) The surveys to which this dataset relates are accurate, and were undertaken by me or under my direction in accordance with the Survey Act 1986 and the Survey Regulations 1998.
(b) This dataset is accurate, and has been created in accordance with that Act and those Rules.

Signature — 11.09.02 (Date)

Field Book ——— p ——— Traverse Book ——— p. ———
Reference Plans SO's 982, 2733, 12500, 12746

Examined — Correct

Approved as to Survey
11./11./2002 — Approving Surveyor

Deposited this day of 20.....
for Registrar General of Land

File 2002/02/E
Received 25.10.2002
Instructions

SO 313244

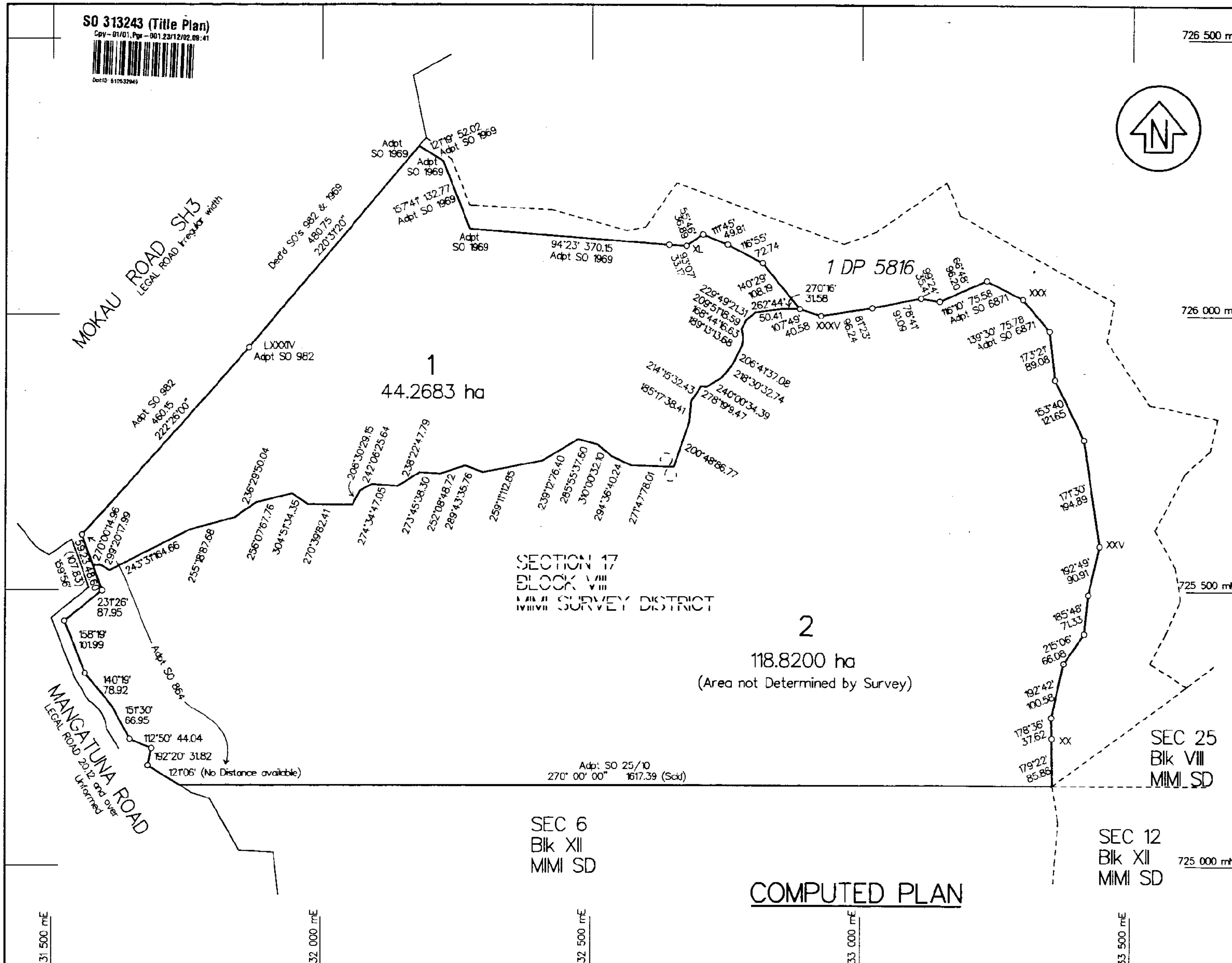
LAND DISTRICT TARANAKI
Survey Blk. & Dist. Block VIII MIMI SD
NZMS Sheet Rcd Map No.

SECTION 1

TERRITORIAL AUTHORITY New Plymouth District
Surveyed by Pat Sole Surveyors Ltd
Scale 1 : 2500 Date May 2002

A.J. BEVIN SURVEYOR GENERAL LAND INFORMATION NEW ZEALAND

SO 313243 (Title Plan)
Cpy - 01/01, Pgs - 001, 23/12/02, 09:41



COMPUTED PLAN

SCHEDULE OF COORDINATES

	mN	mE
BM EC45 SO 11536 ORIGIN	726 327.90	332 178.90

DATUM: GEODETIC 1949
TARANAKI CIRCUIT COORDINATES
ORIGIN: HURANGI
700 000 mN
300 000 mE

SCHEDULE OF AREAS

New Description	Previous Description	Status
Section 1 2	Pt Section 17 Block VIII MIMI Survey District	Crown Land NZ Gaz 1900p160 (Pt)

NOTES:

1. Land for Treaty Settlement purposes. Exempt from Section 11 and Part X of the Resource Management Act 1991. Ngati Tama Claims Settlement Act.
2. Section 1 is subject to Part IVA Conservation Act 1987 on disposition. (excepting sections 24(2A), 24A and 24AA)
3. Unless otherwise stated, all external boundary positions and dimensions are adopted from SO 1038.
4. The new boundary between Sections 1 and 2 has been derived from digitised photogrammetric data and obtained from aerial photo's SN 50030 F6/7 (Flown 21/01/02). The boundary approximates the position of a stream to the west, and a side stream/gully further east.

Class of Survey – IV
(Section 2 Parcel Diagram)

Total Area 163.0883 ha

Comprised in NZ Gazette 1900 p 160 (Pt)

I, Patrick Roy Sole of New Plymouth, being a person entitled to practise as a licensed cadastral surveyor, certify that -
(a) The surveys to which this dataset relates are accurate, and were undertaken by me or under my direction in accordance with the Cadastral Survey Act 2002 and the Surveyor-Generals Rules for Cadastral Survey 2002/1:
(b) This dataset is accurate, and has been created in accordance with that Act and those Rules.

(Signature) 8.11.02 (Date)

Field Book p. Traverse Book p.
Reference Plans SO's 25/10, 864, 982, 1038, 1969, 6871, 7329, 9107, 10532, 11536, 13040 DP 5816
Examined Correct

Approved as to Survey by Land Information NZ on 13 / 02 / 2003

Deposited by Land Information NZ on __/__/__

LAND DISTRICT TARANAKI
Survey Blk. & Dist. VIII MIMI
NZMS Sheet Rcd Map No.

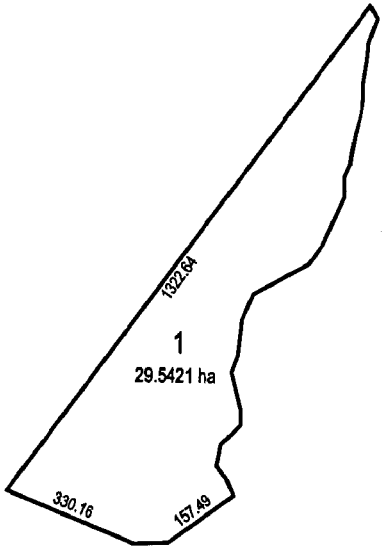
SECTIONS 1 and 2

TERRITORIAL AUTHORITY New Plymouth District
Surveyed by Pat Sole Surveyors Ltd
Scale 1 : 5000 Date October 2002

File 2002/02/E
Received Instructions 23.12.02

SO 313243

Title Diagram 149437
Cpy - 01/01, Pgs - 001, 13/07/04, 08:28
DocID: 610949306



COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**TN145/198**
Land Registration District	**Taranaki**
Date Issued	05 January 1940

Prior References
TN15/247 WA 710

Estate	Fee Simple
Area	23.9726 hectares more or less
Legal Description	Lot 1 Deposited Plan 5816

Proprietors
Kevin George Beard

Interests

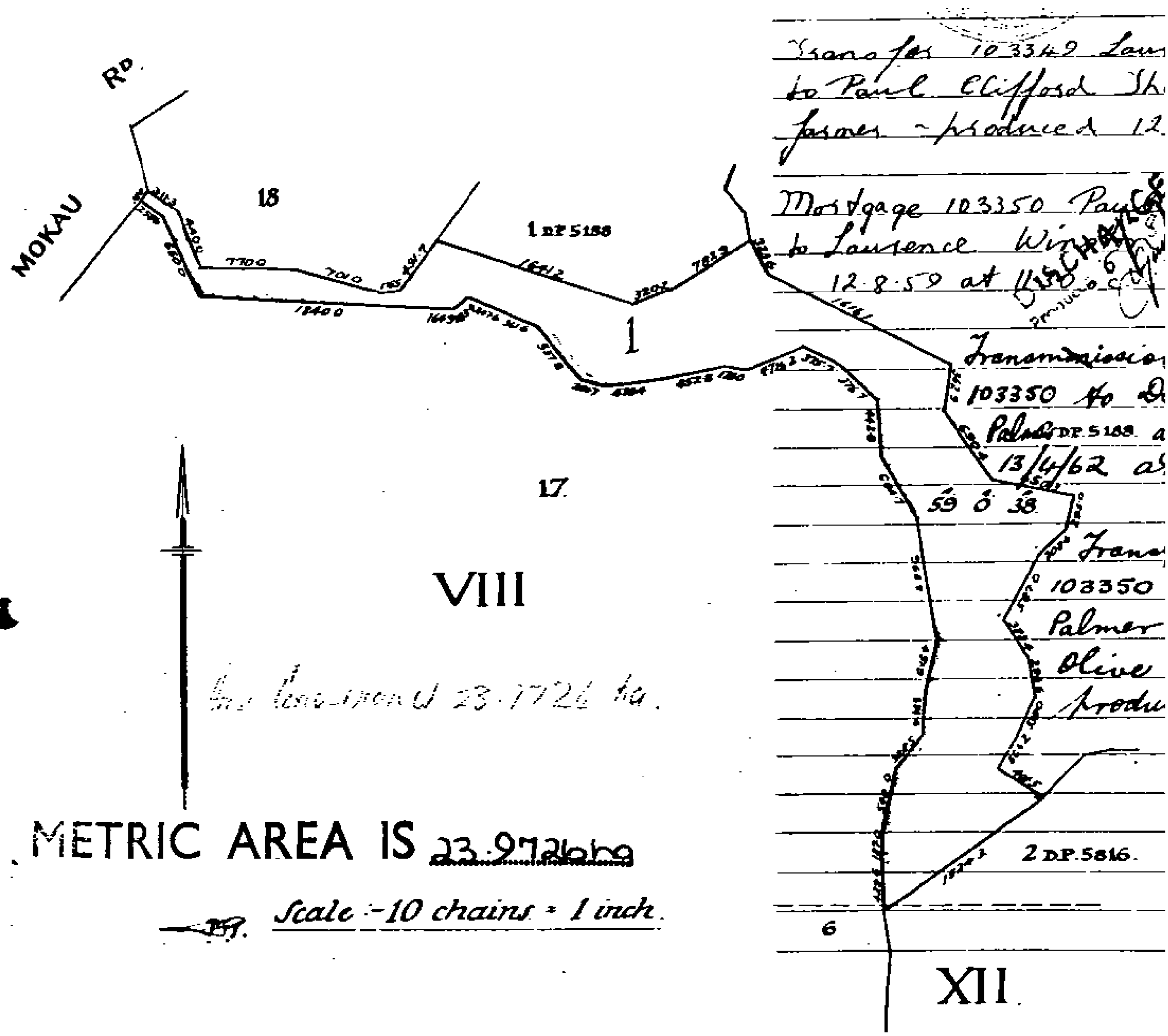
470993.2 Mortgage to TSB Bank Limited - 7.6.2000 at 11.35 am

Subject to a right of access (in gross) over parts marked A and B on SO 333721 in favour of Her Majesty the Queen for police, public safety and emergency services communication purposes created by Gazette Notice 6313472.1 - 16.2.2005 at 9:00 am

Subject to a right (in gross) to convey electricity over part marked C on SO 333721 in favour of Her Majesty the Queen for police, public safety and emergency services communications purposes created by Gazette Notice 6313472.1 - 16.2.2005 at 9:00 am

6313472.1 Lease of part being Section 1 SO 333721. Term 20 years commencing 20.3.2003 (right of renewal) - CT 202904 issued - 16.2.2005 at 9:00 am

