




Construction Environmental Management Plan

July 2018

Mt Messenger Alliance

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Glossary

Acronym	Definition
ADP	Accidental Discovery Protocol
AEE	Assessment of Environmental Effects
AWA	Additional Works Area
CDMP	Construction Dust Management Plan
CEMP	Construction Environmental Management Plan
CLMP	Contaminated Land Management Plan
CNMP	Construction Noise Management Plan
CoPTTM	Code of Practice for Temporary Traffic Management
CTMP	Construction Traffic Management Plan
CWMP	Construction Water Management Plan
DOC	Department of Conservation
ELMP	Ecology and Landscape Management Plan
GHG	Greenhouse Gas
HNZPT	Heritage New Zealand Pouhere Taonga
HNZPTA	Heritage New Zealand Pouhere Taonga Act 2014
HSNOA	Hazardous Substances and New Organisms Act 1996
JSEA	Job Safety Environmental Analysis
LEDF	Landscape and Environmental Design Framework
LTMA	Land Transport Management Act 2003
NES Air Quality	National Environmental Standard – Air Quality 2004
NES Soil	National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011
NPDC	New Plymouth District Council

Acronym	Definition
NZS	New Zealand Standard
PMA	Pest Management Area
PMP	Pest Management Plan
RMA	Resource Management Act 1991
SAP	Site Access Point
SCWMP	Specific Construction Water Management Plan
SH3	State Highway 3
TRC	Taranaki Regional Council

1 Introduction

This Construction Environmental Management Plan (CEMP) has been prepared for the NZ Transport Agency's Mt Messenger Bypass Project (the Project), which is being undertaken by the Mount Messenger Alliance (comprising the NZ Transport Agency, Downer, HEB Construction, Tonkin + Taylor and WSP\OPUS).

The Project involves the construction and ongoing operation of a new section of State Highway 3 (SH3), generally between Uruti and Ahititi, 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 location of the Project Area is shown in Figure 1-1 below.

The primary objectives of the Project are 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.

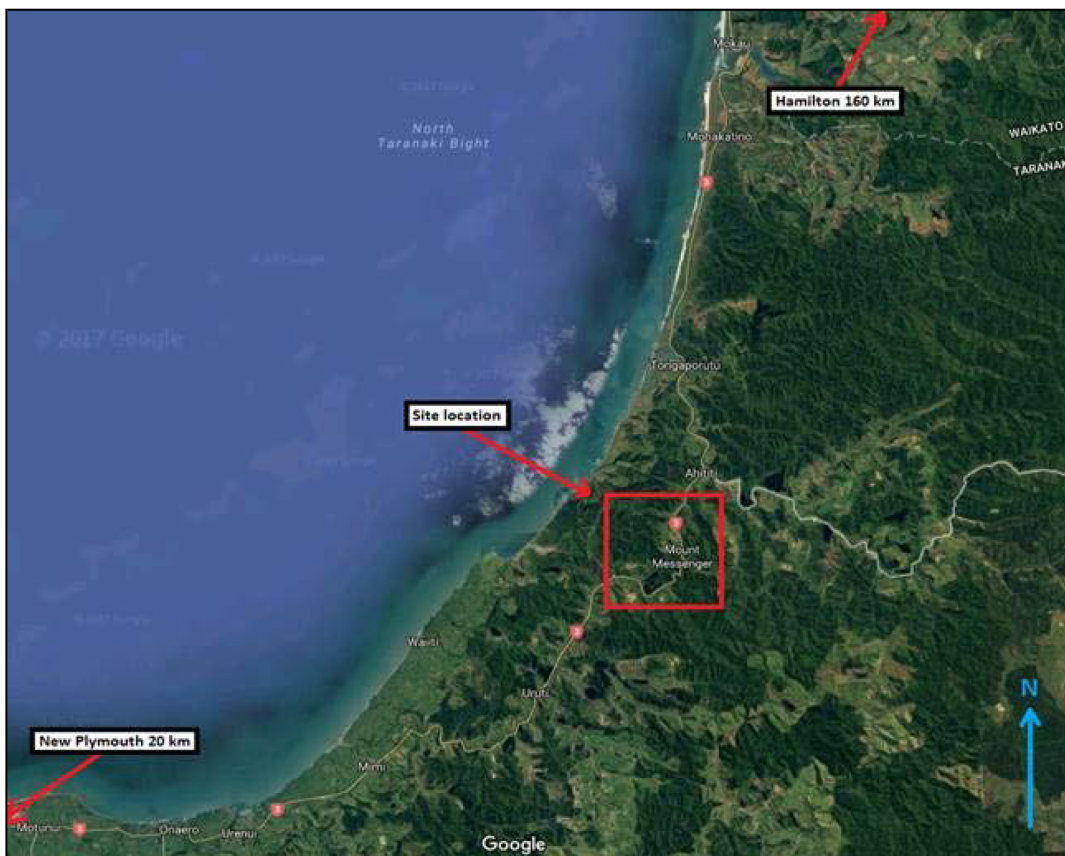


Figure 1-1 - Location of the Project Area

This CEMP provides the overarching framework for the management of construction effects associated with the Project. Further management plans are included as appendices to the CEMP and detail the specific environmental controls for particular aspects of the Project.

1.1 Purpose and objectives of the CEMP

The objective of the CEMP is to avoid, remedy, mitigate or offset any adverse environmental, cultural and social effects (including cumulative effects) associated with construction of the Project, so far as reasonably practicable. The CEMP and management plans have been prepared in accordance with the Transport Agency's Environmental and Social Responsibility Policy. The CEMP will be implemented by the Alliance throughout the entire construction period for the Project, and updated as necessary.

Overall, implementation of this CEMP will ensure:

- Appropriate management of adverse environmental, cultural and social effects associated with construction of the Project;
- Compliance with the conditions of the designation and resource consents and that the Project remains within the limits and standards required by these conditions;
- Adverse effects on the environment arising from the Project are appropriately avoided, remedied, mitigated or offset; and
- Compliance with environmental legislation.

All works must be carried out in accordance with the CEMP or any changes to it authorised under the conditions of the designation and resource consents.

The CEMP and management plans will be reviewed at least annually. Changes may also be required during the construction period to address matters such as, significant changes to the construction methodology or activities, or to address unforeseen adverse effects arising from construction or unresolved complaints (the review process is outlined in Section 8 of this CEMP).

1.2 CEMP structure and content

The CEMP is an overarching document and provides a blueprint for the Alliance to manage the environmental, cultural and social effects of the Project. The principles and general approach to managing the effects are set out in the CEMP, with detailed management methods described in the subject matter specific management plans that inform the CEMP.

Figure 1.2 shows the relationship between the CEMP, management plans and the resource consent and designation conditions.

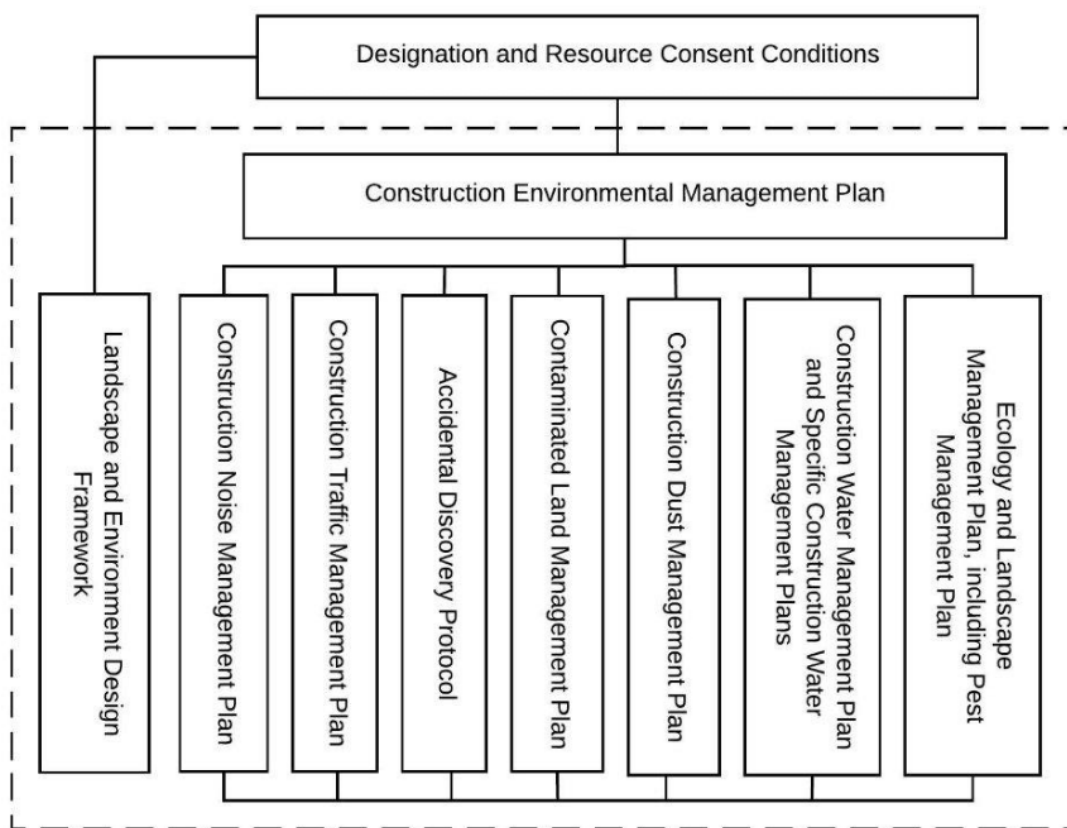


Figure 1-2 - CEMP and management plan framework

Where specific requirements are not addressed by the management plans, the CEMP includes measures to manage these aspects (e.g. construction lighting, waste management, energy use). The CEMP also outlines methods to engage with stakeholders during construction and the complaints protocol for the Project.

1.2.1 CEMP structure

The CEMP defines details of who, what, where and when environmental management and mitigation measures for the Project will be implemented. This CEMP is structured as follows:

- **Section 1** of the CEMP details the Project background, and outlines the scope and structure of the CEMP and relevant designation and resource consent conditions.
- **Section 2** provides a description of the Project scope, overall sequence of works and construction methodology.
- **Section 3** presents the cultural, environmental and social management context of the Project and outlines the environmental risks along with additional legislative requirements applicable to the environmental aspects of the Project.
- **Section 4** outlines the implementation and operation of the CEMP and describes roles and responsibilities and training requirements.

- **Section 5** outlines the environmental management that will be implemented during the construction of the Project. Further description of the management plans and the operating procedures (including measures to avoid, remedy, mitigate or offset the potential adverse environmental effects, which will tie in with the conditions of consent and designations) is provided. This section also sets out the management of incidents and emergencies during construction.
- **Section 6** details the methods to engage with Project stakeholders and the public during construction of the Project, along with the complaints process.
- **Section 7** details monitoring and monitoring review requirements, auditing procedures, and corrective actions addressed by the CEMP.
- **Section 8** describes the process for reviewing and updating the CEMP during construction.