8614419.1 Variation of Mortgage 470993.2 - 13.10.2010 at 2:57 pm



MOKAU RD.
18
1 DP 5188
1
17
VIII
METRIC AREA IS 23.9726ha
Scale :-10 chains = 1 inch.
2 DP. 5816.
6
XII
Transfer 103349 Lau
to Paul Clifford Sh
farmer - produced 12
Mortgage 103350 Paul
to Lawrence Win
12.8.59 at 11.30
DISCHARGED
Transmission
103350 to D
Palmer DP.5188 a
13/4/62 at
59 0 38
Trans
103350
Palmer
Olive
produ

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**TNG2/1020**
Land Registration District	**Taranaki**
Date Issued	08 August 1984

Prior References
TN171/51

Estate	Fee Simple
Area	80.3375 hectares more or less
Legal Description	Part Section 13 Block XII Mimi Survey District

Proprietors
Allan George Robin Thomson

Interests

Subject to Section 8 Coal Mines Amendment Act 1950

MOKAU ROAD S.H3
MANGATUNA RD.
Pt. 13
80·3375 ha
576·75
607·53
10·06 WIDE
ROAD
1020

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**TNG2/1393**
Land Registration District	**Taranaki**
Date Issued	03 September 1984

Prior References
TNF1/215

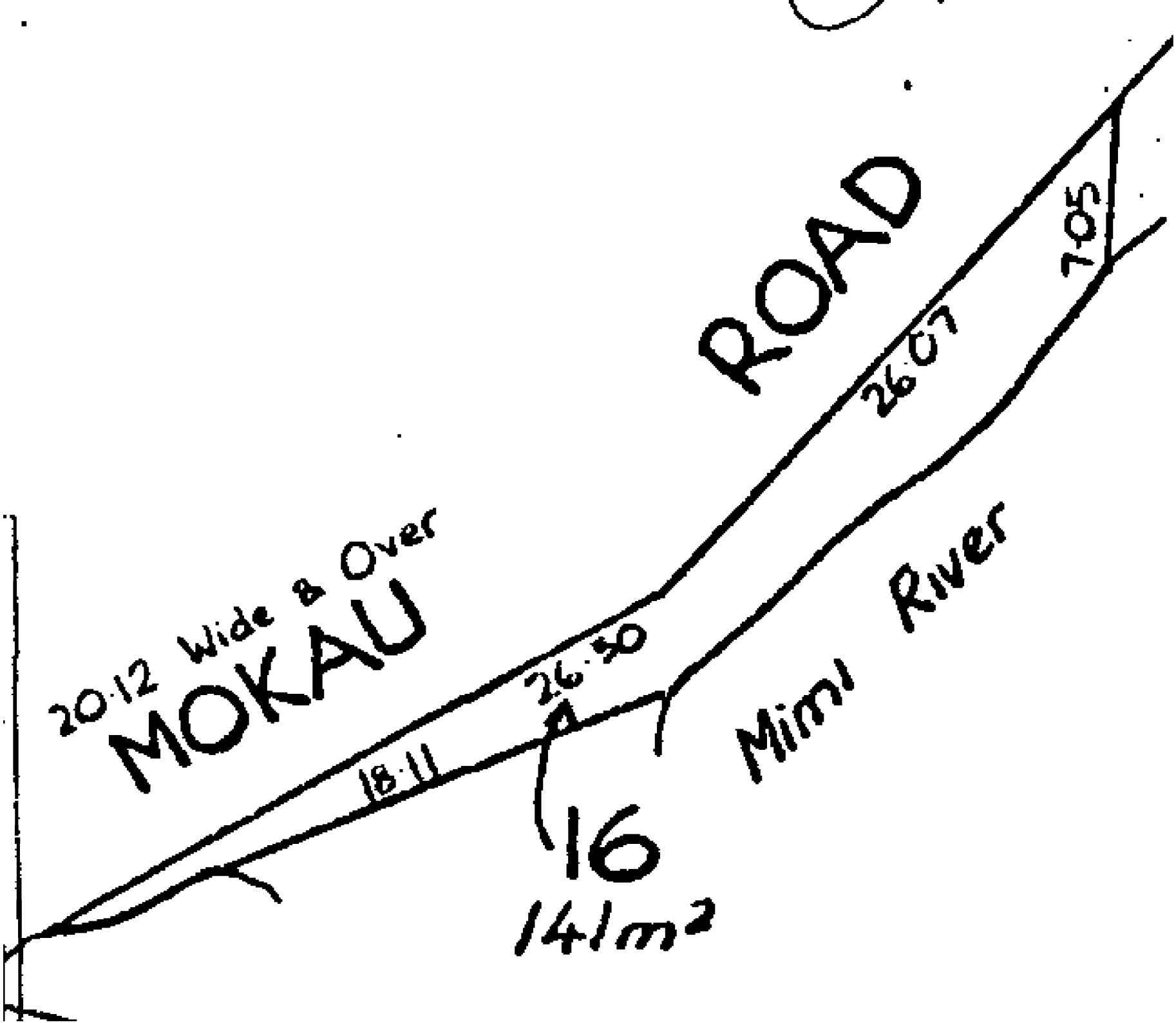
Estate	Fee Simple
Area	141 square metres more or less
Legal Description	Section 16 Block XII Mimi Survey District

Proprietors
Allan George Robin Thomson

Interests

Subject to Section 8 Coal Mines Amendment Act 1950

Subject to Section 168A Coal Mines Act 1925


ROAD
26·07
105
20·12 Wide & Over
MOKAU
18·11
26·30
Mimi River
16
141m²

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**TNG2/1394**
Land Registration District	**Taranaki**
Date Issued	03 September 1984

Prior References
TNF1/235

Estate	Fee Simple
Area	2744 square metres more or less
Legal Description	Section 17 Block XII Mimi Survey District

Proprietors
Allan George Robin Thomson

Interests

Subject to Section 8 Coal Mines Amendment Act 1950

Subject to Section 168A Coal Mines Act 1925

394
MOKAU
ROAD
17
2744m²
158.40
64.11
34.34
10.58
47.33
25.92

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**TNG3/57**
Land Registration District	**Taranaki**
Date Issued	06 September 1984

Prior References
TNF1/236

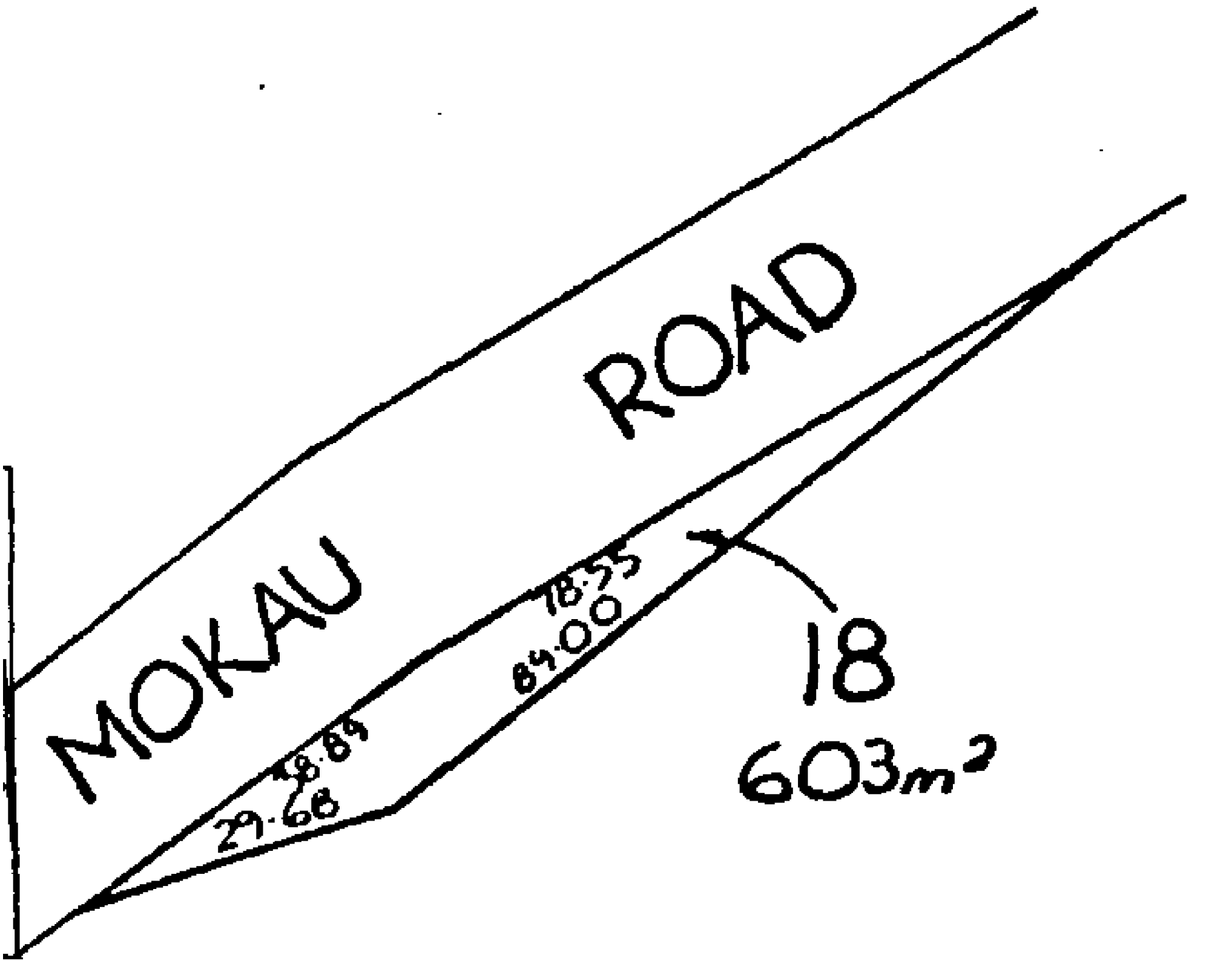
Estate	Fee Simple
Area	603 square metres more or less
Legal Description	Section 18 Block XII Mimi Survey District

Proprietors
Allan George Robin Thomson

Interests

Subject to Section 8 Coal Mines Amendment Act 1950

Subject to Section 168A Coal Mines Act 1925


MOKAU ROAD
18.55
84.00
49.89
29.68
18
603m²

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**TNG2/1395**
Land Registration District	**Taranaki**
Date Issued	03 September 1984

Prior References
TNF1/237

Estate	Fee Simple
Area	1995 square metres more or less
Legal Description	Section 19 Block XII Mimi Survey District

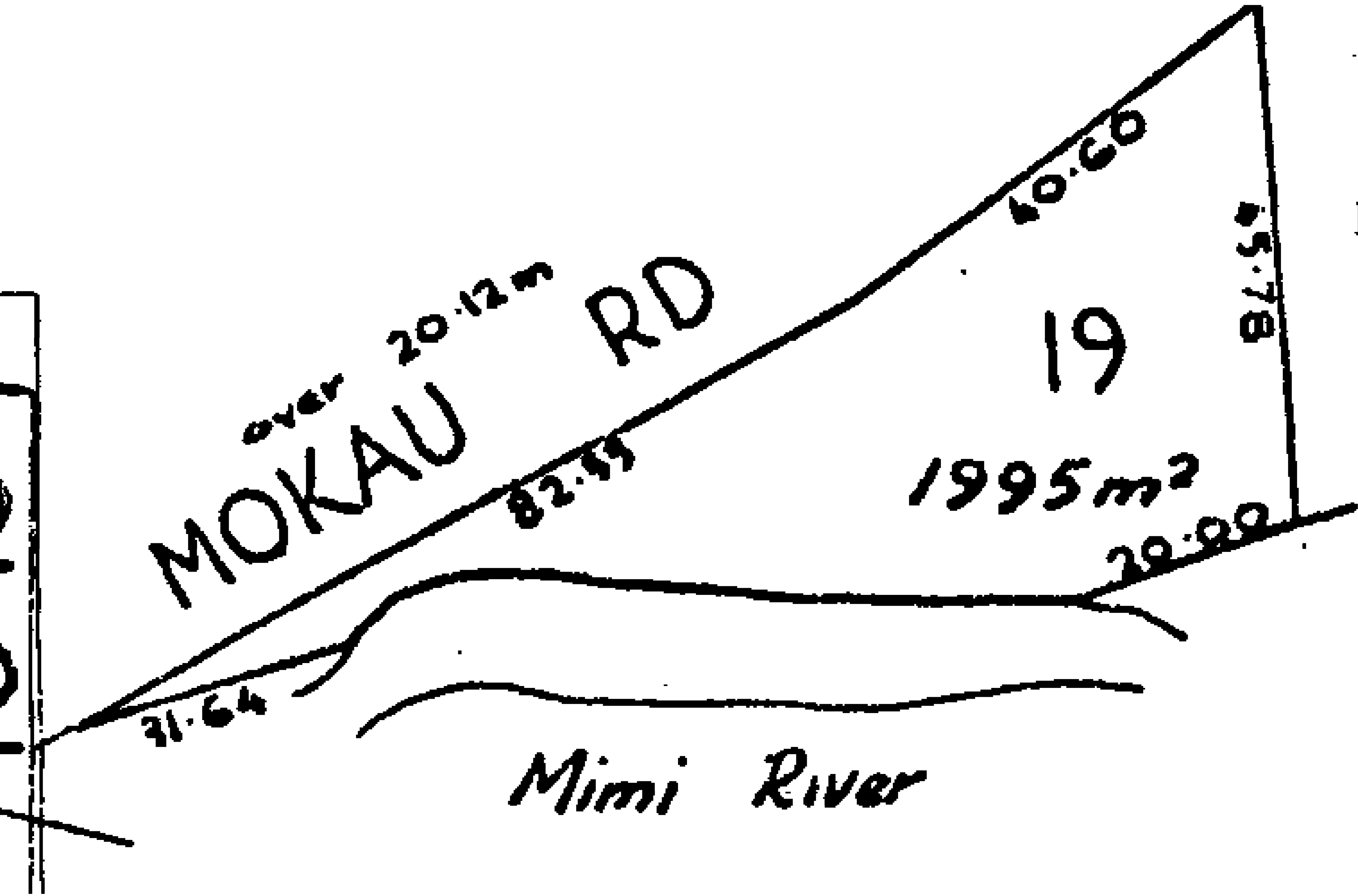
Proprietors
Allan George Robin Thomson

Interests

Subject to Section 8 Coal Mines Amendment Act 1950

Subject to Section 168A Coal Mines Act 1925

10866970.1 Compensation Certificate pursuant to Section 19 Public Works Act 1981 by Her Majesty the Queen - 3.8.2017 at 10:57 am