1.3 Environmental policy

This section outlines the key environmental policy, objectives, key performance indicators and environmental management approach underpinning the Project.

1.3.1 The Transport Agency's Environmental Policy

The Transport Agency's social and environmental responsibilities are guided by legislation, including the Land Transport Management Act 2003 (LTMA) and the Resource Management Act 1991 (RMA), along with various internal and external strategy and policy documents.

Section 96(1)(a) of the LTMA requires that the Transport Agency exhibit a sense of social and environmental responsibility. In order to meet these requirements when undertaking its functions, the Agency has developed an Environmental and Social Responsibility Policy (refer Appendix A of this CEMP). Key policy requirements include, but are not limited to:

- Promoting the safe and efficient movement of goods and people in a manner that avoids adverse environmental and social impacts, to the extent reasonable;
- Continuously improve the management of environmental and social impacts;
- Integrating good urban design into all projects;
- Providing opportunities for Māori to contribute to the decision-making processes;
- Actively and meaningfully engaging with stakeholders; and
- Seeking whole-of-life value for money.

1.3.2 The Transport Agency's Environmental and Social Responsibility Policy

In addition to its statutory objectives, the Transport Agency has developed a number of specific environmental objectives, set out within the Environmental and Social Responsibility Policy. Objectives and key performance indicators are provided for key environmental aspects, including noise, air quality, water resources, erosion and sediment control, social responsibility, culture and heritage, ecological resources, spill response and contamination, resource efficiency, climate change, visual amenity and vibration.

Environmental management methods set out in this CEMP are consistent with the Transport Agency’s overall objective and the objectives and policies in the Transport Agency Environmental Plan and the Project’s delivery objectives, including the consent and designation conditions.

1.4 Ngāti Tama kaitiaki inputs

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

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 Ngati Tama tradition, Ngati Tama descend from Tamaariki, Rakeiora, and Whata.

The Whitecliffs and Mount Messenger area is known to Ngāti Tama as Parininihi. Parininihi has been referred to as ‘Te Matua Kanohi o Ngāti Tama Whanui’, ‘The parent (principle) 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 1.3), which provides the base for restoring Ngāti Tama sustenance and connection to the whenua, awa and maona.

The Treaty Settlement Act acknowledges the cultural, spiritual, historical, and traditional association of Ngāti Tama with the ‘Mount Messenger conservation area’ and provides for a statutory acknowledgement over this area.

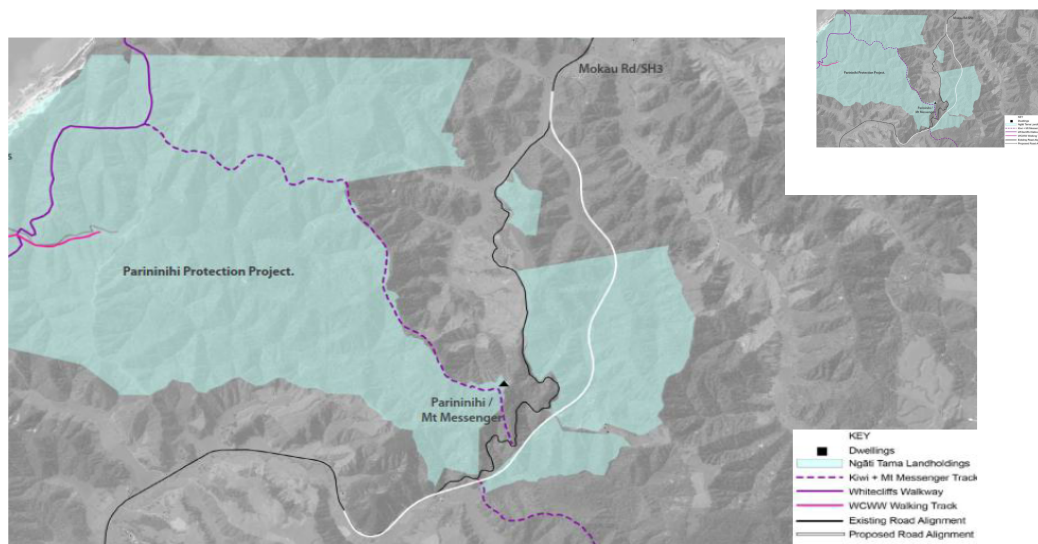


Figure 1-3 – Ngāti Tama Land associated with the Project Area

The significance of the Parininihi land to Ngāti Tama is 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 collaboratively with Ngāti Tama through the process of developing the Project.

Ongoing engagement with Ngāti Tama will occur as the Project progresses to enable Ngāti Tama to provide their kaitiaki inputs into the design, construction and operational phases of the Project. A process for gaining kaitiaki inputs has been developed with Ngāti Tama. The process will involve:

- Establishment of a Kaitiaki Forum Group, the purpose of which is to facilitate engagement between Ngāti Tama and the Transport Agency (through the Mt Messenger Alliance) and to work collaboratively on kaitiaki matters during the design and construction of the Project.
- Kaitiaki matters being developed and progressed through the Kaitiaki Forum Group by way of a sequential process to a conclusion, generally involving:
 - Identifying the kaitiaki matter.
 - Determining the work required to develop the matter and the parties that need to be involved to progress the work.
 - Completing the required work.
 - Reviewing the outcomes / output and determining if additional work is required to progress the outcome / output.
 - Completing more work if needed.
 - Implementing the final outcome / output.

The Transport Agency will continue to work collaboratively with Ngāti Tama through the Kaitiaki Forum Group to ensure that Ngāti Tama's kaitiaki aspirations are provided for in Project outcomes. Examples of matters that may be progressed through the Kaitiaki Forum Group could include:

- The representation of cultural values and artwork in Project designs.
- Development and implementation of biodiversity offset and ecological mitigation proposals.
- The development and implementation of cultural indicators and cultural monitoring.
- Tikanga and cultural practice in relation to Project activities, such as blessings, accidental discoveries, vegetation clearance, relocation of animals.

This kaitiaki process and associated outcomes will be relevant to the implementation of this CEMP.

1.5 Greenroads

The Transport Agency delivers environmental and social outcomes as part of the design, construction and operation of state highway projects. These outcomes are delivered as part of the Agency's commitment to environmental and social responsibility, and to address

opportunities or risks raised during the public engagement and approvals processes. The Transport Agency uses Greenroads, an international sustainability rating system to measure the sustainability performance of roading projects.

The Transport Agency is targeting Greenroads accreditation for the detailed design and construction phases of the Project. The Project performance will be assessed against the seven categories, based on sustainability themes and project lifecycle phases, outlined in Table 1.1.

Table 1.1 - Greenroads Accreditation Categories and Themes

Credit Category	Intent of Category
Project Requirements	To encourage environmentally responsible decision-making processes and to have management plans in place for construction and to establish a minimum project baseline. Credit areas include: <ul style="list-style-type: none"> • Ecological impacts • Social impacts and community engagement • Lifecycle costs and asset management • Pollution prevention, waste, carbon and energy management.
Environment and Water	To promote environmental stewardship beyond minimum regulatory requirements in relation to land use, ecological resources and habitat and water management.
Construction Activities	To promote environmental, social and economically responsible construction practices, for example <ul style="list-style-type: none"> • Reducing environmental effects • Best practice health and safety • Sustainable procurement and local economic development.
Materials and Design	To promote responsible practices for materials management to reduce cost, extend service life and reduce maintenance. Credits focus on opportunities for material reuse, recycling and recovery, use of locally sourced materials and whole of life design
Utilities and Controls	To promote best practice in terms of operational aspects, improved mobility and enhanced user experience
Access and Liveability	To promote improved quality of life, including safety, human health, accessibility and place making opportunities
Creativity and Effort	To provide opportunities for innovation and context sensitive approaches that serve and recognise local values

1.6 Relevant RMA conditions

Refer to Appendix B of the CEMP.

1.7 Review and updates to the CEMP

During the course of the Project, and in accordance with the designation and resource consent conditions, the final CEMP will be reviewed and updated to reflect significant changes associated with construction techniques, communication, mitigation or the natural environment. The review process is described in Section 8 of this Plan.

2 Project Description and Construction Method

2.1 Overview

The Project involves the construction of a two lane road alignment (one traffic lane in each direction) to bypass the existing section of SH3 between Uruti and Ahititi, north of New Plymouth. The route will tie back to the existing SH3 corridor at the northern and southern ends of the alignment.

The Project involves the following proposed key construction aspects:

- A tunnel (235m in length) through the ridgeline in proximity to the existing Mt Messenger rest area, with associated tunnel control building and emergency water-supply tanks;
- A 120m long bridge over a wetland on a tributary of the Mimi Stream;
- A 25m long bridge over a tributary of the Mangapepeke Stream, which has been added to the Project as it will provide higher certainty of ensuring appropriate fish passage for a wider range of flows;
- Bulk earthworks over a total area of approximately 19ha, with a cut volume of approximately 960,000m³ and a bulk fill volume of approximately 890,000m³;
- At least 10 cuttings up to a depth of about 60m, covering a combined distance of around 2.6km (including the tunnel portals);
- At least 15 earth embankments up to about 40m in height (but typically less than 5m high), along a combined distance of approximately 2.5km;
- Mechanically stabilised earth (MSE) embankments;
- Stormwater drainage (including the installation of approximately 1,200m of culverts), treatment and attenuation facilities (including stormwater retention ponds, swales and road drainage network);
- Pavement and surfacing activities; and
- Site reinstatement and landscape planting.

A fundamental part of the overall Project is a package of mitigation and biodiversity offsets. The biodiversity offsets include pest management over a 3650ha largely forested area (the Pest Management Area – PMA) adjacent to the Project Area, along with restoration planting. Refer to Section 5.1 of this CEMP for further information on ecological mitigation and biodiversity offsets.

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.

2.2 Construction zones

For the purposes of programme 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 (located to the north and south of the tunnel, respectively).

The construction regions are further split into ten construction zones as outlined in Table 2.1 and illustrated by the Drawings in Appendix C).

Table 2.1 - Construction Regions and Zones

Construction Regions and Zones	Overview of Main Construction Features / Activities*
<p>NORTHERN CONSTRUCTION REGION - Chainage 0 – Chainage 3635</p> <p>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.</p>	
<p>Zone 1- Chainage 0 – 350</p>	<ul style="list-style-type: none"> • Northern tie-in to existing SH3 on alignment <p><i>Note: Zone includes additional 400m on the existing SH3 for construction works which will cross over into Zone 2</i></p>
<p>Zone 2 - Chainage 350 – 2375</p>	<ul style="list-style-type: none"> • Cuts and fills, drainage works • Establishment and operation of main construction yard • Stream diversions • Access tracks / haul roads • Spoil disposal site
<p>Zone 3 - Chainage 2375 - 3400</p>	<ul style="list-style-type: none"> • Cuts and fills, including a large fill on the tunnel approach • Drainage works • Piling under fills • Temporary storage of fill material • Stream diversions • Access tracks / haul roads • Bridge construction, which will comprise: <ul style="list-style-type: none"> ○ Access to the bridge works site ○ Earthworks for the bridge abutments and supporting MSE walls. ○ In-situ pour concrete ○ Steel erection and deck slab construction
<p>Zone 4 – Chainage 3400 – 3635 (the tunnel)</p>	<ul style="list-style-type: none"> • Tunnel portal construction • Tunnel construction yard establishment and operation • Tunnelling operations • Installation of tunnel lighting, ventilation etc. • Construction of tunnel control room and water tanks
<p>SOUTHERN CONSTRUCTION REGION - Chainage 3635 to Chainage 5955</p> <p>Excess fill from the southern zone will amount to approximately 145,000m³ of structural fill and unsuitable material. This will likely be moved from the south to the north or taken to nearby spoil disposal sites depending on the construction programme.</p>	

Construction Regions and Zones	Overview of Main Construction Features / Activities*
Zone 5 – Chainage 3635 – 4150	<ul style="list-style-type: none"> • Large cut and fill works between the tunnel and the bridge • Access tracks • Drainage works
Zone 6 – Chainage 4150 – 4270 (the bridge)	<ul style="list-style-type: none"> • Access tracks to the bridge work site • Bridge construction yard establishment and operation • Bridge construction, which will comprise: <ul style="list-style-type: none"> ○ Piling works ○ In-situ pour concrete ○ Steel erection ○ Deck slab construction
Zone 7 – Chainage 4270 - 4825	<ul style="list-style-type: none"> • Cuts and fills • Access tracks • Drainage works
Zone 8 – Chainage 4825 - 5250	<ul style="list-style-type: none"> • Cuts and fills • Drainage works • Access tracks • Southern tie-in to existing SH3
Zone 9 – Chainage 5250 - 5955	<ul style="list-style-type: none"> • Cuts and fills • Drainage works • Access tracks • Tie-in to existing SH3
Zone 10 (no Chainage)	<ul style="list-style-type: none"> • Spoil disposal site

* Some construction activities, such as pavement and surfacing, landscaping etc. will be undertaken across multiple construction zones (refer to Section 2.3).

2.3 Construction staging and sequencing

Construction of the Project will be undertaken on a number of fronts or work faces at once, such that different construction operations will, at times, be simultaneously progressed across multiple construction zones.

The construction approach will involve:

- **Preparatory works** – Initial works to enable Establishment Works and Construction Works, such as:
 - site surveys;
 - investigations (including geotechnical investigations);
 - monitoring; and

- works that are a Permitted Activity in the Taranaki Regional Plans can be carried out at any time, provided the Permitted Activity standards are met. The Alliance shall confirm that all measures required by the management plans will be implemented over the duration of the Works.

Should the establishment of site access and construction yards etc. not be undertaken during the Preparatory Works phase, they will be undertaken as part of the Establishment Works phase, outlined below.

- **Establishment works** – 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.
- **Main construction works** – 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.

Figure 2-1 shows the indicative construction programme and sequencing for the Project.

		2018			2019			2020			2021			2022		
Mobilisation and Site Establishment	Northern Region															
	Southern Region															

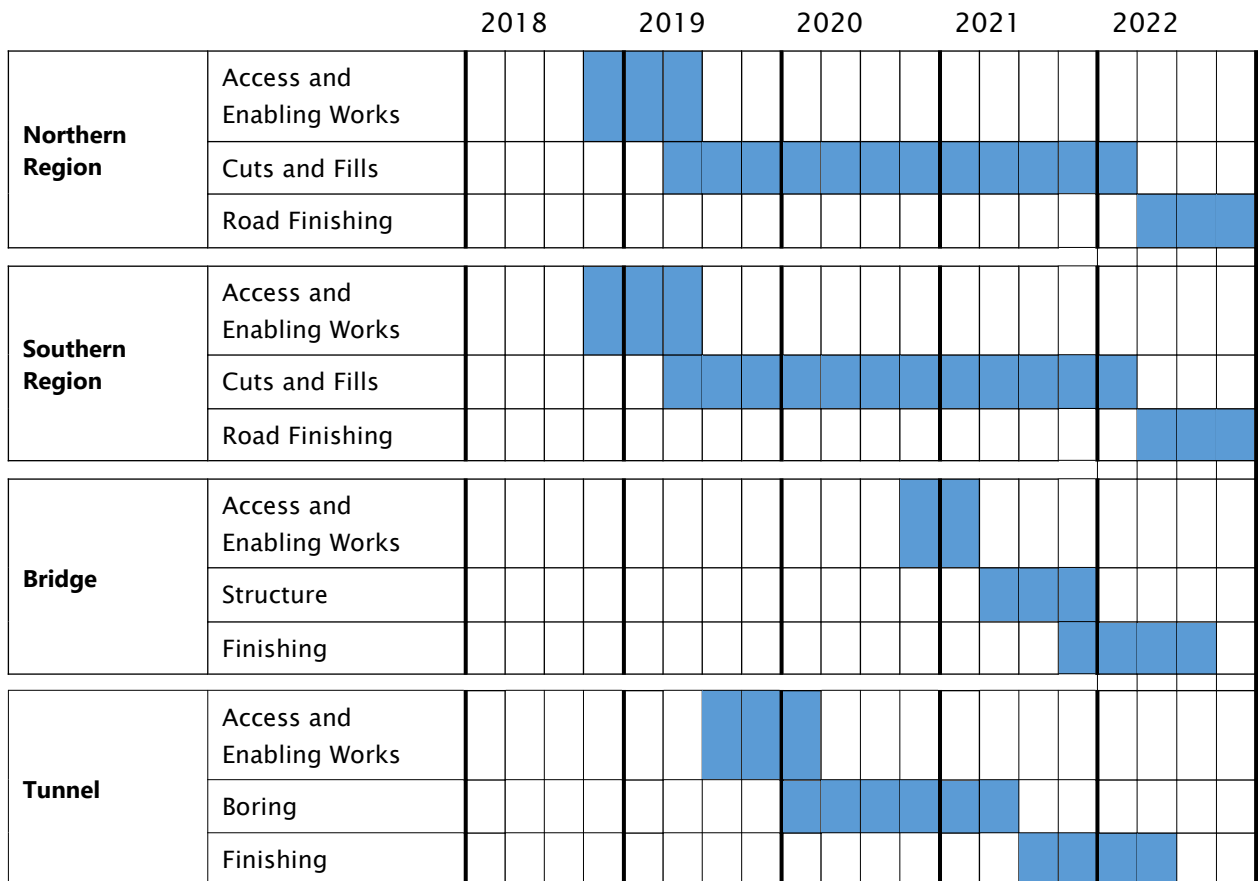


Figure 2-1 - Indicative Construction Programme and Sequencing

The overall strategy for the construction sequence is as follows:

- Establish construction yards, site access points, access tracks and erosion and sediment controls in the northern construction region. Undertake site survey prior to vegetation clearance, install drainage works, including temporary and permanent works as appropriate (drainage installation will continue throughout the construction phase).
- While works in the northern construction region works are underway, commence construction of site access points, laydown areas, and installation of environmental controls in the southern construction region. The initial focus will be on establishing a number of site access points 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, 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, followed by 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.
- 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 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 undertaken across the wider Project Area, including reinstatement of construction yards and haul roads, and restoration and landscape planting in accordance with the Project Landscape and Environment Design Framework (LEDf) and the Ecology and Landscape Management Plan (ELMP). 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 at least 6ha of kaihikatea swamp forest, at least 9ha of mitigation planting, and restoration of 8.455km of riparian margin, and revegetation of as much of the construction footprint that will not be road as is practicable.

Refer to the construction staging drawings in Appendix C for further detail on construction staging and sequencing.

Throughout this work, a programme of ecological monitoring and management will be in place to avoid, remedy or mitigate potential ecological effects. This programme will include the salvage, recovery and translocation of flora and fauna from within the construction area as described in Section 5.1, and detailed in the ELMP.

2.4 Construction method

This section outlines the general Project related construction activities.

2.4.1 Vegetation clearance

Vegetation clearance 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.

Vegetation clearance will be undertaken in accordance with the Landscape and Vegetation Management Plan chapter of the ELMP (Appendix D of this CEMP), the Project's vegetation clearance protocols for bats, lizards, kiwi and peripatus and the Constraints Map in Appendix A of the ELMP. Prior to vegetation clearance occurring, a pre-clearance ecological survey will be undertaken and this will form the bases of the Constraints Map.

2.4.2 Demolition

Any demolition required within the designation (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 includes procedures for safely handling any hazardous substances, such as asbestos.

2.4.3 Earthworks

The earthworks will generally comprise the following, outlined in further detail below:

- Site establishment works – topsoil stripping, establishment of erosion and sediment controls, installation of permanent and temporary drainage;
- Access track / haul road construction;
- 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.

All earthworks shall be undertaken in accordance with the Construction Water Management Plan (CWMP) (Appendix E to this CEMP) and will be subject to Specific Construction Water Management Plans (SCWMPs) prepared for individual construction activities and / or locations prior to the commencement of the respective works (refer to Section 5 of the CEMP and the CWMP for further detail on the SCWMPs).

2.4.3.1 Site establishment

Site preparation undertaken prior to the commencement of main earthworks activities 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.

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.

2.4.3.2 Access tracks

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

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 peat is of greater depth or extent, meaning that removal of the peat is not practical (i.e. where peat depth is greater than 500mm).

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

Refer to Figure 2-2 and Figure 2-3 for cross sections of typical access track arrangements.