Mo
2

4
Re

4
Bu
a.
L

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**TNG1/238**
Land Registration District	**Taranaki**
Date Issued	22 August 1983

Prior References
TN30/244

Estate	Fee Simple
Area	52.7986 hectares more or less
Legal Description	Section 35-36 Block VIII Mimi Survey District

Proprietors
Russell Alister Gordon

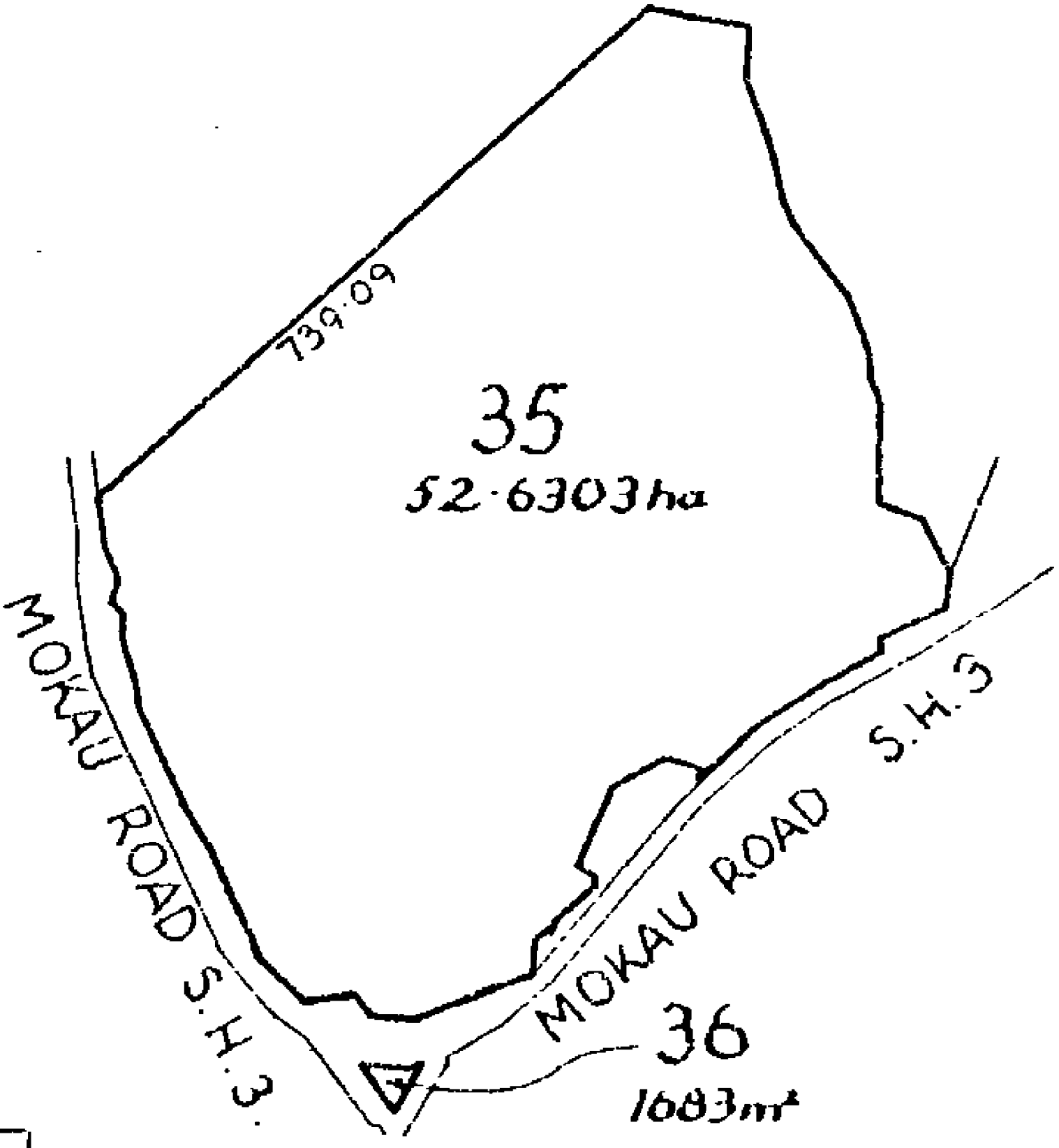
Interests

Subject to Section 8 Mining Act 1971

Subject to Section 5 Coal Mines Act 1979

372508.3 Mortgage to The National Bank of New Zealand Limited - 6.7.1990 at 1.40 pm

8116379.1 Variation of Mortgage 372508.3 - 30.3.2009 at 9:37 am



Total Area 52·7986ha

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**TNG2/1181**
Land Registration District	**Taranaki**
Date Issued	21 August 1984

Prior References
TNG1/626

Estate	Fee Simple
Area	60.1000 hectares more or less
Legal Description	Section 20 Block XII Mimi Survey District

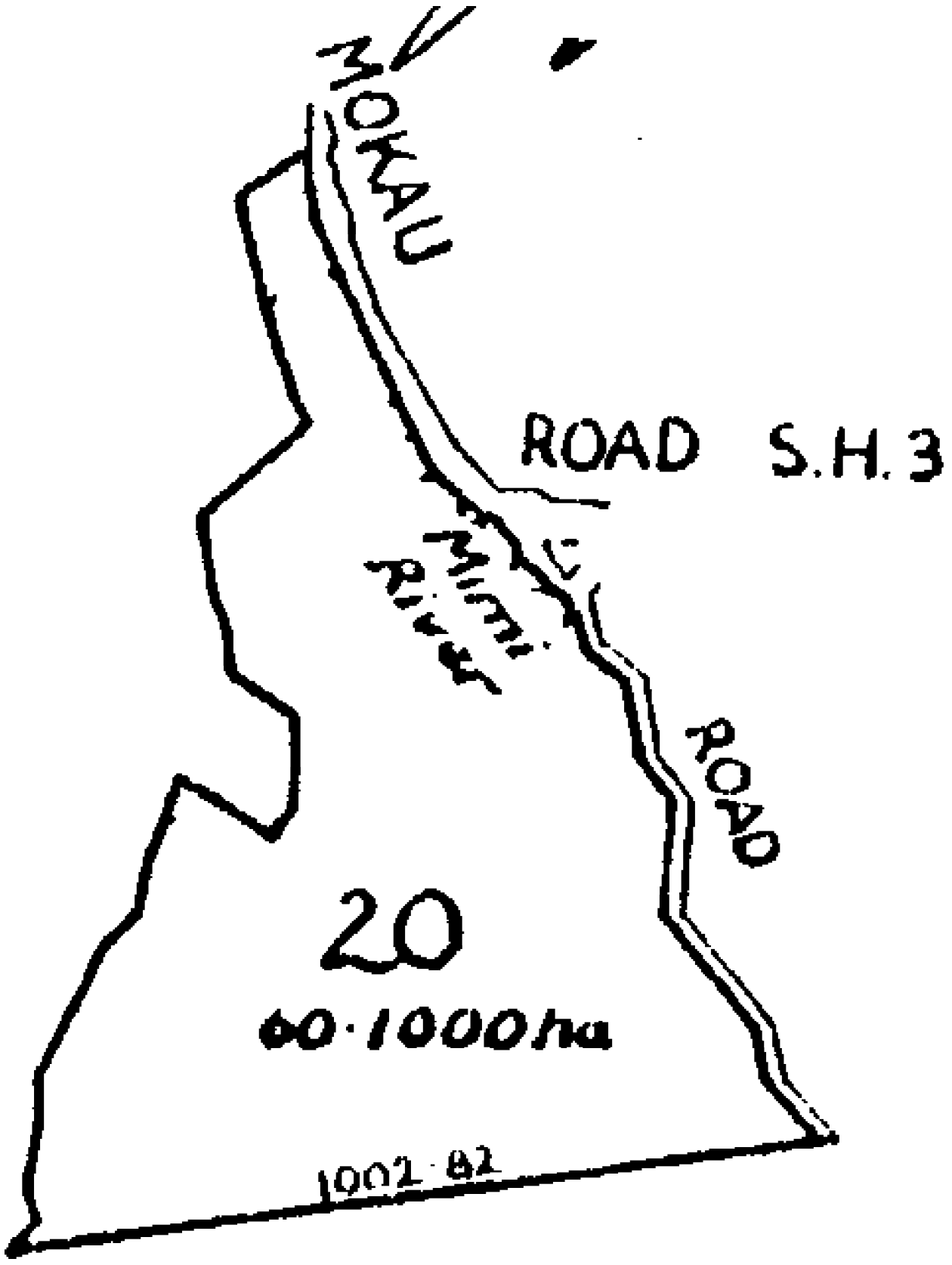
Proprietors
William Arthur Anglesey and Janice Robyn Bonita Anglesey

Interests

Subject to Section 8 Mining Act 1971

Subject to Section 5 Coal Mines Act 1979

5260166.2 Mortgage to ANZ Banking Group (New Zealand) Limited - 21.6.2002 at 9:00 am


MOKAU
ROAD S.H.3
MOKAU RIVER
ROAD
20
00·1000ha
1002·82

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**TNH4/333**
Land Registration District	**Taranaki**
Date Issued	16 November 1989

Prior References
366155.1

Estate	Fee Simple
Area	82.8796 hectares more or less
Legal Description	Lot 1 Deposited Plan 16494

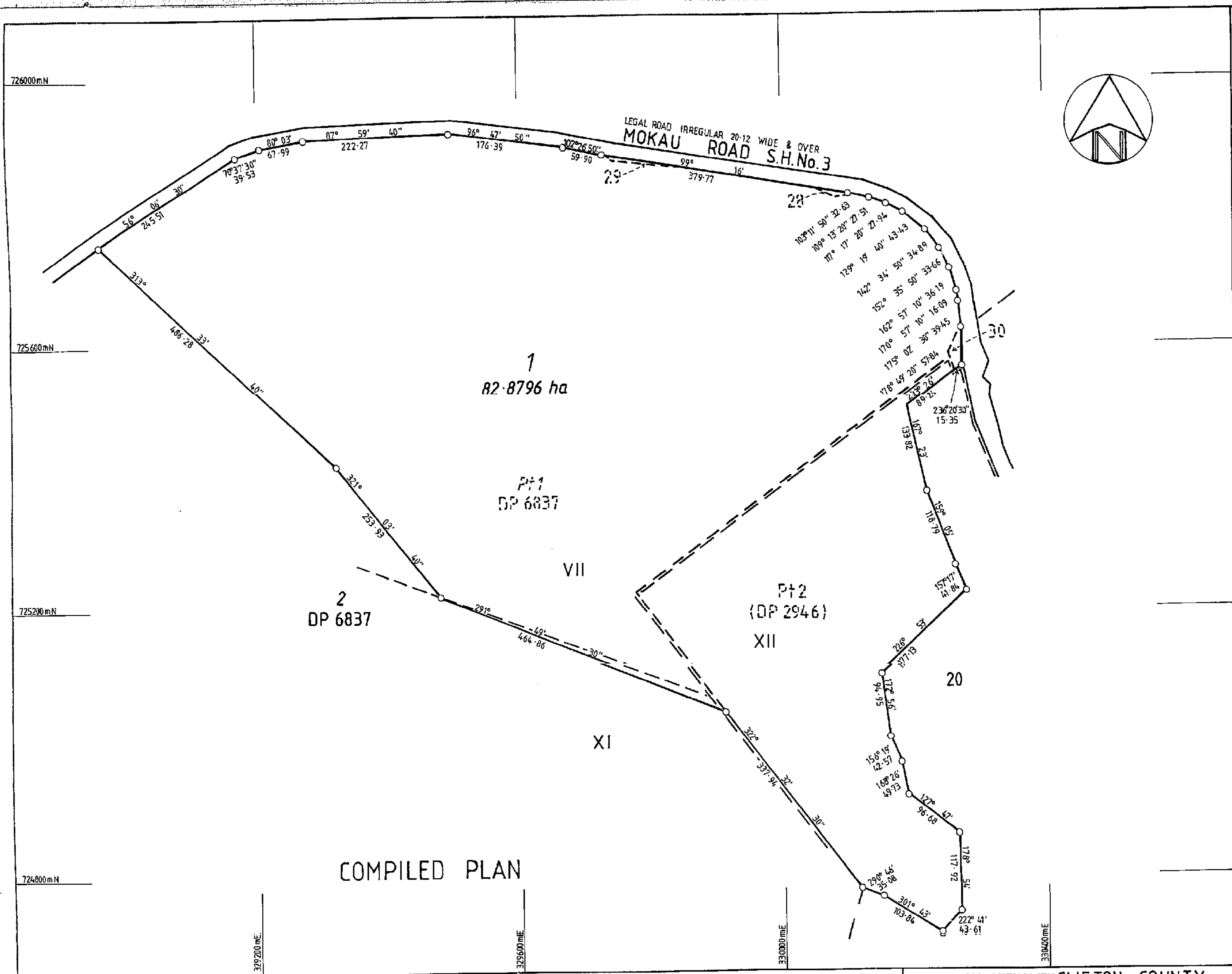
Proprietors
Timothy Charles Scott and Carol Joyce Scott

Interests

482712.5 Mortgage to The National Bank of New Zealand Limited - 3.10.2001 at 11.35 am

482712.6 Mortgage to Arthur James Sutton - 3.10.2001 at 11.35 am

6405261.1 Variation of Mortgage 482712.5 - 4.5.2005 at 9:00 am



Approvals Approved

Consultant
Landcorp Investments Limited
Registered Proprietors.