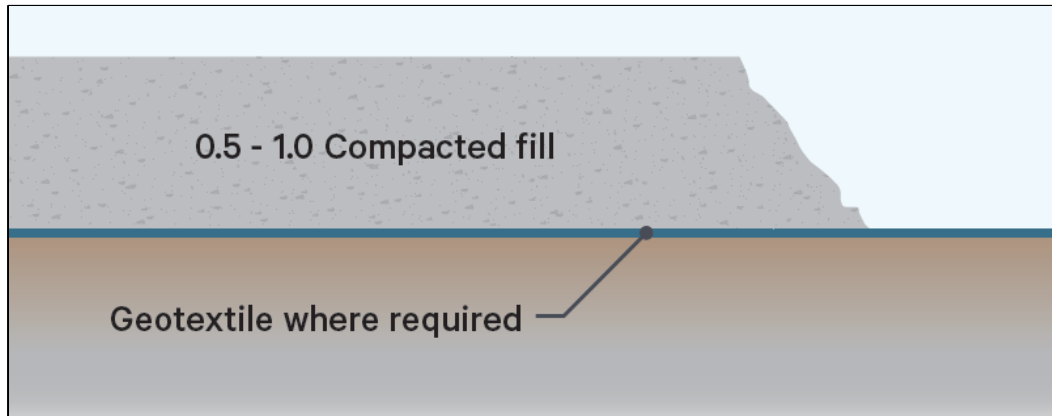


Figure 2-2 - Proposed access track construction

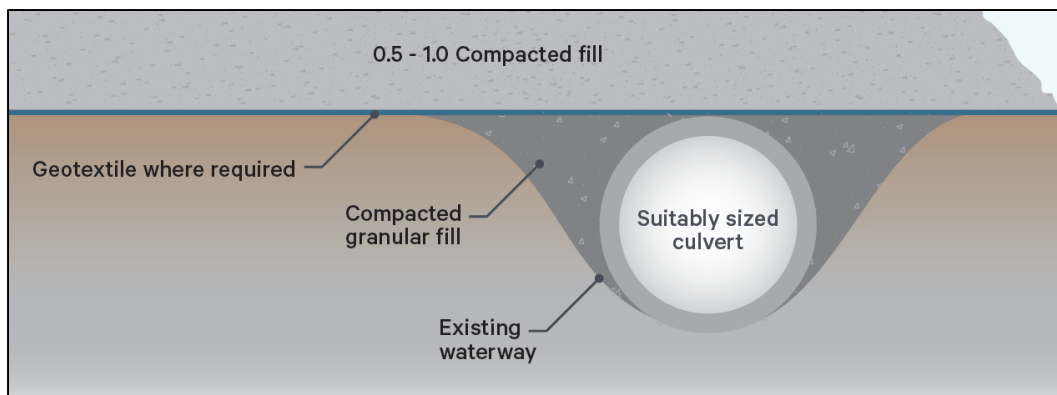


Figure 2-3 - Proposed construction of an access track over an existing waterway

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 last 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.

2.4.3.3 Gully clearing and filling

Gullies located 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 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 respective SCWMPs.

2.4.3.4 Bulk earthworks

The Project will require the disturbance of a large area of land within the Project designation boundaries. Bulk earthworks will occur over a total area of approximately 19ha. Of this, around 13ha is located within the Tongaporutu catchment and around 6ha is within the Mimi catchment.

The total volume of cut and fill required for the Project will be approximately 960,000m³ of cut and 890,000m³ of fill. Approximately, 145,000m³ of excess structural and unsuitable fill will be generated during the earthworks. Construction staging will involve excess material from cuts being used in embankments or placed in spoil disposal sites, enabling earthworks operations to be contained within the designation boundary.

An overriding principle for the Project has been to minimise the land disturbance required in order to reduce construction related sediment from entering streams and watercourses and, in turn, the downstream coastal receiving environment.

Erosion control during construction works will be based on minimising sediment generation in the first instance through a reduction in the erosion potential of exposed soils. Erosion control will be the highest priority in the design of erosion and sediment control measures as it prevents, as far as practicable, sediment generation through a range of structural (physical) and non-structural (construction sequencing and staging and site management practices) measures.

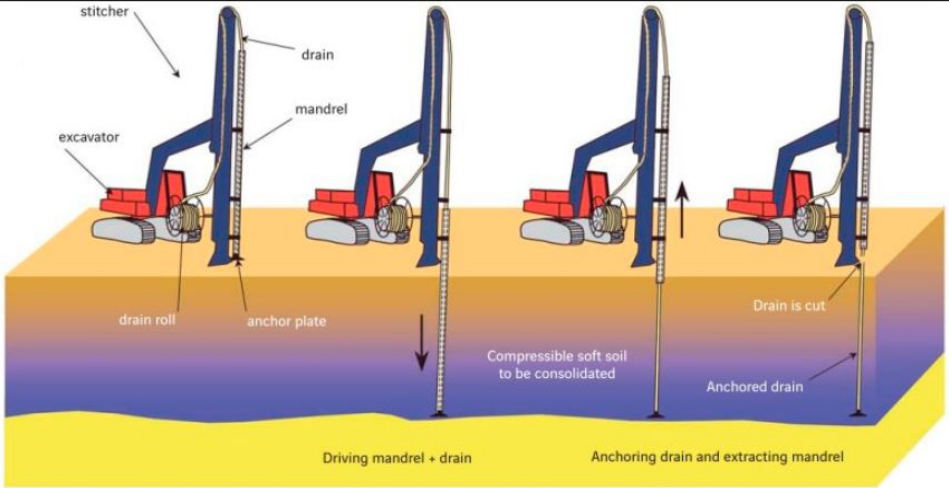
Erosion and sediment control will be undertaken in accordance with the CWMP and the SCWMPs. Measures will comprise:

- Sediment retention ponds;
- Decanting earth bunds;
- Container impoundment systems;
- Silt fences and filter soaks; and
- Flocculation.

Table 2.2 provides an overview of the bulk earthworks activities to be undertaken during the construction phase.

Table 2.2 - Overview of Bulk Earthworks Activities

Earthworks activity	Works Method
Cut slopes	<ul style="list-style-type: none"> • 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.
Rock cuttings	<ul style="list-style-type: none"> • 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. 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.
Low earth fill embankments	<ul style="list-style-type: none"> • Embankments in low-lying valleys will likely be underlain by very soft to soft, highly compressible alluvial soils. 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 1-2 m high and will be in place for 6 - 9 months duration (refer below for further detail). • 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 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 and relevant SCWMP.
Higher embankments and MSE fills	<ul style="list-style-type: none"> • Higher embankments with steep slopes and MSE fills, located on soft alluvial soils, will either be undercut and replaced with compacted fill or a load transfer platform constructed at the base of the embankment using driven timber piles with geogrid and a gravel platform. • Higher embankments located in the more elevated gullies will likely 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

Earthworks activity	Works Method
	<p>from nearby cuttings and/or the tunnel.</p> <ul style="list-style-type: none"> • 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.
<p>Wick drains</p>	<p>Wick drains installation method involves constructing access tracks and embankments as follows:</p> <ul style="list-style-type: none"> • 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 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. 

2.4.3.5 Spoil disposal sites

Spoil disposal sites will be required throughout the Project Area to dispose of material that is unsuitable for use in construction. Construction of the Project is anticipated to generate approximately 145,000m³ of surplus fill material (structural and unsuitable).

Spoil disposal sites are shown on the plans at Appendix C and will be as follows:

- Two sites will be located in the northern construction region where earthworks will generate a surplus of material, thereby reducing haulage distances.
- One site will be located in the southern 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. 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 and SCWMPs. Wet materials will be contained behind bunds to manage any discharge from the material. Any dust generated from the spoil disposal sites will be managed in accordance with the Construction Dust Management Plan (CDMP) (Appendix F of this CEMP).

Following completion of construction, disposal areas will be contoured, landscaped, and vegetated in accordance with the provisions of the ELMP and LEDF.

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.

2.4.3.6 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 drawings in Appendix C). Stockpiles will be constructed and bunded in accordance with erosion and sediment control and dust management requirements outlined in the CDMP (refer to Appendix F). Temporary stockpiles will be removed at the completion of construction.

2.4.4 Works in streams

2.4.4.1 Stream diversion / realignment

Stream diversions will be required during the construction to temporarily divert flows around working areas in order to allow construction works to progress or to provide access to a construction area. 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 relevant SCWMPs and the Freshwater Ecology Management Plan chapter of the ELMP.

2.4.4.2 Culverts

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 by pumping around the area of works or by creating a temporary stream diversion around the culvert footprint (refer to the CWMP in Appendix E for details on these methodologies). SCWMPs will be prepared for all culvert installation and works in streams. Refer also to the Freshwater Management Plan chapter of the ELMP for fish passage requirements through temporary culverts.

2.4.5 Bridge construction

The Project includes the construction of two bridges:

- At CH 2400: 25m single span bridge supported on MSE walls (refer Figure 2-4).

Access to construct this bridge will be from adjacent haul roads within the Project alignment, or from the main access road by a temporary crossing of the Mangapepeke Valley constructed at the bridge location.

Construction of this bridge will require:

- Access to the base of both MSE walls.
- Undercutting existing ground and benching into rock.
- Backfilling of the undercut and up to the MSE wall location.
- Construction of MSE walls, which entails installation of strap reinforcements connected to precast concrete panels.

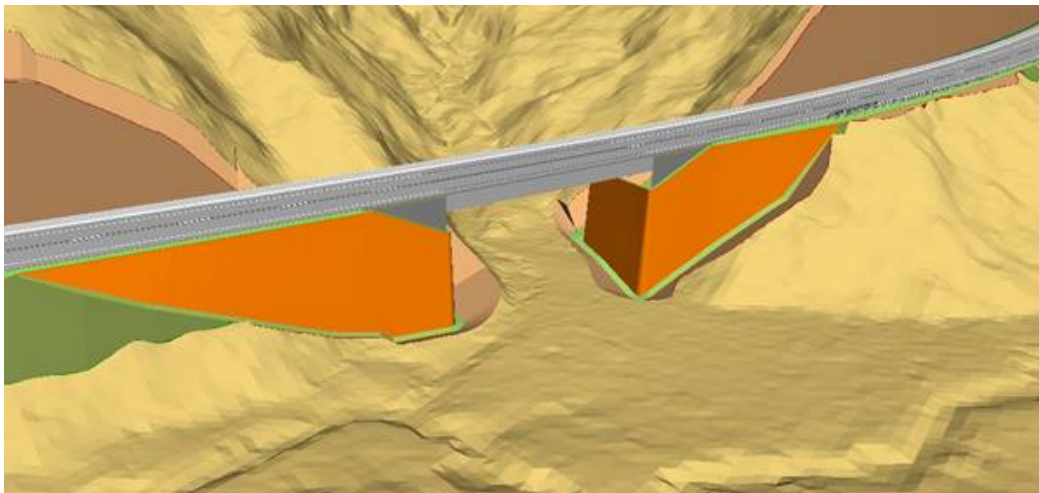
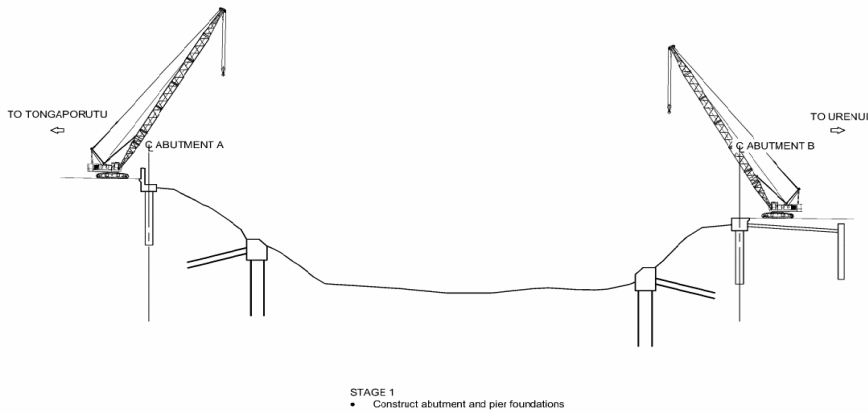
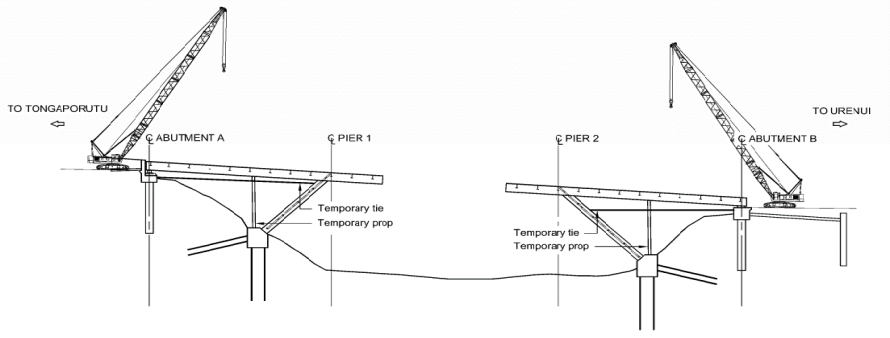
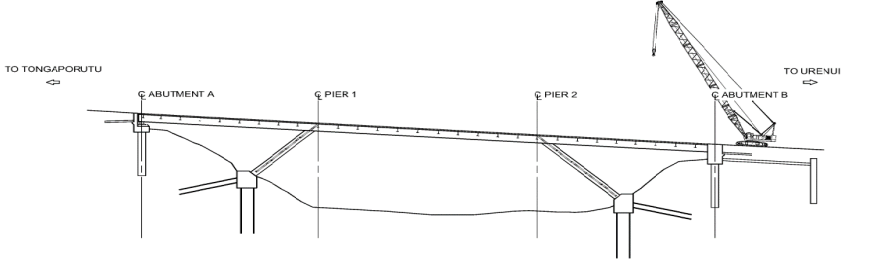