Coords from SO 10530
Datum Geodetic 1949
Taranaki Circuit Coords
Origin Huirangi 700 000mN
300 000mE
Note: Land Exempt from Local Authority Approval by SOE Act 1986.

Total Area 82·8796 ha

Comprised in CT 30/243 Bal

I, IAN WILSON
Registered Surveyor and holder of an annual practising certificate for who may act as a registered surveyor pursuant to section 25 of the Survey Act 1986) hereby certify that this plan has been made from surveys executed by me or under my directions, that both plan and survey are correct and have been made in accordance with the Survey Regulations 1972 or any regulations made in substitution thereof.
Dated at NEW PLYMOUTH this 7th day of July 1989 Signature Ian Wilson.

Field Book — p. — Traverse Book — p. —
Reference Plans DP 2946, 6837 SO 10529, 10530, 12071
Examined — Correct —

Approved as to Survey
26/9/89 J.R.P. Maseyk
Chief Surveyor

Deposited this 16th day of November 1989
Ast District Land Registrar

File
Received 7-8-89
Instructions 72-88-30/6

DP 16494

LAND DISTRICT TARANAKI
Survey Blk. & Dist. VII, XII MIMI
NZMS 261 Sheet Q18 Record Map No. 8·4

LOT 1 Being Pt Lot 1 DP 6837, Sec's 28, 29 & 30, Blk VII and Pt Sec 2, Blk XII

TERRITORIAL AUTHORITY CLIFTON COUNTY
Surveyed by Dept. of Survey & Land Information.
Scale 1: 4000 Date April 1989

W.A. ROBERTSON, DIRECTOR GENERAL/SURVEYOR GENERAL, DEPARTMENT OF SURVEY AND LAND INFORMATION, NEW ZEALAND

DOSLI FORM D15

Appendix C: Planning maps

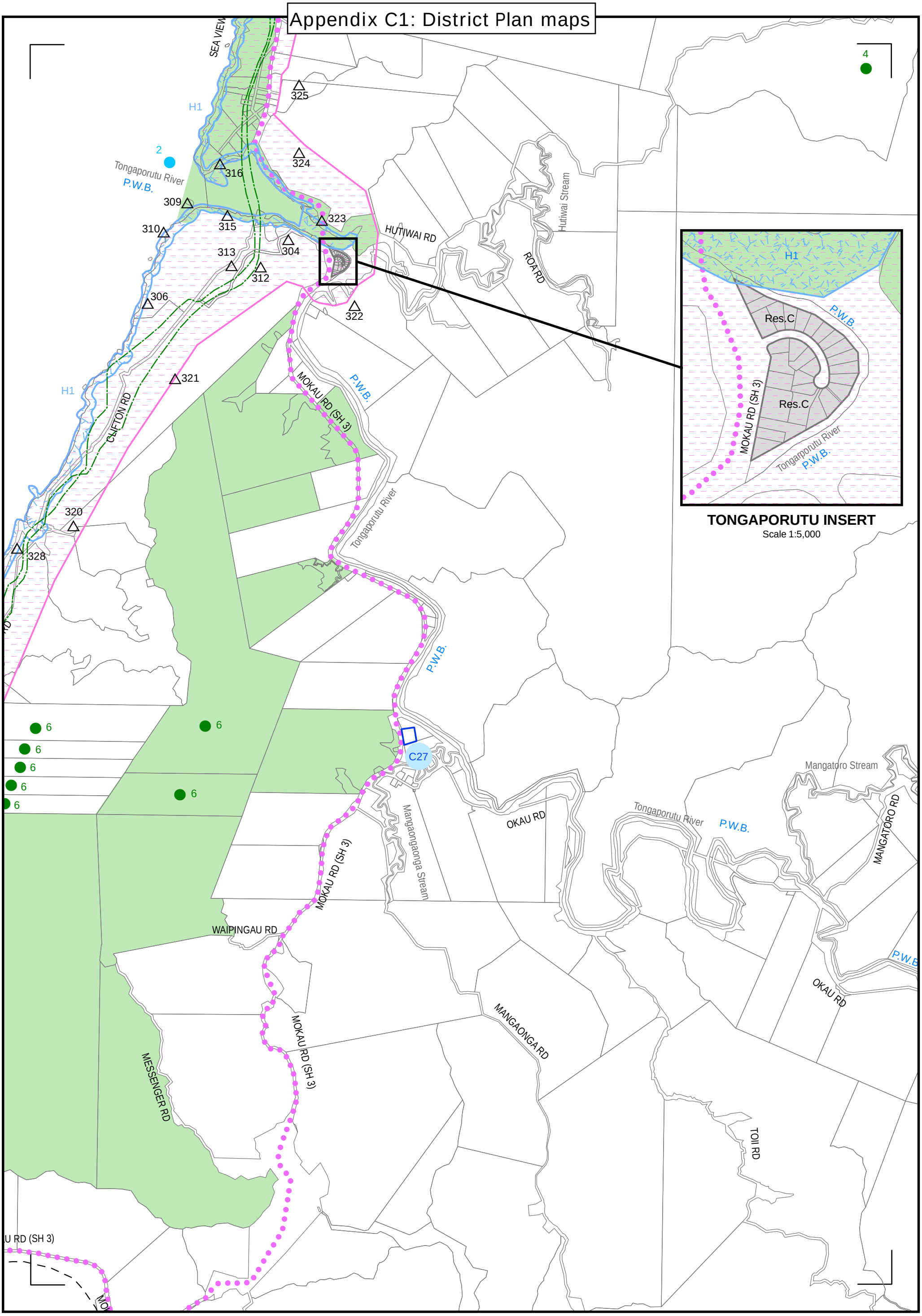
Appendix C1 – District Plan maps

Appendix C2 – Distance to regionally significant wetland (listed in Appendix IIA of the Taranaki Regional Fresh Water Plan)

Appendix C: Planning maps

- Appendix C1: District Plan maps
- Appendix C2: Distance to regionally significant wetland (listed in Appendix IIA of the Taranaki Regional Fresh Water Plan)

Appendix C1: District Plan maps



TONGAPORUTU INSERT
Scale 1:5,000

Digital map data supplied by Critchlow Associates Ltd. LINZ licence HH/0976372

On any State Highway the Designation is to provide for the control of access to State Highways and all functions, powers and operations of Transit New Zealand in accordance with the Transit New Zealand Act 1989

PLANNING MAP

B 10

RURAL

	A10	A11
B9	B10	B11
C9	C10	C11

NEW PLYMOUTH DISTRICT COUNCIL
newplymouthnz.com

NEW PLYMOUTH DISTRICT PLAN

0 500 1,000 1,500 Metres

Scale 1:30,000

Amended May 2007
LINZ Base Map August 2006

N W E S

MOKAU ROAD (SH 3)
326
Mimi River
P.W.B.
MANGATUNA ROAD
MANGAONGA ROAD
TOII ROAD
MANGATUNA ROAD
MANGAHIA ROAD
MAY ROAD
MANGATUNA ROAD
MANGATUNA ROAD
KIWI ROAD
MAY ROAD
KIWI ROAD
Kiwi Stream
KIWI ROAD
10
MOKI ROAD
MOKI ROAD
P.W.B.
P.W.B.
Waitara River
MOKI ROAD
Kiwi Stream
MOKI ROAD
REREKINO ROAD
TARAWAI ROAD
P.W.B.
Uruti Stream

Digital map data supplied by Critchlow Associates Ltd. LINZ licence HH/097637/2

PLANNING MAP

C 10

RURAL

B9	B10	B11
C9	C10	C11
D9	D10	D11

NEW PLYMOUTH DISTRICT COUNCIL
newplymouthnz.com

NEW PLYMOUTH DISTRICT PLAN

500 0 500 1000 Metres

Scale 1:30,000

Amended August 2005
LINZ Base Map August 2005

N
W E
S

On any State Highway the Designation is to provide for the control of access to State Highways and all functions, powers and operations of Transit New Zealand in accordance with the Transit New Zealand Act 1989

MAP KEY

ENVIRONMENT AREAS

Residential — Res.A-C

Rural

Business — Bus.A-D

Industrial — Ind.A-F

Open Space — O/S A-C, O/S Port Taranaki

OVERLAYS

Future Urban Development — FUD

Designations

Govt. Departments, Network Utilities and Local Authorities — L123

All Public Roads (including State Highways) — EXAMPLE STREET

Proposed Road Widening — L71

Hazards

Coastal — H1

Flood Detention Areas & Spillways — H2a

Ponding Areas — H2b

Flood Plain — H2c

Volcanic — H3 or H3

Fault Line

Fault Line (Approximate)

Airport Flight Path Surface

Urban Viewshafts — 1 2 3

Coastal Policy Area

Priority Water Bodies — P.W.B.

Significant Coastal Areas — 2

Significant Natural Areas — 2

Preferred Esplanade Reserves & Strips — 25

Outstanding Landscape

Regionally Significant Landscapes

NP Entrance Corridors

Waahi Tapu & Archaeological Sites — 748 or 501

Heritage Buildings & Items — 3

Notable Trees — 123 or 150

Defined Retail Frontage

High Voltage Electricity Transmission Lines (766kV)

Energy Pipelines

Noise Control Boundaries

Indicative Arterial Road

Indicative Collector Road

Indicative Local Road

Indicative Pedestrian Route/Link

OTHER

State Highway Limited Access Road

State Highway

Arterial Road

Collector Road

Local Road

District Boundary

Indicative Rivers

Structure Plan Area

NOTES

All public roads, including state highways, have the same zoning as adjoining sites. Where a road has different environment areas on either side, each side of the road takes on the zoning of the adjoining site with the centre line of the road

Refer to Appendix 4 - Schedule of Designations and to section 3 of these maps for detail of proposed road widening and service lanes.

All public roads and state highways are designated.

Where the area affected by a hazard is large a border only has been utilised to improve map clarity.

Refer to Appendix 11 - New Plymouth Airport Flight Surfaces and section 3 of these maps for more detail.
Airport Flight Path Surface is divided into four zones.

Refer to section 3 of these maps for full details of the urban viewshafts. Urban viewshafts are divided into sections, denoted on the maps as 1, 2 or 3.

Refer to Appendix 18.

Refer to Appendix 20.

Refer to Appendix 21.

Refer to Appendix 17.

Refer to Appendix 26. Location and extent of waahi tapu and archaeological sites is indicative only. Broken triangles represent silent files which are accurate to parcel only.

Refer to Appendix 8.
Refer to Appendix 13.
Where a symbol has a shadow line, this indicates a group of notable trees is located on the site.

Refer to Appendix 12. Port Taranaki Noise Control Boundaries: Planning Maps C21,C22,C23,D22. Airport Noise Control Boundaries: Planning Maps C5,D5,A30,A31.

Refer to Appendix 23 Part A.

Amended August 2015

Appendix C2: Distance to regionally significant wetland

Date Printed: 30-November-2017

Legend

- Groundwater Site
- Selected Land Use Sit
- Significant Wetland
- Road (-35k)
- State Highway (-47.5k
- Land Parcel Boundari
- Layers

SCALE 1: 16,000

812.8 0 812.8

Meters

Projection: NZGD_2000_New_Zealand_Transverse_Mercator

Taranaki Regional XPLORER

Appendix D: Draft designation and resource consent conditions

MT MESSENGER BYPASS PROJECT – DRAFT DESIGNATION CONDITIONS 14 DECEMBER 2017

DEFINITIONS FOR DESIGNATION AND RESOURCE CONSENT CONDITIONS

DEFINITIONS DESIGNATION AND RESOURCE CONSENT CONDITIONS	
Application	The application for resource consents for the Project dated December 2017 and supporting information dated [insert]
ADP	Accidental Discovery Protocol
AEE	Assessment of Effects on the Environment Report
Certification	The process of the Requiring Authority or Consent Holder submitting to the NPDC or TRC a plan to confirm that it complies with these designation or resource consent conditions
CLMP	Contaminated Land Management Plan
Completion of Construction Works	When Construction Works for the Project are complete and the new road is opened and available for use by highway traffic
Consent Holder	NZ Transport Agency
Construction Work(s)	Main construction works, including: • ground improvement works; • temporary and permanent drainage installation; • bulk earthworks (including cut and fill activities); • bridge and tunnel construction; • pavements and surfacing; • site reinstatement; • landscaping; and • installation of permanent road furniture and ancillary works.