Figure 2-4: Indicative illustration of Bridge at CH 2400

- At CH 4150: 120m bridge supported on Micropiles or shallow foundations. The proposed bridge construction methodology will comprise three main stages as outlined in Table 2.3 and shown on the drawings in Appendix C.

Table 2.3 - Bridge Construction Works at CH 4150 (Zone 6)

Stage	Proposed Works
<p>Stage 1</p>	<p><u>Bridge Abutment Foundations</u></p> <p>Construction of the bridge abutment foundations will be as follows:</p> <ul style="list-style-type: none"> • Construct 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. <p><u>Bridge Pier Foundations</u></p> <p>Construction of the bridge pier foundations will be as follows:</p> <ul style="list-style-type: none"> • 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. • 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.  <p><i>Indicative Stage 1 Construction</i></p>
<p>Stage 2</p>	<p><u>Bridge Piers</u></p> <ul style="list-style-type: none"> • Erect braced piers at both ends • Place steel superstructure to both ends.

	 <p style="text-align: center;"> STAGE 2 • Erect brace piers both ends • Place steel superstructure both ends </p> <p style="text-align: center;"><i>Indicative Stage 2 Construction</i></p>
<p>Stage 3</p>	<p><u>Bridge Deck</u></p> <ul style="list-style-type: none"> • Erect central steel superstructure span • Complete temporary deck bracing • Remove temporary ties and props • Erect deck slab panels • Construction in-situ deck and concrete barriers • Install expansion joint, barrier joints and barrier steel top rail.  <p style="text-align: center;"> STAGE 3 • Erect central steel superstructure span • Complete temporary deck bracing • Remove temporary ties and props • Erect deck slab panels • Construct in-situ deck and concrete barriers • Install expansion joint, barrier joints and barrier steel top rail • Lay surfacing </p> <p style="text-align: center;"><i>Indicative Stage 3 Construction</i></p>

2.4.6 Tunnel construction

Construction of the new tunnel will be generally progressed in three main stages as outlined in Table 2.4 and shown on drawings in Appendix C.

Table 2.4 - Tunnel Construction Method

Construction Stage	Construction Activities
Stage 1	<ul style="list-style-type: none"> • A tunnel construction yard will be established at one end of the tunnel, followed by assembly of tunnelling equipment (including installation of the construction ventilation, water treatment and electrical systems).
	<ul style="list-style-type: none"> • 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.
	<ul style="list-style-type: none"> • 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 portal, using arched steel tunnel sets and rock-bolts and shotcrete, as required.
	<ul style="list-style-type: none"> • Construction of the upper section of the tunnel will commence using a Roadheader. Tunnel support by rockbolts and shotcreting of the excavated material will be installed in stages as tunnel construction progresses. • Dump trucks will remove tunnel spoil as it is generated for use as general construction fill.
	<ul style="list-style-type: none"> • 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 above.
Stage 2	<ul style="list-style-type: none"> • 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.
	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 (lighting, fire suppression, ventilation, automation/monitoring). Commissioning and testing of the tunnel system will follow the tunnel fit-out.

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 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.

Any water associated with shotcreting will be collected and treated.

2.4.7 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.

2.4.8 Site access

Access to the site during construction will be via specified site access points (SAPs), connected to SH3 as outlined in Table 2.5 and shown in Figure 2-5. To enable the safe transport of large construction plant to the site and maintain state highway operations, modifications to discrete sections of SH3 will likely be undertaken as outlined in Table 2.5.

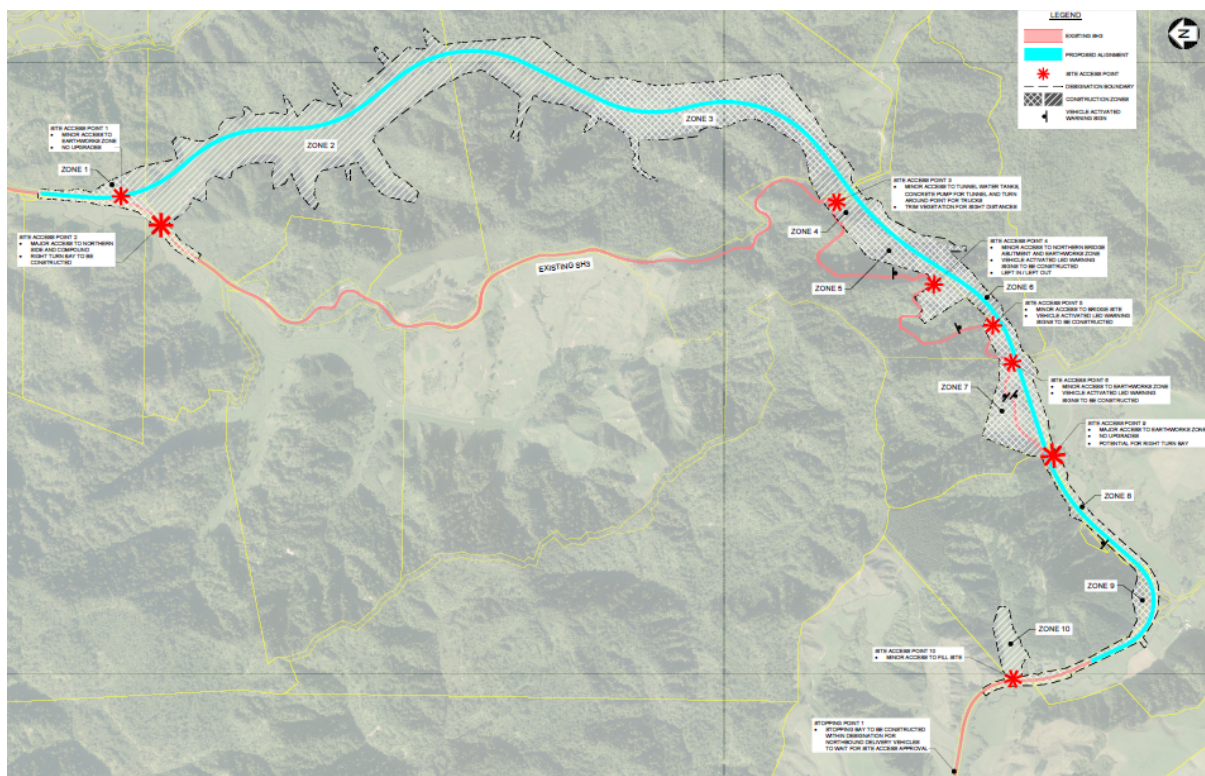


Figure 2-5 - Location of Site Access Points along the route (refer to the Construction Traffic Management Plan in Appendix G for full size drawing)

Table 2.5 - Site Access Points

SAP and Construction Zone	Purpose	Site Access Point Operation
SAP 1 Zone 2	SAP 1 will provide access to zone 2 during the early phase earthworks.	The first 10m of the access point will be stabilised.
SAP 2 Northern Construction Region	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 Construction) to facilitate the safe movement of traffic in and out of the site.
SAP 3 Zone 4	<p>SAP 3 is located at the top of the hill adjacent to the tunnel control building and will provide access for:</p> <ul style="list-style-type: none"> • 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.	<p>SAP 4 will be located on the outside of a bend in a steep, slow speed area. Safety improvements will include:</p> <ul style="list-style-type: none"> • 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	<p>SAP 5 will be the primary access to the northern end of the southern construction region for:</p> <ul style="list-style-type: none"> • the southern bridge abutment and yard • 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	SAP 6 will be a minor access point for preparatory works in zone 7 (environmental	Vehicle activated LED warning signs will be installed.

SAP and Construction Zone	Purpose	Site Access Point Operation
Zone 7	controls, vegetation clearance etc), when access via SAP 5 is not practical.	
SAP 7 Zone 7	As Fill Disposal Area 3 has been deleted, SAP 7 is no longer required.	
SAP 8 Zone 7	As Fill Disposal Area 3 has been deleted, SAP 8 is no longer required.	
SAP 9 Zones 7 and 8	<p>SAP 9 is located at the southern end of the Project where the new alignment meets SH3.</p> <ul style="list-style-type: none"> • It will initially provide 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.
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 stabilised shoulder.

All site access points will be signposted and secured with gates and security fencing, where practicable. Access points will be managed in accordance with the Transport Agency Code of Practice for Temporary Traffic Management (CoPTTM), and appropriate controls (such as flashing beacons) and speed restrictions implemented as required.

Refer to the Construction Traffic Management Plan (CTMP) provided at Appendix G for further detail on the management of site access points and construction traffic during the Project.

2.5 Construction yard and support areas

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

The yard locations (outlined in table 2.6 and shown on drawings in Appendix C) 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). All storage of equipment associated with the construction works shall take place within the boundaries of the Project designation.

Upon the completion of works, the construction yards will be disestablished and the areas reinstated. Reinstatement will be undertaken in accordance with the LEDF and ELMP.

It is estimated that the number of construction staff working on-site will peak at approximately 200 to 250 persons.