DEFINITIONS DESIGNATION AND RESOURCE CONSENT CONDITIONS	
CNMP	Construction Noise Management Plan
CTMP	Construction Traffic Management Plan
COPTTM	NZ Transport Agency Code of Practice for Temporary Traffic Management
CTMP	Construction Traffic Management Plan
CWMP	Construction Water Management Plan
dBA	A unit of sound level which has its frequency characteristics modified by a filter (C-weighted) so as to account for the non-linear frequency response of the human ear at high noise level (typically greater than 100 decibels)
DMP	Dust Management Plan
DoC	Department of Conservation
ELMP	Ecology and Landscape Management Plan
Establishment Work(s)	Progressively opening up and establishing the site, including: • construction and/or widening of roads/tracks to access construction areas and install sediment control measures (e.g. sediment control ponds); • vegetation clearance; • establishment of construction yards; • establishing full width access tracks/haul roads; • installing remaining erosion and sediment controls; and • stream diversions.
Existing Network Utilities	All network utilities existing at the date of notification of the Notice of Requirement. Network utility has the same meaning as in section 166 of the Resource Management Act 1991
LEDF	Landscape and Environment Design Framework

DEFINITIONS DESIGNATION AND RESOURCE CONSENT CONDITIONS	
Manager	Regulatory Manager of the New Plymouth District Council for the Designation Conditions and the Regulatory Manager of Taranaki Regional Council for the Resource Consent Conditions (excluding the Contaminated Land Management Plan)
NPDC	New Plymouth District Council, including any officer of New Plymouth District Council
Heritage New Zealand	Heritage New Zealand Pouhere Taonga
Pest Management Areas	The 562ha that will be subject to pest management measures for biodiversity offsetting purposes
PMP	Pest Management Plan
Preparatory Work(s)	Initial works to enable Establishment Works and Construction Works, such as: • site surveys; • investigations (including geotechnical investigations); • monitoring; and • where the Permitted Activity standards in the Taranaki Freshwater Plan / New Plymouth District Plan are met, land disturbance activities to establish site access, access tracks, construction yards, laydown areas and spoil disposal sites and associated erosion and sediment controls. Preparatory Works do not include vegetation clearance.
Project	The construction of a new section of SH3 generally between Uruti and Ahititi, north of New Plymouth that is approximately 6km in length and located to the east of the existing SH3 alignment, comprising all associated Work in the area shown as the proposed designation in Figure 1.1 of the AEE
Project Area	The area shown as the proposed designation in Figure 1.1 of the AEE
Requiring Authority	NZ Transport Agency
RMA or 'the Act'	Resource Management Act 1991
SCWMP	Specific Construction Water Management Plan

DEFINITIONS DESIGNATION AND RESOURCE CONSENT CONDITIONS	
SH3	State Highway 3
Stabilised Area	An area inherently resistant to erosion such as rock, or rendered resistant by the application of aggregate, geotextile, vegetation or mulch, or as identified in the Construction Water Management Plan. Where vegetation is to be used on a surface that is not otherwise resistant to erosion, the surface is considered stabilised once an 80% vegetation cover has been established.
Stabilisation	The activity to achieve a Stabilised Area
Stage or Staging	A stage of the Works to construct the Project as identified in the, CEMP, CWMP or SCWMP
TRC	Taranaki Regional Council, including any officer of Taranaki Regional Council
TRoNT	Te Runanga o Ngāti Tama
Work or Works	Establishment Works and Construction Works associated with the Project (to avoid doubt, this does not include Preparatory Works)
Working Day	Has the same meaning as under section 2 of the Resource Management Act 1991

TABLE OF CONTENTS FOR DESIGNATION CONDITIONS

DRAFT DESIGNATION CONDITIONS

Designation conditions for the construction of a State highway, being the Mt Messenger Bypass Project:

Ref.	Designation Condition
	General and Administration
1.	(a) Except as modified by the conditions below, the Project shall be undertaken in general accordance with the information provided by the Requiring Authority in the Notice of Requirement dated December 2017. (b) Except for the Pest Management Plan in condition 28, none of the conditions apply to the on-going operation or maintenance of SH3. (c) Where there is conflict between the documents listed in (a) above and these designation conditions, these conditions shall prevail. Where there is an inconsistency between the information and plans lodged with the Notice of Requirement and information provided subsequently, the most recent plans and information shall prevail.
2.	As soon as practicable following Completion of Construction Works, the Requiring Authority shall: (a) review the extent of the area designated for the Project; (b) identify any areas of designated land that are no longer necessary for the on-going operation or maintenance of SH3, or the mitigation or offsetting of effects of the Project; and (c) give notice to NPDC in accordance with section 182 of the RMA for the removal of those parts of the designation identified in (b) above.
3.	The designation shall lapse if not given effect to within 10 years from the date on which it is included in the New Plymouth District Plan under section 175 of the RMA.

Ref.	Designation Condition
	Cultural protocols
4.	[to be developed with TRoNT]
	Management Plans – General
5.	The Requiring Authority shall, in accordance with conditions 6 and 7, provide to the Manager all of the management plans for the Project prior to the commencement of Works. The management plans: (a) provide the overarching principles, methodologies and procedures for managing the effects of construction of the Project to achieve the environmental outcomes and performance standards required by these conditions; and (b) shall be finalised, maintained and implemented in general accordance with the draft management plans included with the documents and information provided in support of the Notice of Requirement.
6.	All Works shall be carried out in general accordance with the plan set [Volume 2 of the application documentation] and the management plans required by these designation conditions and attached as appendices to the Construction Environmental Management Plan, which are: (a) Construction Noise Management Plan (CNMP); (b) Construction Traffic Management Plan (CTMP); (c) Ecology and Landscape Management Plan (ELMP); and (d) Pest Management Plan (PMP).
7.	(a) The Requiring Authority shall provide the updated CEMP, CNMP and CTMP, to the Manager at least 30 working days before the commencement of Works. The Requiring Authority shall consider any comments received from the Manager when finalising each management plan. If the Requiring Authority has not received comments from

Ref.	Designation Condition
	the Manager within 15 working days of providing the management plan, the Requiring Authority may finalise and implement the management plan accordingly. (b) The Requiring Authority shall provide the final management plan to the Manager at least 5 working days before the commencement of Works. *Advice note: Pursuant to condition 1(a), the final management plan shall be updated in accordance with the draft management plan provided to the hearing panel as part of the consent application. The Requiring Authority shall take into account any comments received from the TRC Manager when finalising the management plan.*
8.	(a) The Requiring Authority shall provide the updated ELMP and PMP to the Manager, TRoNT and DoC at least 30 working days before the commencement of Works. The Requiring Authority shall consider any comments received from the Manager, TRoNT and DoC when finalising the ELMP and PMP. If the Requiring Authority has not received comments from the Manager, TRoNT, or DoC within 15 working days of providing the management plans, the Requiring Authority may finalise and implement the management plan accordingly. (b) The Requiring Authority shall provide the final ELMP and PMP to the Manager, TRoNT, and DoC at least 5 working days before the commencement of Works. *Advice note: Pursuant to condition 1(a), the final management plan shall be updated in accordance with the draft management plan provided to the hearing panel as part of the consent application. The Requiring Authority shall take into account any comments received from the TRC Manager when finalising the management plan.*
9.	The Requiring Authority may make reasonable amendments to the finalised management plans at any time. Reasonable amendment is any amendment where the adverse environmental effect arising from the amendment is the same or less than the effect anticipated in the final management plan provided under conditions 7 or 8. In addition, any changes to the management plans shall remain consistent with the overall intent of the originally finalised management plan. The Requiring Authority shall

Ref.	Designation Condition
	provide the Manager with a copy of any amendment as soon as practicable and before Works associated with that amendment are implemented.
10.	(a) The Requiring Authority may make material amendment to the finalised management plans at any time subject to the certification of the Manager. Material amendment is amendment where there is an adverse (beyond de minimis) environmental effect above that anticipated in the final management plan provided under conditions 7 or 8. (b) Any material changes to the management plans shall be consistent with the overall intent of the originally finalised management plan. (c) In the event of material amendment to a management plan, the Requiring Authority must submit the amendment to the Manager for certification 20 working days before the commencement of the relevant Works. If the Manager has not provided comment or certification within 10 working days, the Requiring Authority may finalise the amended management plan. (d) The Requiring Authority shall provide the Manager with a copy of a material amendment to a management plan 5 working days before the commencement of the relevant Works.
11.	Preparatory Works and all Works that are a Permitted Activity in the New Plymouth District Plan can commence prior to the finalisation of the management plans, except for vegetation clearance which shall be carried out in accordance with the relevant management plans.
12.	All personnel involved with the construction of the Project shall be made aware of, and have access to, all conditions and management plans applicable to the construction of the Project. Copies shall be kept on site at all times.

Ref.	Designation Condition
13.	(a) In the event of any dispute, disagreement or inaction arising about the implementation of the management plans, matters shall be referred in the first instance to the Manager, and to the Requiring Authority's Construction Manager (as described in the CEMP), to determine a process of resolution. (b) If a resolution cannot be agreed under (a) within 15 working days, the matter shall be referred within 10 working days to an independent appropriately qualified expert, acceptable to both parties, setting out the details of the matter to be referred for determination and the reasons the parties do not agree. (c) The expert shall, as soon as possible, issue a decision on the matter. (d) The decision of the expert on the implementation of the management plan is binding and shall be implemented by the Requiring Authority. (e) The dispute resolution process above will be applied before any formal enforcement action is taken by NPDC, except in urgent situations.
14.	The Requiring Authority shall undertake an annual review of all management plans that takes into account (this is not an exclusive list): (a) Compliance with the Project consent and designation conditions, the CEMP and management plans. (b) Any significant changes to construction activities or methods. (c) Key changes to roles and responsibilities within the Project team. (d) Results of inspections, monitoring and reporting procedures associated with the monitoring of adverse effects during construction. (e) Comments or recommendations from NPDC regarding the CEMP and management plans. (f) Comments or recommendations from TRoNT or DoC regarding the ELMP and PMP.

Ref.	Designation Condition
	(g) Unresolved complaints and any response to complaints and remedial action taken to address the complaint. The outcome of this review shall be provided to the Manager. *Advice note: comments or recommendations regarding the CEMP and management plans may also be received from TRC under the resource consent conditions.*
	Construction Environmental Management Plan
15.	The Requiring Authority shall finalise a Construction Environmental Management Plan (**CEMP**) to provide an overarching framework to ensure that the Project remains within the limits and standards required by these conditions and that Works appropriately avoid, remedy, mitigate or offset more than minor adverse effects on the environment.
16.	The CEMP shall include, but need not be limited to, details of: (a) staff and contractors' responsibilities; (b) training requirements for employees, sub-contractors and visitors; (c) environmental incident and emergency management (including the procedures required under regional consent condition 6); (d) communication and interface procedures; (e) environmental complaints management (required under condition 32); (f) compliance monitoring; (g) environmental reporting; (h) corrective action;

Ref.	Designation Condition
	(i) environmental auditing; (j) construction lighting; (k) rehabilitation of construction yards; (l) the methods to engage with stakeholders, including: (i) how the community will be kept informed of progress with Works, including proposed hours of operation outside normal working hours and Project construction personnel contact details; (ii) how the Requiring Authority will engage with the community in order to foster good relationships and to provide opportunities for learning about the Project; (iii) providing early information on key Project milestones; (iv) identifying stakeholders such as landowners, road users, local community, iwi, regulatory authorities, industry, network utility operators, road maintenance contractors, emergency services; and (v) responding to queries and complaints (in accordance with condition 33); and (m) CEMP review (in accordance with condition 14). The CEMP shall also set out construction methodologies and construction timeframes, including Staging.
	Construction Noise and Construction Noise Management Plan
17.	Construction noise shall, subject to the exceptions provided for in the Construction Noise Management Plan (**CNMP**) set out in conditions 18 and 19, comply with the following criteria in accordance with NZS6803: 1999:

<table>
<tr><th>Ref.</th><th>Designation Condition</th></tr>
<tr><td></td><td>
<table>
<tr><th></th><th>Time period</th><th>dB LAeq</th><th>dB LAFmax</th></tr>
<tr><td rowspan="4">Weekdays</td><td>0630–0730</td><td>55</td><td>75</td></tr>
<tr><td>0730–1800</td><td>70</td><td>85</td></tr>
<tr><td>1800–2000</td><td>65</td><td>80</td></tr>
<tr><td>2000–0630</td><td>45</td><td>75</td></tr>
<tr><td rowspan="4">Saturday</td><td>0630–0730</td><td>45</td><td>75</td></tr>
<tr><td>0730–1800</td><td>70</td><td>85</td></tr>
<tr><td>1800–2000</td><td>45</td><td>75</td></tr>
<tr><td>2000–0630</td><td>45</td><td>75</td></tr>
<tr><td rowspan="4">Sunday and Public Holidays</td><td>0630–0730</td><td>45</td><td>75</td></tr>
<tr><td>0730–1800</td><td>55</td><td>85</td></tr>
<tr><td>1800–2000</td><td>45</td><td>75</td></tr>
<tr><td>2000–0630</td><td>45</td><td>75</td></tr>
</table>
Notes:
Measurement and assessment of construction noise shall be undertaken in accordance with NZS6803:1999.
</td></tr>
<tr><td>18.</td><td>The Requiring Authority shall finalise the CNMP for the Project to identify how it will manage effects from construction noise that will exceed the criteria in condition 17.

The CNMP shall be in accordance with:

(a) the requirements of Annex E to NZS 6803:1999; and</td></tr>
</table>

Ref.	Designation Condition
	(b) the NZ Transport Agency State highway construction and maintenance noise and vibration guide (2013).
19.	The CNMP shall include, but need not be limited to: (a) the general hours of work for the Project; (b) the details of any activities that may be undertaken outside of the general hours of work for the Project; (c) procedures to comply with NZS6803:1999; (d) the details of any activities that may not comply with NZS6803:1999 and measures to mitigate construction noise from those activities as far as practicable to ensure the effects are appropriate; (e) the necessary setbacks for specific construction plant and equipment in relation to residential dwellings; and (f) the management and communication procedures for Works that may not comply with NZS6803:1999.
	Construction Traffic Management Plan
20.	The Requiring Authority shall finalise the Construction Traffic Management Plan (**CTMP**) for the Project that identifies how it will manage construction traffic to: (a) protect public safety; (b) minimise delays to road users; (c) minimise disruption to property access; and (d) inform the public about any potential impacts on the road network.
21.	The CTMP shall include, but need not be limited to: (a) details of traffic management activities and sequencing proposed for the Project;

Ref.	Designation Condition
	(b) methods for managing construction related traffic movements; (c) provisions to ensure that, as far as practicable, road users will not be held up by construction activities for an unreasonable period of time (such time period to be specified); and (d) provisions for emergency services to have access along SH3 24 hours per day, unless construction requires the temporary closure of a road, in which case, prior to any temporary closure, an emergency action plan shall be developed and agreed with emergency services to provide for access for the duration of that closure.
22.	The CTMP shall comply with the version of the NZ Transport Agency Code of Practice for Temporary Traffic Management (**COPTTM**) which applies at the time the Plan is prepared. Where it is not possible to adhere to the COPTTM, the COPTTM's prescribed Engineering Exception Decision process shall be followed.
	Ecology and Landscape Management Plan
23.	The Requiring Authority shall finalise the Ecology and Landscape and Management Plan (**ELMP**) to identify how the Project will avoid, remedy, mitigate, and offset potential adverse effects on the ecological values and biodiversity of the land within the Project area and its surrounds; as well as pre and post Works monitoring.
24.	The ELMP shall address how the Project will avoid, remedy, mitigate, and offset effects on ecological values, including: (a) vegetation / habitat (including wetlands); (b) herpetofauna (lizards); (c) bats; (d) avifauna; (e) fish, kōura and kākahi; and

Ref.	Designation Condition
	(f) streams.
25.	The ELMP shall include the following ecological mitigation and ecological offset measures: (a) Pest management measures described in the Pest Management Plan referred to in condition 28. (b) Restoration planting of: (i) 6ha of swamp forest; and (ii) 9ha using an appropriate mix of plant seedlings. (c) Planting of 200 seedlings of the same species for each significant tree that is felled, as shown on the Landscape Concept Plans in the LEDF. (d) Riparian planting and exclusion from livestock of up to 8.9km of existing stream, or if culvert or stream diversion lengths are reduced in the detailed design, the length of existing stream that is calculated by the Stream Ecological Valuation method. Riparian margins of 10m each side of the channel will be created and planted. (e) Relocation or cultivation of threatened plants found within the Project Area. (f) Fish passage provisions informed by NZ Transport Agency's "Fish passage guidance for state highways" (August 2013) guidelines. (g) The physical mechanisms (e.g. fences) to protect the restoration and riparian planting described in this condition from clearance and / or livestock, on an ongoing basis. (h) The legal mechanisms to protect the restoration and riparian planting described in this condition on an ongoing basis.

Ref.	Designation Condition
	(i) Landscaping design and treatments (landform and planting), including rehabilitation of all areas used for temporary work and construction yards. (j) The staging of planting and landscape treatments in relation to the construction programme.
26.	The ELMP shall include the following monitoring: (a) Pre-construction vegetation monitoring to provide more detailed baseline information on forest condition, including the composition and abundance of palatable vegetation. (b) Pre-construction survey of wetland vegetation composition and structure to assist planning for the swamp forest restoration planting. (c) Survey of actual vegetation loss immediately following Completion of Construction Works.
27.	(a) The Requiring Authority shall complete restoration planting within three planting seasons of the Completion of Construction Works, unless natural conditions over the next 4 years result in poor seed production or poor seed condition and adversely limits seedling propagation for indigenous plant species, in which case completion would be delayed to reflect the availability of suitable seedlings. (b) Should there be a delay in the completion of restoration planting, the Requiring Authority shall provide the Manager with an amended timeframe and complete the planting as soon as reasonably possible within that timeframe, informing the Manager when planting is complete.
	Pest Management Plan

Ref.	Designation Condition
28.	The Requiring Authority shall finalise a Pest Management Plan (**PMP**) that shall include pest management over a core area of no less than 222ha with a buffer area of an additional 340ha (total 562ha) (Pest Management Area) and: (a) focus on controlling rats, possums, mustelids, feral cats, feral pigs and goats at low densities, and will exclude all farm livestock; and (b) be undertaken by, or on behalf of, the Requiring Authority in perpetuity, or until such time as technological advances mean that pest control is no longer necessary.
	Accidental Discovery Protocol
29.	The Requiring Authority shall rely on P45, the NZ Transport Agency Accidental Discovery Protocol and implement that protocol throughout Works. P45, the Transport Agency Accidental Discovery Protocol, shall be reviewed by TRoNT and modified to: (a) reflect the site specific Project detail; and (b) be consistent with any archaeological authority issued by Heritage New Zealand under the *Heritage New Zealand Pouhere Taonga Act 2014* applying to the Project. *Advice Note:* *The Ministry for Culture and Heritage must also be advised of any artefact finds within 28 days of the discovery in accordance with the Protected Objects Act 1975. The final repatriation of artefacts is a matter for the Ministry of Culture and Heritage in consultation with iwi.*

Ref.	Designation Condition
30.	The Accidental Discovery Protocol referred to in condition 29 shall not apply, and need not be implemented, in the event that: (a) the Project is subject to an archaeological authority granted under section 48 of the Heritage New Zealand Pouhere Taonga Act 2014 (or the corresponding provision in any legislation replacing that Act); and (b) that authority provides for a protocol to be implemented in the event of discovery of cultural or archaeological artefacts or features during the construction of the Project, including the matters provided in condition 29. *Advice Note: The purpose of this condition is to ensure consistency between these conditions and the conditions imposed on any archaeological authority under the Heritage New Zealand Pouhere Taonga Act 2014.*
	Access
31.	The Requiring Authority shall, as far as reasonably practicable, maintain access to existing recreation facilities of the Kiwi Road and Mt Messenger Tracks during construction.
32.	The Requiring Authority will ensure that reasonable vehicular access is maintained during the Project to the properties currently served by the section of SH3 that will be bypassed or otherwise affected by the Project.
	Complaints
33.	(a) At all times during implementation of the Notice of Requirement, the Requiring Authority shall maintain a register of any complaints received alleging adverse effects from, or related to, the exercise of the Notice of Requirement. The record shall include: (i) the name and address (where this has been provided) of the complainant; (ii) identification of the nature of the complaint; (iii) location, date and time of the complaint and of the alleged event; (iv) weather conditions at the time of the complaint (as far as practicable), including wind direction and

Ref.	Designation Condition
	approximate wind speed if the complaint relates to air discharges; (v) the outcome of the Requiring Authority's investigation into the complaint; (vi) measures taken to respond to the complaint; and (vii) any other activities in the area, unrelated to the Project, which may have contributed to the complaint (such as non-Project construction, fires, or unusually dusty conditions generally). (b) The Requiring Authority shall: (i) acknowledge the complaint within 2 working days, (ii) promptly investigate, identify the level of urgency is respect of the complaint and communicate that to the complainant; and (iii) take reasonable steps to remedy or mitigate the matters giving rise to the complaint if there are reasonable grounds for the complaint within 10 working days of receiving the complaint or such sooner time as may be reasonably necessary in the circumstances. (c) The Requiring Authority shall also maintain a record of its responses and any remedial actions undertaken. (i) This record shall be maintained on site and shall be made available to the Manager upon request. The Requiring Authority shall provide the Manager with a copy of the complaints register every month.

MT MESSENGER BYPASS PROJECT - DRAFT RESOURCE CONSENT CONDITIONS 14 DECEMBER 2017

RESOURCE CONSENTS AND ASSOCIATED CONDITIONS

Conditions applying to all consents:

- General Conditions 1 – 19; and
- Management Plan Conditions 20 – 36

Council Form	Activity type	Activity	RMA Ref	Conditions
Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES)				
9	Earthworks under the NES	Disturbance of contaminated soils	S9	1 - 36
Regional Fresh Water Plan for Taranaki (Operative 2001)				
300	Take and use of surface water	Take and use of water for construction-related purposes	S14	1 - 36 45 - 48
210	Damming of water from a stream or rivers	Temporary weir to dam stream and establish a small headpond for taking water.	S14	1 – 36 42
210	Diversion of streams and rivers	Temporary and permanent diversion of watercourses within Project footprint	S14	1 - 36 42 - 44
320	Use of stream bed	Placement of temporary weir	S13	1 - 36 42
201	Use of stream bed	Removal, demolition and decommissioning of culverts in stream beds established for construction access	S13	1 - 36 42

Council Form	Activity type	Activity	RMA Ref	Conditions
201	Use of stream bed	Construction, placement and use of culverts in stream beds	S13	1 - 36 42 - 44
201	Structures	Construction, placement and use of bridge over stream bed	S13	1 - 36 42 - 44
500	Use of stream bed	Planting and/or removal of vegetation	S13	1 - 36 42
220	Disturbance of beds of streams and rivers	Realignment / modification of streams	S13	1 - 36 42 - 44
112	Discharge of contaminants to land and water	Discharges of stormwater and sediment deriving from soil disturbance activities during construction	S15	1 - 36 37 - 41
500	Groundwater take and diversion	Groundwater take and diversion	S14	1 - 36
Regional Soil Plan for Taranaki (Operative 2001)				
230	Vegetation removal	Clearance of vegetation associated with construction activities	S9	1 - 36 37 - 40
Regional Air Quality Plan for Taranaki 2001				
120	Discharges of dust	Dust associated with earthworks	S15	1 - 36

DEFINITIONS FOR DESIGNATION AND RESOURCE CONSENT CONDITIONS

DEFINITIONS DESIGNATION AND RESOURCE CONSENT	
Application	The application for resource consents for the Project dated December 2017 and supporting information dated [insert]
ADP	Accidental Discovery Protocol
AEE	Assessment of Effects on the Environment Report
Certification	The process of the Requiring Authority or Consent Holder submitting to the NPDC or TRC a plan to confirm that it complies with these designation or resource consent conditions
CLMP	Contaminated Land Management Plan
Completion of Construction Works	When Construction Works for the Project are complete and the new road is opened and available for use by highway traffic
Consent Holder	NZ Transport Agency
Construction Work(s)	Main construction works, including: • ground improvement works; • temporary and permanent drainage installation; • bulk earthworks (including cut and fill activities); • bridge and tunnel construction; • pavements and surfacing; • site reinstatement; • landscaping; and • installation of permanent road furniture and ancillary works.
CNMP	Construction Noise Management Plan
CTMP	Construction Traffic Management Plan

DEFINITIONS DESIGNATION AND RESOURCE CONSENT	
COPTTM	NZ Transport Agency Code of Practice for Temporary Traffic Management
CTMP	Construction Traffic Management Plan
CWMP	Construction Water Management Plan
dBA	A unit of sound level which has its frequency characteristics modified by a filter (C-weighted) so as to account for the non-linear frequency response of the human ear at high noise level (typically greater than 100 decibels)
DMP	Dust Management Plan
DoC	Department of Conservation
ELMP	Ecology and Landscape Management Plan
Establishment Work(s)	Progressively opening up and establishing the site, including: • construction and/or widening of roads/tracks to access construction areas and install sediment control measures (e.g. sediment control ponds); • vegetation clearance; • establishment of construction yards; • establishing full width access tracks/haul roads; • installing remaining erosion and sediment controls; and • stream diversions.
Existing Network Utilities	All network utilities existing at the date of notification of the Notice of Requirement. Network utility has the same meaning as in section 166 of the Resource Management Act 1991
LEDF	Landscape and Environment Design Framework
Manager	Regulatory Manager of the New Plymouth District Council for the Designation Conditions and the Regulatory Manager of Taranaki Regional Council for the Resource Consent Conditions (excluding the Contaminated Land Management Plan)