Table 2.6 - Overview of Construction Yards and Support Areas

Construction Yard and Area	Key Construction Activities / Features
<p>Main construction yard Northern end of the alignment (Chainage 400 – 550). Approximately 5,000m²</p>	<ul style="list-style-type: none"> • Main Project office, administrative centre (with training room, first aid room and toilets) and meeting place for construction staff • Main carpark for the site • Main plant/equipment storage and workshop and servicing • Fuel storage and refuelling facilities • Main access to northern end of alignment • Main delivery point and laydown area for materials (including stockpiles) • Transfer and segregation point for site and Project office waste (for off-site disposal)
<p>Secondary construction yards</p> <ul style="list-style-type: none"> • Tunnel yard and laydown area • Bridge yard and laydown area • Remote work areas <p>Approximately 2,500m²</p>	<p>Secondary construction yards will provide for:</p> <ul style="list-style-type: none"> • Small office and welfare facility • Local plant/equipment storage • Local access to alignment • Delivery point for construction materials • Collection of site waste.

Figure 2-6 provides an indicative layout for the main construction yard.

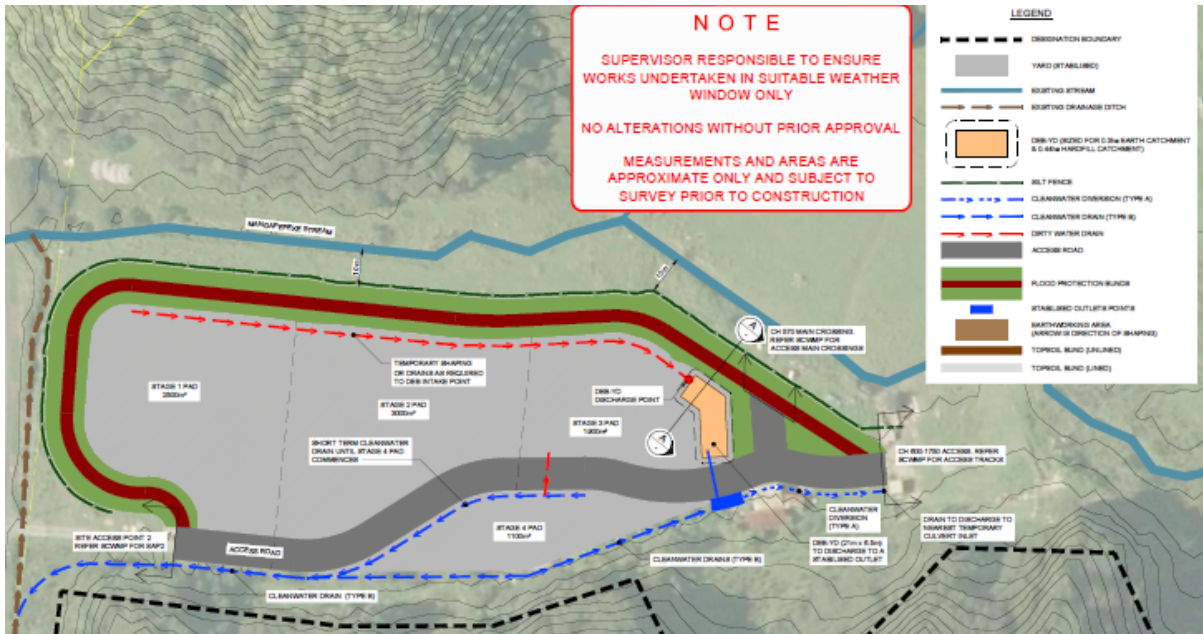


Figure 2-6 – Main Construction Yard – Indicative Layout

2.5.1.1 Construction yard operation

Construction yards will operate as follows:

- Construction yards will typically operate Monday to Sunday 6.30am–9pm (typical construction hours for the Project). Some works may occur outside of these hours outlined in Section 2.13.
- Buildings within the construction yards will be single storey pre-fabricated buildings.
- Stormwater discharge from hardstand areas of the yard will be managed in accordance with the CWMP (Appendix E).
- The construction yards will be lit with lighting directed inwards into the yard in order to minimise light spill beyond the yard boundaries. Glare will be kept below the recommendations in AS 4282 – 1997 “Control of the Obtrusive Effects of Outdoor Lighting”.
- Dust generated from operation of the yards will be managed in accordance with the CDMP (Appendix F).

2.5.2 Site parking

The majority of staff and vehicle parking will be located within the dedicated construction yards. Areas of car parking in the construction yards will be designed to separate vehicles and pedestrians by using designated pedestrian walkways, designed vehicle routes, and strategically placed pedestrian crossing points.

- Appropriate signage within site car parks will safely direct people to their intended location;
- Car parks will have adequate lighting to ensure the safety of both the pedestrian and vehicle traffic; and

- Car parks will consist of an all-weather clean basecourse surface with an effective drainage solution.

2.6 Site security and safety

Generally site security will be maintained by establishing temporary construction fences at the perimeter of all Project construction areas. Gates will be provided at construction entry and exit points and locked shut when the site is unattended, as practicable.

2.7 Project notice boards

Project notice boards will be located in prominent locations around the Project Area. Notice boards will identify:

- The Project name;
- The Transport Agency (as the Requiring Authority and consent holder) and the Alliance; and
- The Project hotline.

2.8 Site house keeping

All work sites will be maintained in a tidy and neat condition, and due care shall be taken to prevent damage to any adjoining public or private property. All litter and liquid contaminants will be removed and disposed of in an appropriate manner. Equipment and materials will be stored safely, securely and in an orderly manner. No plant, buildings, debris, or other materials shall be placed or allowed to roll, wash, slide or blow across site boundaries. For further information on site waste management refer to Section 5.11.

On completion of construction work all plant, temporary facilities, debris surplus and foreign materials will be removed from the site as practicable.

2.9 Construction Vehicles and Plant Movement

Construction vehicle and plant movements around the site will be managed in accordance with the requirements within the ELMP, including the biosecurity chapter.

2.10 Site reinstatement

Construction areas, including haul roads, construction yards and laydown areas will be reinstated following the completion of works, in accordance with the LEDF and the ELMP.

2.11 Network utilities

The Project will require the relocation and protection of network utilities during the construction phase as follows:

- Power connections providing supply to existing dwellings; and
- Protection of the existing Chorus cable by Mt Messenger tunnel.

All work will be undertaken in accordance with the National Code of Practice for Utility Operators' Access to Transport Corridors (which picks up the requirements of the various

Acts and Regulations).

In accordance with the Code of Practice, Network Utility Operators will have the opportunity to lay new services during the construction works.

It is anticipated that new ducts for Chorus fibre-optic cable will be installed during construction, along the berm of the new alignment, under the new bridge, and along the tunnel's cable tray.

All excavation will be undertaken in accordance with the Alliance's 'permit to dig' system. The Alliance will continue to work closely with the relevant service providers to undertake any necessary protection and/or relocation works during construction.

2.12 Programme

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. A staging programme for the proposed works is provided in Section 2.3 and a larger version in Appendix H. The programme identifies the main areas of work, and general activities to be undertaken.

2.13 Hours of work

General working hours will be Monday to 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:

- work on the existing SH3 corridor including site access points and tie-ins connecting the new road to the existing SH3 to minimise disruption to SH3 traffic;
- the delivery of oversized material and equipment (such as bridge and tunnelling equipment), to minimise disruption to SH3 traffic;
- tunnelling works, which will be undertaken around the clock during the construction of the tunnel. The ability to work at all hours on the tunnel is a significant program and cost advantage, for example allowing the tunnel supports time to cure and gain the required concrete strength before the construction team is able to work under it to progress the tunnel excavation again;
- early morning concrete pours, to allow for efficient use of people and resources; and
- servicing of plant and equipment onsite, to minimise impacts on the 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 when undertaken in proximity to occupied dwellings. However, much of the alignment has large setbacks to the nearest receivers and shielding from the local

topography, which will enable compliance with the night-time noise limits.

In relation to the operation of the southern spoil disposal site, should the Transport Agency not rent or otherwise occupy the dwelling at 2397 Mokau Road during construction:

- the southern spoil disposal site shall only operate Monday to Saturday 7:30am to 6:00pm to comply with the NZS6803:1999 limits; and
- no works will be permitted on Sundays or public holidays or between 1800 and 0730 Monday to Saturday.

Construction activities will be undertaken in accordance with the Construction Noise Management Plan (CNMP) – refer to Section 5.7 and Appendix I.

3 Environmental and Cultural Management

This section provides a summary of the construction activities and related environmental, cultural and social aspects of the Project, including the location of key construction activities, sensitive receptors and legal requirements applicable to the management of the works.

3.1 Construction activities and environmental receptors

The management plans appended to this CEMP identify construction activities that have the potential to result in adverse environmental effects, and outline the proposed measures to avoid, remedy, mitigate or offset these effects. The key receiving environments and receptors that may be affected during construction of the Project are outlined below. Management of construction effects is further detailed in Section 5 of this CEMP.

3.1.1 Sensitive receiving environments

3.1.1.1 Freshwater environments

The Project will require works within the Mangapepeke and Mimi catchments (note: the Mangapepeke is a sub-catchment of the Tongaporutu catchment immediately above the extent of works), which have been identified in the Assessment of Ecological Effects – Freshwater Ecology prepared for the Project (AEE Technical Report 7b) and the ELMP, as sensitive receiving environments.

3.1.1.2 Flora and fauna

The Project Area contains high value ecosystems and habitat for indigenous terrestrial and aquatic flora and fauna, as outlined in Chapter 2 of the ELMP provided at Appendix D. The locations of important ecological values and constraints within the Project footprint are shown on the Ecology Constraints Map provided in Appendix A of the ELMP.

Of greatest ecological significance in the wider Project Area to the east of SH3 area is the hydrologically intact swamp forest and non-forest wetland areas in the valley floor of the northern Mimi River catchment. 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 ELMP outlines a suite of protocols to be implemented during construction to avoid, remedy, mitigate or offset adverse environmental effects on ecological values.

3.1.2 Key receivers

The Project is located in a relatively undeveloped rural area characterised by low intensity farming (particularly at the northern and southern ends of the alignment) and bush. Dwellings located in proximity to the construction area (as shown on the drawings at Appendix C) are limited to:

- 2528 Mokau Road at the southern end of the alignment, approximately 120m from the nearest point of earthworks;

- 2397 Mokau Road at the southern end of the alignment, approximately 30m from the southern stockpile area; and
- 2750 Mokau Road, which is approximately 300m from the nearest point of earthworks (located on the opposite side of a ridgeline to the works).

It is noted that the dwelling at 3072 Mokau Road (SH3) at the northern end of the alignment, will not be occupied during the construction works and hence is not considered a sensitive receiver.

Specific mitigation may be required to address construction nuisance issues at these dwellings (construction noise, dust), depending on the specific construction activities occurring in proximity to these properties. Further detail is provided in the CDMP (Appendix F) and the CNMP (Appendix I).