DEFINITIONS DESIGNATION AND RESOURCE CONSENT	
NPDC	New Plymouth District Council, including any officer of New Plymouth District Council
Heritage New Zealand	Heritage New Zealand Pouhere Taonga
Pest Management Areas	The 562ha that will be subject to pest management measures for biodiversity offsetting purposes
PMP	Pest Management Plan
Preparatory Work(s)	Initial works to enable Establishment Works and Construction Works, such as: • site surveys; • investigations (including geotechnical investigations); • monitoring; and • where the Permitted Activity standards in the Taranaki Freshwater Plan / New Plymouth District Plan are met, land disturbance activities to establish site access, access tracks, construction yards, laydown areas and spoil disposal sites and associated erosion and sediment controls. Preparatory Works do not include vegetation clearance.
Project	The construction of a new section of SH3 generally between Uruti and Ahititi, north of New Plymouth that is approximately 6km in length and located to the east of the existing SH3 alignment, comprising all associated Work in the area shown as the proposed designation in Figure 1.1. of the AEE
Project Area	The area shown as the proposed designation in Figure 1.1. of the AEE
Requiring Authority	NZ Transport Agency
RMA or 'the Act'	Resource Management Act 1991
SCWMP	Specific Construction Water Management Plan
SH3	State Highway 3

DEFINITIONS DESIGNATION AND RESOURCE CONSENT	
Stabilised Area	An area inherently resistant to erosion such as rock, or rendered resistant by the application of aggregate, geotextile, vegetation or mulch, or as identified in the Construction Water Management Plan. Where vegetation is to be used on a surface that is not otherwise resistant to erosion, the surface is considered stabilised once an 80% vegetation cover has been established,
Stabilisation	The activity to achieve a Stabilised Area
Stage or Staging	A stage of the Works to construct the Project as identified in the, CEMP, CWMP or SCWMP
TRC	Taranaki Regional Council, including any officer of Taranaki Regional Council
TRoNT	Te Runanga o Ngāti Tama
Work or Works	Establishment Works and Construction Works associated with the Project (to avoid doubt, this does not include Preparatory Works)
Working Day	Has the same meaning as under section 2 of the Resource Management Act 1991

TABLE OF CONTENTS FOR RESOURCE CONSENT CONDITIONS

Condition No.	Condition Content
42 - 44	Works in a Watercourse
45 - 46	Surface water take and use: - Mimi River - Mangapepeke Stream
47	Intake structure
48	Water Meter Installation and Maintenance
49 - 50	Stormwater measures

DRAFT RESOURCE CONSENT CONDITIONS

Ref.	Resource Consent Condition
	General conditions applying to all consents
1.	(a) Except as modified by the conditions below, the Project shall be undertaken in general accordance with the information provided by the Consent Holder in the application dated December 2017. (b) Except for the Pest Management Plan in condition 29, none of the conditions apply to the on-going operation or maintenance of SH3. (c) Where there is conflict between the documents listed in (a) above and these conditions, these conditions shall prevail. Where there is an inconsistency between the information and plans lodged with the application and information provided subsequently, the most recent plans and information shall prevail.
2.	Pursuant to section 125(1) of the Act, the consents referenced [to insert – TRC reference numbers] shall lapse 10 years from the date of commencement of the consents in accordance with section 116 of the Act.
3.	Pursuant to section 123(c) of the Act, the consents referenced [to insert – TRC references] shall expire 35 years from the date of commencement in accordance with section 116 of the Act.
	Cultural protocols
4.	[to be developed with TRoNT]
	Complaints
5.	(a) At all times during implementation of the consents, the Consent Holder shall maintain a register of any complaints received alleging adverse effects from, or related to, the exercise of the consents. The record shall include:

Ref.	Resource Consent Condition
	(i) the name and address (where this has been provided) of the complainant; (ii) identification of the nature of the complaint; (iii) location, date and time of the complaint and of the alleged event; (iv) weather conditions at the time of the complaint (as far as practicable), including wind direction and approximate wind speed if the complaint relates to air discharges; (v) the outcome of the Consent Holder's investigation into the complaint; (vi) measures taken to respond to the complaint; and (vii) any other activities in the area, unrelated to the Project, which may have contributed to the complaint (such as non-Project construction, fires, or unusually dusty conditions generally). (b) The Consent Holder shall: (i) acknowledge the complaint within 2 working days, (ii) promptly investigate, identify the level of urgency in respect of the complaint and communicate that to the complainant; and (iii) take reasonable steps to remedy or mitigate the matters giving rise to the complaint, if there are reasonable grounds for the complaint, within 10 working days of receiving the complaint or such sooner time as may be reasonably necessary in the circumstances. (c) The Consent Holder shall also maintain a record of its responses and any remedial actions undertaken. (d) This record shall be maintained on site and shall be made available to the Manager upon request. The Consent Holder shall provide the Manager with a copy of the complaints register every month.

Ref.	Resource Consent Condition
	Incidents
6.	The Consent Holder shall prepare procedures for incident management that outline how the Consent Holder will manage and notify the Manager of: (a) discharges from non-stabilised areas that are not treated by erosion and sediment control measures as required by the Construction Water Management Plan; and / or (b) failure of any erosion and sediment control measures; and / or (c) discharge of a hazardous substances, including cement, to a water body; and / or (d) failure of any temporary stream diversion; and / or (e) any other incident which either directly or indirectly causes, or is likely to cause more than minor adverse ecological effects in any water body that is not authorised by a resource consent held by the Consent Holder. The Consent Holder shall provide the procedures to the Manager on request, and keep a copy of the procedures onsite at all times during Works.
	Management Plans – General
7.	The Consent Holder shall, in accordance with conditions 9, 10 and 11, provide to the Manager all of the management plans for the Project, prior to the commencement of Works. The management plans: (a) provide the overarching principles, methodologies and procedures for managing the effects of construction of the Project to achieve the environmental outcomes and performance standards required by these conditions; and

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	(b) shall be finalised, maintained and implemented in general accordance with the draft management plans included with the documents and information provided in support of the resource consent applications.
8.	All Works shall be carried out in general accordance with the Plan set [Volume 2 of the application documentation] and the management plans required by the resource consent conditions and attached as appendices to the Construction Environmental Management Plan, which are: (a) Contaminated Land Management Plan (CLMP); (b) Ecology and Landscape Management Plan (ELMP); (c) Pest Management Plan (PMP); (d) Dust Management Plan (DMP); and (e) Construction Water Management Plan (CWMP).
9.	(a) The Consent Holder shall provide the CLMP to the NPDC Manager, at least 30 working days before the commencement of Works. The Consent Holder shall consider any comments received from the NPDC Manager when finalising the CLMP. If the Consent Holder has not received comments from the NPDC Manager within 15 working days of providing the CLMP, the Consent Holder may finalise and implement the CLMP accordingly. (b) The Consent Holder shall provide the final CLMP to the NPDC Manager at least 5 working days before the commencement of Works. *Advice note: Pursuant to condition 1(a), the final management plan shall be updated in accordance with the draft management plan provided to the hearing panel as part of the consent application.*

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10.	(a) The Consent Holder shall provide the updated CEMP, DMP and CWMP to the Manager, at least 30 working days before the commencement of Works. The Consent Holder shall consider any comments received from the Manager when finalising each management plan. If the Consent Holder has not received comments from the Manager within 15 working days of providing the management plan, the Consent Holder may finalise and implement the management plan accordingly. (b) The Consent Holder shall provide the final management plan to the Manager at least 5 working days before the commencement of Works. *Advice note: Pursuant to condition 1(a), the final management plans shall be updated in accordance with the draft provided to the hearing panel as part of the consent application. The Consent Holder shall take into account any comments received from NPDC when finalising the management plans.*
11.	(a) The Consent Holder shall provide the updated ELMP and PMP to the Manager, TRoNT, and DoC, at least 30 working days before the commencement of Works. The Consent Holder shall consider any comments received from the Manager, TRoNT, and DoC when finalising the ELMP and PMP. If the Consent Holder has not received comments from the Manager, TRoNT, or DoC within 15 working days of providing the management plans, the Consent Holder may finalise and implement the management plans accordingly. (b) The Consent Holder shall provide the final ELMP and PMP to the Manager, TRoNT, and DoC at least 5 working days before the commencement of Works. *Advice note: Pursuant to condition 1(a), the final management plans shall be updated in accordance with the draft provided to the hearing panel as part of the consent application. The Consent Holder shall take into account any comments received from NPDC when finalising the management plans.*

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12.	No earthworks, except those that comply with the standards and conditions in Rule 25 or 26 of the Taranaki Freshwater Plan, shall commence on site unless a Specific Construction Water Management Plan (SCWMP) is in place for that specific area of works. Such a SCWMP can be based on a geographic area or based on a specific activity type. *Advice Note: The geographic basis for a SCWMP may be based on a specific chainage location along the alignment. The activity basis for a SCWMP may be based on having a SCWMP for a particular activity, such as shoulder widening, anywhere along the alignment.*
13.	(a) The Consent Holder shall provide the final SCWMP to the Manager at least 5 working days before the commencement of Works to which the SCWMP applies, where that SCWMP was provided at the hearing. (b) The Consent Holder shall provide any SCWMP that was not provided at the hearing to the Manager for certification at least 20 working days before the commencement of Works to which the SCWMP will apply. The Consent Holder shall consider any comments received from the Manager when finalising the SCWMP. If the Consent Holder has not received comments from the Manager within 10 working days of providing the SCWMP, the Consent Holder may finalise the SCWMP and implement it accordingly.
14.	The Consent Holder may make reasonable amendments to the finalised management plans at any time. Reasonable amendment is any amendment where the adverse environmental effect arising from the amendment is the same or less than the effect anticipated in the final management plan provided under conditions 9, 10 or 11. In addition, any changes to the management plans shall remain consistent with the overall intent of the originally finalised management plan. The Consent Holder shall provide the Manager with a copy of any amendment as soon as practicable and before any Works associated with that amendment are implemented.
15.	(a) The Consent Holder may make material amendment to the finalised management plans at any time subject to the certification of the Manager. Material amendment is amendment where there is an adverse (beyond de

Ref.	Resource Consent Condition
	minimis) environmental effect above that anticipated in the final management plan provided under conditions 9, 10 or 11. (b) Any material changes to the management plans shall be consistent with the overall intent of the originally finalised management plan. (c) In the event of material amendment to a management plan, the Consent Holder must submit the amendment to the Manager for certification 20 working days before the commencement of the relevant Works. If the Manager has not provided comment or certification within 10 working days, the Consent Holder may finalise the amended management plan. (d) The Consent Holder shall provide the Manager with a copy of a material amendment to a management plan 5 working days before the commencement of the relevant Works.
16.	Preparatory Works, and all Works that are a Permitted Activity in the Taranaki Regional Plans, can commence prior to the finalisation of the management plans, except for vegetation clearance which shall be carried out in accordance with the relevant management plans.
17.	All personnel involved with the construction of the Project shall be made aware of, and have access to, all conditions and management plans applicable to the construction of the Project. Copies shall be kept on site at all times.
18.	(a) In the event of any dispute, disagreement or inaction arising about the implementation of the management plans, matters shall be referred in the first instance to the Manager, and to the Consent Holder's Construction Manager (as described in the CEMP), to determine a process of resolution. (b) If a resolution cannot be agreed under (a) within 15 working days, the matter shall be referred within 10 working days to an independent appropriately qualified expert, acceptable to both parties, setting out the details of the matter to be referred for determination and the reasons the parties do not agree.