3.2 Legislative and other requirements

This section details the statutory framework and other requirements for environmental management of the Project and outlines the relevant legislation, policies and plans.

3.2.1 National legal requirements and policies

Construction of the Project must comply with a range of national legislation, regulations, strategies and policies in order to provide for the management of environmental effects. Key documents, national environmental legislation and regulations relevant to the Project are outlined in Table 3.1.

Table 3.1 - Key legislative requirements, regulations and standards

National legislation, regulations, strategies and policy
Resource Management Act 1991 (RMA)
Hazardous Substances and New Organisms Act 1996 (HSNOA)
Dangerous Goods Act 1974 and Regulations
Protected Objects Act 1975 (for the relevant archaeological and heritage standards/practices)
Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA)
New Zealand Coastal Policy Statement 2010
National Environmental Standard – Air Quality 2004 (NES Air Quality)
National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011 (NES Soil)
The Wildlife Act 1953
Freshwater Fisheries Regulations 1983
Health and Safety at Work Act 2015

National legislation, regulations, strategies and policy
Health and Safety at Work (Asbestos) Regulations 2016
Health and Safety at Work (Hazardous Substances) Regulations 2017

3.2.2 Relevant legislation, standards and guidelines

Table 3.2 identifies standards and guidelines which are relevant to specific environmental aspects of the Project and will be read in conjunction with relevant management plans of this CEMP.

Table 3.2 - Plans, standards and guidelines associated with environmental aspects

Environmental Aspect and / or Management Plan	Plans, Guidelines and Standards
Environmental and Social Management	<ul style="list-style-type: none"> • Transport Agency State highway environmental plan: improving environmental sustainability and public health in New Zealand 2008 • Transport Agency Environmental and Social Responsibility Policy
Ecological Management	<ul style="list-style-type: none"> • Environment Institute of Australia and New Zealand, Ecological Impact Assessment Guidelines 2015 • ANZECC 2000, Australian and New Zealand Fresh and Marine Water Quality Guidelines • Cawthorn 2002, Estuarine Environmental Assessment and Monitoring: A National Protocol • NZ Transport Agency, Fish Passage Guidance for State Highways, 2013 • NIWA, New Zealand Fish Passage Guidelines, April 2018
Construction Noise and Vibration	<ul style="list-style-type: none"> • NZS 6803:1999 Acoustics – Construction Noise • DIN 4150–3:1999 Structural Vibration (German standard) • BS 5228:2009 Code of Practice for Noise and Vibration Control on Structures (British Standard) • NZS 6801:1991 Measurement of Sound • NZS 6802:1991 Assessment of Environmental Sound • Transport Agency State highway construction and maintenance noise and vibration guide, August 2013
Air Quality	<ul style="list-style-type: none"> • Ministry for Environment, Good Practice Guide for Assessing and Managing the Environmental Effects of Dust Emissions 2001 • Transport Agency Guide for Assessing Air Quality Impacts from State Highway Projects, 2014 • AS/NZ 3580.1.1: 2007 Method for sampling and analysis of ambient air – Guide to siting air monitoring equipment • National Environmental Standard for Air Quality (AQ NES)

Environmental Aspect and / or Management Plan	Plans, Guidelines and Standards
Groundwater	<ul style="list-style-type: none"> NZS4411: 2001 Environmental Standard for Drilling of Soil and Rock
Contaminated Land Management	<ul style="list-style-type: none"> National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, 2011 MfE A Guide to the Management of Cleanfills 2002 Code of Practice for the Management and Removal of Asbestos, 2016 New Zealand Guidelines for Assessing and Managing Asbestos in Soil, 2017 MfE Contaminated Land Management Guidelines No 1 to 5 NZ Geotechnical Society Guideline for the classification and field description of soils and rocks for engineering purposes MfE Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand Soil Quality Guidelines from the Canadian Council of Ministers of the Environment
Hazardous substances	<ul style="list-style-type: none"> Hazardous Substances (fireworks, safety ammunition, and other explosives transfer) Regulations 2003 no. 2003/176 Land Transport Rule 45001/1 and 45001/2: Dangerous Goods 2005 AS/NZ 2430.3 Classification of Hazardous Areas AS 2430.1:1987 Classification of Hazardous Areas – Explosive Gas Atmosphere NS 6101.1:1998 Classification of Hazardous Areas – Flammable Gas and Vapour Atmospheres AS/NZS 238 and AS/NZS 61241.1.2 Electrical Installations in Hazardous Zones Land Transport Rule 45001/1 and 45001/2: Dangerous Goods Railways Act 2005
Construction Traffic Management	<ul style="list-style-type: none"> The Transport Agency Traffic Control Devices Manual The Transport Agency Code of practice for temporary traffic management (COPTTM): Part 8 of the Traffic Control Devices manual (TCD Manual) 2012 The Transport Agency Manual of Traffic Signs and Markings – relevant to the design and planning of signage, line marking and road layouts affected by the Project Austroads Guide to Traffic Engineering Practice – where the design of road layouts, signage or other traffic engineering elements require more detailed analysis Austroads Guide to Road Design Part 3: Geometric Design

Environmental Aspect and / or Management Plan	Plans, Guidelines and Standards
Land disturbance and temporary stormwater management	<ul style="list-style-type: none"> • Transport Agency Erosion and Sediment Control Guidelines for State Highway Infrastructure – Construction Stormwater Management 2014 • Guidelines for Earthworks in the Taranaki Region 2006 • ANZECC 2000 Guidelines • Transport Agency Stormwater Treatment Standard for State Highway Infrastructure 2010
Historic Heritage and Archaeology	<ul style="list-style-type: none"> • Heritage New Zealand Pouhere Taonga Act 2014 • Minimum Standard P45 – Accidental Archaeological Discovery Specification

The Transport Agency’s policies and plans direct environmental management and align it to national legislation, regulations and policy. The Transport Agency’s Environmental Plan implements the Transport Agency’s Strategic Plan and the National State Highway Strategy. Together these documents provide the link between relevant government policies and legislation.

3.2.3 Environmental risk register

The Project Risk Register includes environmental risks associated with the Project’s construction activities. The information contained in the register provides a guide for the implementation of environmental management activities, controls and monitoring, thus minimising environmental impacts.

The Risk Register is a ‘living document’ and will be updated during the course of the Project to address revised construction methodologies. The Risk Register will be reviewed prior to the commencement of construction activities (taking into account finalised construction methodologies) and at regular intervals during construction, including when there is a new or changed activity, equipment or location or following an environmental incident. Changes to legislative requirements may require review and update of the Risk Register. The Environmental Manager shall manage the Risk Register.

3.2.4 Project approvals

3.2.4.1 Notice of Requirement

The Transport Agency is a Requiring Authority as defined in the RMA. The Project is subject to a Notice of Requirement to alter the existing SH3 designation to enable the construction of the Project.

3.2.4.2 Resource Consents

Activities not permitted by a relevant regional plan require resource consents. The Project is subject to resource consents under the following statutory planning documents:

- Taranaki Freshwater Regional Plan (Freshwater Plan);
- Taranaki Soil Regional Plan (Soil Plan);

- Taranaki Air Regional Plan; and
- National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011 (NES Soil).

3.2.5 Compliance

All works shall be carried out in general accordance with the construction drawings and management plans required by the resource consent and designation conditions and attached as appendices to the CEMP. The management plans 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 the consent and designation conditions.

The Alliance will take responsibility for maintaining compliance with the conditions relevant to its scope of works.

3.2.6 CS-Vue

CS-VUE is the compliance system adopted by the Transport Agency to manage planning and environmental statutory requirements. It is a secure database which assigns each consent (or other legal obligation) with a consent manager and condition manager and automatically sends an email notifying them of compliance requirements. The Alliance will use the database to ensure compliance with legal obligations such as resource consents, designation conditions, Archaeological Authorities and any other agreements or obligations, which have compliance conditions.

4 CEMP Implementation

This section addresses the implementation of the CEMP and the management plans. The following areas are covered:

- Roles and responsibilities;
- Training;
- Emergency contacts and response;
- Communication and interfaces; and
- Complaints management.

4.1 Roles and responsibilities

This section describes the project organisational structure for environmental management.

4.1.1 Overview of responsibility for this plan

There are three key groups with responsibility for environmental management of the Project:

- **The Transport Agency** – as the Project owner and holder of the designations and resource consents with overall responsibility for compliance with consent and designation conditions and Project approvals;
- **The Alliance** – contractor undertaking the works with overall responsibility for site environmental management; and
- **Taranaki Regional Council (TRC) and New Plymouth District Council (NPDC)** – who audit the works and monitors compliance with resource consent and designation conditions, the CEMP and management plans.

All Project employees have a responsibility to identify and report all environmental and aspects within the workplace to their immediate supervisor, and for monitoring the environmental awareness practices of subcontractors. These responsibilities will be communicated during the site induction and during tool box meetings throughout the Project.

Site environmental management will be achieved through aspect identification and assessment. Commitment and continuous improvement to the environmental culture by management is critical to its success and continuation.

4.1.2 Specific roles and responsibilities

Project roles and responsibilities with respect to the environmental management during construction of the Project are outlined in Table 4.1.

Table 4.1 - Project Roles and Responsibilities

Project Role	Responsibilities
All Staff	<ul style="list-style-type: none"> • Attending tool–box talks which will include environmental training, including familiarisation with the requirements of the CEMP and management plans; • Responsible for reporting environmental incidents, complaints, defects and other problem areas to senior staff as they arise on site; • Ensuring that required processes and procedures for environmental and sustainability management are followed; • Ensuring that environmental mitigation and protection measures are maintained and working correctly; • Within day to day work responsibilities, ensure the environment both on site and adjacent to the site is protected and respected; and • Ensure the site is tidy and all litter is placed in the correct bins.
Alliance Manager	<ul style="list-style-type: none"> • The Alliance Manager has overall responsibility for the Alliance achieving compliance with resource consent and designation conditions and site environmental management; • The Alliance Manager has ultimate responsibility for achieving the Project environmental and sustainability goals; • Reviews, updates and approves management plans prior to issue; • Ensures adequate resources are provided to ensure environmental issues and obligations are appropriately managed; and • Sets the Project environmental culture.
Construction Manager	<ul style="list-style-type: none"> • Reviews work packages against Project environmental objectives and targets, along with CEMP and management plans to ensure a high level of performance is achieved; • Develops, implements and monitors construction methods ensuring compliance with resource consent and designation conditions, the CEMP and management plans; • Comply with all legislation, regulations, designation and consent conditions in relation to the Project; • Demonstrate understanding of major environmental and community issues and environmentally sensitive areas; • Implement environmental protection and sustainability measures in accordance with the contract, the CEMP and management plans; • Ensure that all workers are trained in relation to environmental measures; • Report all incidents, system defects and complaints to the Alliance Manager; • Ensure all workers and others (e.g. subcontractors and suppliers) comply with environmental operating procedures and community relations protocols; and • Reinforce the Project environmental culture.
Environmental Manager	<ul style="list-style-type: none"> • Provides leadership to ensure staff are motivated to achieve environmental standards, and comply with all resource consent and designation conditions and achieve sustainability goals;