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	(c) The expert shall, as soon as possible, issue a decision on the matter. (d) The decision of the expert on the implementation of the management plan is binding and shall be implemented by the Consent Holder. (e) The dispute resolution process above will be applied before any formal enforcement action is taken by TRC, except in urgent situations.
19.	The Consent Holder shall undertake an annual review of all management plans that takes into account (this is not an exclusive list): (a) Compliance with the Project consent and designation conditions, the CEMP and management plans. (b) Any significant changes to construction activities or methods. (c) Key changes to roles and responsibilities within the Project team. (d) Results of inspections, monitoring and reporting procedures associated with the management of adverse effects during construction. (e) Comments or recommendations from TRC regarding the CEMP and management plans. (f) Comments or recommendations from TRoNT or DoC regarding the ELMP and PMP. (g) Unresolved complaints and any response to complaints and remedial action taken to address the complaint. The outcome of this review shall be provided to the Manager. *Advice note: comments or recommendations regarding the CEMP and management plans may also be received from NPDC under the designation conditions.*

Ref.	Resource Consent Condition
	Construction Environmental Management Plan
20.	The Consent Holder shall finalise a Construction Environmental Management Plan (**CEMP**) to provide an overarching framework to ensure that the Project remains within the limits and standards required by these conditions and that Works appropriately avoid, remedy, mitigate or offset more than minor adverse effects on the environment.
21.	The CEMP shall include, but need not be limited to, details of: (a) staff and contractors' responsibilities; (b) training requirements for employees, sub-contractors and visitors; (c) environmental incident and emergency management (including the procedures required under regional consent condition 6); (d) communication and interface procedures; (e) environmental complaints management (required under condition 5); (f) compliance monitoring; (g) environmental reporting; (h) corrective action; (i) environmental auditing; (j) construction lighting; (k) rehabilitation of construction yards; (l) the methods to engage with stakeholders, including:

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	(i) how the community will be kept informed of progress with Works, including proposed hours of operation outside normal working hours and Project construction personnel contact details; (ii) how the Consent Holder will engage with the community in order to foster good relationships and to provide opportunities for learning about the Project; (iii) providing early information on key Project milestones; (iv) identifying stakeholders such as landowners, road users, local community, iwi, regulatory authorities, industry, network utility operators, road maintenance contractors, emergency services; and (v) responding to queries and complaints (in accordance with condition 5); and (m) CEMP review (in accordance with condition 19). The CEMP shall also set out construction methodologies and construction timeframes, including Staging.
	Contaminated Land Management Plan
22.	The Consent Holder shall finalise the Contaminated Land Management Plan (**CLMP**) to establish the procedures for handling potentially contaminated soils, and contaminated materials excavated on site, including the discovery of unexpected contaminated material.
23.	The CLMP shall include procedures for the following events (this is not an exclusive list): (a) triggers and methods for further testing and monitoring of potentially contaminated material; (b) procedures for contaminated soil classification, management and disposal of contaminated soil/material; (c) how the placement of re-used contaminated soil/material will be recorded and tracked;

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	(d) unexpected discovery of contaminated material; and (e) procedures for managing the potential risks to human health, in accordance with the *Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011*.
	Ecology and Landscape Management Plan
24.	The Consent Holder shall finalise the Ecology and Landscape Management Plan (**ELMP**) to identify how the Project will avoid, remedy, mitigate, and offset potential adverse effects on the ecological values and biodiversity of the land within the Project area and its surrounds; as well as pre and post Works monitoring.
25.	The ELMP shall address how the Project will avoid, remedy, mitigate, and offset effects on ecological values, including: (a) vegetation / habitat (including wetlands); (b) herpetofauna (lizards); (c) bats; (d) avifauna; (e) fish, kōura and kākahi; and (f) streams.
26.	The ELMP shall include the following ecological mitigation and ecological offset measures: (a) Pest management measures described in the Pest Management Plan referred to in condition 29. (b) Restoration planting of:

Ref.	Resource Consent Condition
	(i) 6ha of swamp forest; and (ii) 9ha using an appropriate mix of plant seedlings. (c) Planting of 200 seedlings of the same species for each significant tree that is felled, as shown on the Landscape Concept Plans in the LEDF. (d) Riparian planting and exclusion from livestock of up to 8.9km of existing stream, or if culvert or stream diversion lengths are reduced in the detailed design, the length of existing stream that is calculated by the Stream Ecological Valuation method. Riparian margins of 10m each side of the channel will be created and planted. (e) Relocation or cultivation of threatened plants found within the Project Area. (f) Fish passage provisions informed by NZ Transport Agency's "Fish passage guidance for state highways" (August 2013) guidelines. (g) The physical mechanisms (e.g. fences) to protect the restoration and riparian planting described in this condition from clearance and / or livestock on an ongoing basis. (h) The legal mechanisms to protect the restoration and riparian planting described in this condition on an ongoing basis. (i) Landscaping design and treatments (landform and planting), including rehabilitation of all areas used for temporary work and construction yards. (j) The staging of planting and landscape treatments in relation to the construction programme.

Ref.	Resource Consent Condition
27.	The ELMP shall include the following monitoring: (a) Pre-construction vegetation monitoring to provide more detailed baseline information on forest condition, including the composition and abundance of palatable vegetation. (b) Pre-construction survey of wetland vegetation composition and structure to assist planning for the swamp forest restoration planting. (c) Survey of actual vegetation loss immediately following Completion of Construction Works.
28.	(a) The Consent Holder shall complete restoration planting within three planting seasons of the Completion of Construction Works, unless natural conditions over the next 4 years result in poor seed production or poor seed condition and adversely limits seedling propagation for indigenous plant species, in which case completion would be delayed to reflect the availability of suitable seedlings. (b) Should there be a delay in the completion of restoration planting, the Consent Holder shall provide the Manager with an amended timeframe and complete the planting as soon as reasonably possible within that timeframe, informing the Manager when planting is complete.
	Pest Management Plan
29.	The Consent Holder shall finalise a Pest Management Plan (**PMP**) that shall include pest management over a core area of no less than 222ha with a buffer area of an additional 340ha (total 562ha) (Pest Management Area) and: (a) focus on controlling rats, possums, mustelids, feral cats, feral pigs and goats at low densities, and will exclude all livestock; and (b) be undertaken by, or on behalf of, the Consent Holder in perpetuity, or until such time as technological advances mean that pest control is no longer necessary.

Ref.	Resource Consent Condition
	Dust Management Plan
30.	The Consent Holder shall finalise the Dust Management Plan (**DMP**) to establish methods to be used to manage, mitigate and monitor dust emissions during the Works.
31.	The DMP shall include, but need not be limited to: (a) identification of potential sources of dust taking into account construction activities and the construction programme; (b) identification of sensitive receptors likely to be adversely affected by emissions of dust; (c) methods for managing and mitigating adverse dust effects that may arise from construction activities, particularly in proximity to sensitive receptors. Where appropriate, these methods may include: (i) the use of water carts or sprinklers to apply water to areas generating dust; (ii) reducing vehicle speeds on unsealed surfaces; and (iii) the use of commercial dust suppressants; (d) an outline of the methods for managing the effects of dust on the dwelling at 2397 Mokau Road; and (e) the methods of monitoring for potential dust generation, including assessment of weather conditions, soil conditions and visual dust assessments.
	Construction Water Management Plan
32.	The Consent Holder shall finalise a Construction Water Management Plan (**CWMP**) that identifies how all Works shall be undertaken and addresses:

Ref.	Resource Consent Condition
	(a) The procedures for determining staging and sequencing of earthworks. (b) Identification of a suite of appropriate structural and non-structural erosion and sediment control measures to be installed prior to and during all Works. (c) The design specifications for all erosion and sediment controls to be implemented. (d) A procedure to establish and define minor on the ground changes to erosion and sediment control, in accordance with the intent of the CWMP. (e) The procedures for decommissioning the erosion and sediment control measures. (f) Methods for amending and updating the CWMP as required.
33.	The CWMP shall include, but need not be limited to: (a) construction activities to be undertaken; (b) area and volume of the earthworks and / or streamworks proposed; (c) location of the earthworks and / or streamworks with particular consideration of the downstream receiving environment; (d) methods for managing construction water effects; (i) duration of the earthworks and / or streamworks; (ii) time of the year that the streamworks are to be undertaken, and where applicable, the measures to be implemented to respond to any heightened risks at that time;

Ref.	Resource Consent Condition
	(iii) stabilisation and timing to reduce the open area of high risk locations to assist with a reduction in sediment generation; (iv) framework for the chemical treatment (flocculation) of sediment retention ponds; and (e) construction water related monitoring programme in accordance with condition 41, including the procedures for adapting the controls to appropriately respond to the monitoring findings.
	Specific Construction Water Management Plans
34.	Specific Construction Water Management Plans (**SCWMP**) shall be prepared for all earthworks in accordance with the CWMP and shall otherwise be consistent with the CWMP. *Advice Note: These SCWMPs will be developed within the context of the principles and practices of the CWMP and the Construction Water Assessment Report and will allow for innovation, flexibility and practicality of approach to effects of construction on water (including, erosion and sediment control). The SCWMPs will also enable ongoing adaption to changing conditions throughout the Project lifetime.*
35.	Where applicable to a site or activity, SCWMPs shall include, the: (a) detailed information specified in the CWMP (referred to in condition 33); and (b) details of the chemical treatment (flocculation) of sediment retention ponds in accordance with condition 36.
36.	In each SCWMP that specifies chemical treatment (flocculation) of sediment retention ponds and decanting earth bunds, the Consent Holder shall include: (a) specific design details of the chemical treatment system; (b) monitoring maintenance (including post-storm) and contingency programme;

Ref.	Resource Consent Condition
	(c) details of optimum dosage (including catchment specific soil analysis and assumptions, and consideration of any environmental effects); (d) where it is considered necessary, procedures for carrying out an initial treatment trial; and (e) details of the person or bodies that will hold responsibility for the maintenance of the chemical treatment system and the organisational structure which will support the system.
	Erosion and Sediment Control Device requirements
37.	The Consent Holder shall design, construct and maintain all erosion and sediment control measures to meet the Transport Agency's Erosion and Sediment Control Guidelines for State Highway Infrastructure – Construction Stormwater Management 2014, unless the departure is provided for in the final CWMP or SWCMP that applies to the relevant Works.
	Stabilisation
38.	The Consent Holder shall stabilise areas of earthworks not actively worked for more than a 14 day period, unless specified in a final SCWMP for that earthworks area.
	As built certification
39.	(a) As-built erosion and sediment control plans signed by an appropriately qualified and experienced erosion and sediment control practitioner shall be provided to the Manager as confirmation that the erosion and sediment control measures for that location / activity to which the SCWMP applies have been constructed in accordance with the SCWMP. (b) Bulk earthworks within each location to which a SCWMP applies shall not commence until the certified as-built plan confirming compliance with the SCWMP has been provided to the Manager.

Ref.	Resource Consent Condition
40.	No erosion and sediment control measures shall be removed or decommissioned from the earthworks location to which those measures apply, before that location is stabilised, unless the Manager has been informed not less than 2 working days prior to such removal and decommissioning, and it is in accordance with: (a) the CWMP; (b) a SCWMP; and / or (c) approved by a suitably qualified and experienced erosion and sediment practitioner.
	Construction Water related Discharges Monitoring Programme
41.	The Consent Holder shall prepare a monitoring programme for construction water related discharges that includes: (a) baseline monitoring to be undertaken prior to the commencement of Works; (b) monitoring to be undertaken during the construction period including both qualitative and quantitative monitoring; (c) preliminary management triggers and responses to identify effects on the receiving downstream environment; (d) chemical treatment monitoring requirements; (e) spillage / accident reports that cause a discharge of sediment or contaminants to an aquatic environment; and (f) obvious degradation of the receiving environment immediately downstream of the sediment retention ponds.

Ref.	Resource Consent Condition
	Works in a Watercourse
42.	Works in any watercourse shall comply with all relevant requirements of the CWMP and / or SCWMP and the ELMP.
43.	Permanent culvert design shall be in accordance with the ELMP, including that culverts shall: (a) allow for the safe passage of the 100 year ARI event through the Project Area; (b) be designed to minimise flooding effects; (c) address the risks of non-performance, such as blockage taking into account the risk of a soil / rock debris flow; (d) incorporate fish passage elements in accordance with the ELMP; and (e) incorporate energy dissipation and erosion control to minimise the occurrence of bed scour and bank erosion in receiving environments.
44.	At least 15 working days prior to the commencement of permanent works in any watercourse, the Consent Holder shall provide the final design of the permanent works to the Manager.
	Surface water take and use
	Mimi River
45.	The Consent Holder shall ensure that the maximum volume of water abstracted from the Mimi River does not: (a) exceed 150 cubic metres per day; and /or (b) result in more than a 20% change in water depth, measured on a staff gauge located in a run and measured at a time when unaffected by take.

Ref.	Resource Consent Condition
	Mangapepeke Stream
46.	The Consent Holder shall ensure that the maximum volume of water abstracted from the Mangapepeke Stream does not: (a) exceed 300 cubic metres per day; and / or (b) result in more than a 20% change in water depth, measured on a staff gauge located in a run and measured at a time when unaffected by take.
	Intake Structure
47.	The Consent Holder shall: (a) install, operate and maintain water intake structures, screens and any associated equipment to minimise the catching or capture of fish; andensure that the intake structure, screen and associated equipment does not exceed:maximum water velocity into the entry point of the intake structure of 0.12 metres per second; andintake screen mesh spacing's in any one dimension of 3 millimetres.
	Water Meter Installation and Maintenance
48.	(a) The Consent Holder shall install and maintain a water meter at each abstraction point on the Mimi River and the Mangapepeke Stream prior to the commencement of the take and for the duration of each abstraction from the point of take. (b) The water meter shall: (i) measure both cumulative water abstraction and the instantaneous rate of take; (ii) be calibrated to within an accuracy of +/- 5%; and (iii) be installed and maintained in accordance with manufacturer's specifications.

Ref.	Resource Consent Condition
	Advice note: Where surface water take exceeds 5 litres / second, the Consent Holder shall comply with the Resource Management (Measuring and Reporting of Water Takes) Regulations 2010.
	Stormwater measures
49.	Permanent stormwater measures shall be installed and operated in general accordance with the Drainage Layout drawings and information submitted with this application, including the information contained in the AEE and Technical Report 7b.
50.	At least 15 working days prior to the commencement of permanent stormwater measures, the Consent Holder shall provide the final design of the permanent stormwater measures (excluding conveyancing measures) to the Manager.