Project Role	Responsibilities
	<ul style="list-style-type: none"> • Develops, implements and reviews environmental management systems, including the CEMP and management plans for the Project; • Coordinates the interfaces and communications with external agencies and stakeholders in relation to environmental management of the Project in conjunction with the Stakeholder Engagement and Communication Manager. Key Project partners and stakeholders include TRC, NPDC, Ngāti Tama and the Department of Conservation (DOC); • Attends meetings with Council Monitoring Officers; • Undertakes regular site inspections and audits to monitor and ensure compliance with the CEMP, management plans and consent and designation conditions and manages compliance information on CS-Vue, including input of all monitoring reports; • Coordinates environmental interfaces with consultants, subcontractors and suppliers; • Manages staff training in site specific environmental procedures; • Manages maintenance and monitoring of the effectiveness of erosion and sediment controls, stormwater and other control devices, including chemical treatment (ie. flocculation); • Ensures spill kits are available and stocked, and provides training on equipment use; • Coordinates environmental emergency responses; • Notifies the Alliance Manager of any significant environmental non-compliances for which they have jurisdiction; • Reports to the Alliance Manager and the Transport Agency any changes to construction techniques or natural environmental changes, which require alterations to existing consents or new resource consents; and • Reinforces the Project environmental culture.
Stakeholder Engagement and Communications Manager	<ul style="list-style-type: none"> • Manage, in collaboration with the Environmental Manager, internal Project communications regarding environmental information; • Responsible for notifying Project neighbours / property owners of works occurring (activities, timing, duration) within proximity and managing mitigation as required; • Disseminates information to key Project stakeholders and road users as approved by the Transport Agency; • Primary contact for Project related enquiries and complaints and manages the complaints response process; and • Manages the Project stakeholder database.
Project Engineers	<ul style="list-style-type: none"> • Provide leadership to the site team to achieve Project environmental objectives and targets to ensure a high level of performance is achieved; • Provide leadership to ensure staff are motivated to achieve sustainability goals; • Provide input into the development and implementation of the CEMP and management plans;

Project Role	Responsibilities
	<ul style="list-style-type: none"> Responsible for ensuring environmental controls and erosion and sediment control works are installed, modified and maintained as appropriate for each stage of construction; Assist in the development, implementation and review of Project environmental objectives; Ensure staff on-site are aware of environmental requirements at all times and sees that routine maintenance to erosion sediment control facilities and management measures continue with on-going effectiveness; and Reinforce the Project environmental culture.
Site Supervisors	<ul style="list-style-type: none"> Monitor operations in accordance with this CEMP and management plans; Take appropriate action to prevent unsound environmental practices; Ensure all subcontractors comply with these requirements; Ensure all employees and subcontractors are inducted prior to commencing work on site; Arrange for work permits, i.e. excavation permit, permit to pump etc.; Report and record all accidents, incidents, injuries and near misses accurately and within specified time frames; and Reinforce the Project environmental culture.
Transport Agency Environmental Representative	<ul style="list-style-type: none"> Checks that non-compliance reporting is undertaken in a timely manner; Review CEMP and management plans, Complaints Register, Incidents and Emergency Register, Non Compliance Report, Environmental Performance Report, if required; and Overview of the Environmental Managers use of CS-Vue.

4.1.3 Contact details

Contact details for those with key responsibilities in the implementation of this CEMP from the Alliance, TRC and NPDC are provided in Table 4.2 with a full contact list provided in Appendix J.

Table 4.2 - Project Contact Details

Role	Name	Contact Details
Mt Messenger Alliance		
Alliance Manager	Hugh Milliken	E: hugh.milliken@mtma.co.nz P: 027 809 8703
Construction Manager	Stuart Haynes	E: stuart.haynes@mtma.co.nz P: 0274 586 708
Environmental Manager	Ed Breese	E: ed.breese@mtma.co.nz P: 021 333 726

Role	Name	Contact Details
Stakeholder Engagement and Communications Manager	Magila Annandale	E: magila.annandale@mtma.co.nz P: 027 272 2656
Zero Harm Manager	Steve Christensen	E: steve.christensen@downer.co.nz P: 0272 911 539
Design Manager	Ken Boam	E: ken.boam@mtma.co.nz P: 021 631 162
Taranaki Regional Council		
TRC Compliance Officer	TBC	TBC
TRC Consents Manager	TBC	TBC
New Plymouth District Council		
NPDC Compliance Officer	TBC	TBC
NPDC Consents Manager	TBC	TBC

4.1 Environmental and cultural training and induction

4.1.1 Project inductions

All Project staff (including subcontractors) will undergo a cultural, environmental induction prior to commencing work on-site. The induction will include information on the surrounding natural, physical and cultural environment and outline all Project staff responsibilities under the CEMP and management plans. The induction will cover the following matters:

- Requirements of Project consent, designation and other approvals/permits, including the Project CEMP and management plans;
- Environmental responsibilities of all Project staff;
- Matters of cultural significance and value to Ngāti Tama;
- Actual or potential environmental effects associated with the Project construction works and the importance of mitigation and site controls to avoid, minimise or offset adverse environmental effects;
- Location of sensitive receptors;
- Areas of high environmental, cultural or landscape value;

- Detail on the ecology of the area and an overview of sensitive areas, including sensitive flora and fauna;
- Spill response and emergency procedures;
- Construction traffic management for works on the SH3 network;
- Hazard and risk management to ensure personnel understand the potential impacts and proposed mitigation measures;
- Project communications and the complaints management procedures; and
- Environmental monitoring.

Staff who have completed the environmental induction will be provided with an appropriate form of identification, such as a sticker to display on the front of their hard hat or an induction card, in order to certify they have been appropriately inducted onto the Project site.

All visitors to site must undergo a visitor’s briefing so they are aware of the environmental, cultural and health and safety requirements while on-site. Visitors must be closely escorted by inducted persons at all times whilst on site.

4.1.2 Environmental awareness training

The Alliance Management Team, Construction Manager, Site Managers, superintendents and environmental and ecology team members (responsible for implementation of the ELMP), will undergo cultural and environmental awareness training to make all aware of their responsibilities relating to this CEMP.

Training will further develop the team's understanding of the consent and designation requirements and sensitive environment in which the Project is located, which will contribute to a strong environmental culture on site. Training will be led by the Environmental Manager (or their nominated delegate) with assistance from the relevant technical specialist as outlined in the management plans.

Training will include specific focus on cultural protocols, ecological, construction water, construction noise and air quality management as outlined in Table 4.3.

Staff responsible for temporary traffic management during construction will undergo traffic management training appropriate to their particular role as outlined in the CTMP.

Table 4.3 - Environmental Awareness Training

Environmental Aspect	Specific Training
Cultural, Heritage and Archaeology	<ul style="list-style-type: none"> • Cultural induction. • Briefing on cultural protocols to be implemented during construction. • Briefing on archaeological requirements of the Project and locations within the Project Area where there may be potential to encounter archaeological remains during ground disturbance. • Project Accidental Discovery Protocol, which outlines the protocols to be implemented should archaeological or cultural remains be discovered during works. Requirements for archaeological and/or

Environmental Aspect	Specific Training
	kaitiaki monitoring during the works.
Erosion and Sediment Control / Construction Water Management	<ul style="list-style-type: none"> • Relevant TRC and Transport Agency erosion and sediment control guidelines. • Design details for the erosion and sediment control and construction water management measures and associated methodologies during construction. • The performance standard as defined in the CWMP to be achieved by all erosion and sediment controls on site. • The sensitivity of the receiving environment to sediment discharges. • Understanding the construction water risk for specific activities and/or locations. • SCWMP requirements.
Streamworks	<ul style="list-style-type: none"> • Briefing on the values of waterbodies within and downstream of the Project Area and the sensitivity of the receiving environment to sediment discharges. • The objectives of the stream design including fish passage requirements. • Briefing on the Project Fish Rescue and Relocation Protocol, which contains the methodology to minimise direct effects of construction on fish, kōura and kākahi (freshwater mussels) prior to draining, diverting or excavating streams. • Construction method requirements for stream works (stream diversions, culverting or other in-stream work), including the set-up of fish passage barriers for isolating sites prior to in stream works (for those involved in this work).
Vegetation Clearance	<ul style="list-style-type: none"> • A briefing on the values of any significant areas of vegetation that are to be retained. • Briefing of the Project Vegetation Clearance Protocol: <ul style="list-style-type: none"> ○ the methods that shall be used to protect vegetation remaining during construction; ○ the removal and relocation of forest resources; and ○ the methodology for mulching and stockpiling wood and topsoil.
Construction Dust Management	<ul style="list-style-type: none"> • Information about the activities and stages of construction that may cause dust impacts within the construction area. • Dust management procedures as per the CDMP. • Dust monitoring. • Additional training will be provided to water cart drivers and site supervisors, in assessing whether sufficient water has been applied for effective dust suppression.
Construction noise management	<ul style="list-style-type: none"> • Project construction noise limits. • Activities with the potential to generate high levels of noise and/or

Environmental Aspect	Specific Training
	vibration. <ul style="list-style-type: none"> • The sensitivity of receivers. • Noise mitigation and management procedures.

An annual environmental and cultural awareness refresher session will be held for relevant when Project staff return after the Christmas shutdown period each year.

Engineers responsible for writing Work Plans, Job Safety Environmental Analysis (JSEA's) or Permits to Work will be given guidance on how to assess and plan for environmental aspects in accordance with the CEMP and management plans.

4.1.3 Site rules/hazard board

The Site Rules/Hazard Board will be displayed in an area where all can see and review upon entering the site. It will list the relevant environmental hazards and controls that have been identified and assessed in relation to the works being undertaken.

The Site Rules/Hazard Board will be reviewed and updated to take account of new hazards and environmental risks, or changes in the degree of risk or hazards.

New hazards or changes in risk will be normally identified in the Method Statements or in the Daily Job Start. In addition, hazards and risks will be reported during Toolbox Meetings, Weekly Safety Inspections and via the Event Reporting system.

4.1.4 Job start briefing

Prior to the start of each shift each crew will be given a Job Start Briefing that will cover all relevant construction packages. The approved JSEA will be used as the reference information for that briefing as follows:

- The briefing will include discussion of safety, quality, environmental protection and sustainability aspects of the activities to be undertaken in that shift.
- Team members will have the opportunity to improve the hazard control elements of the plan.
- All team members will sign on to the Job Start Plan before they commence work.
- The work will then be performed in accordance with the Job Start Briefing, and the approved JSEA.

An environmental management representative will attend as applicable to explain new environmental controls or reiterate existing controls.

4.1.5 Tool box talks

Environmental and cultural issues will form a part of weekly toolbox meetings to ensure all site staff are aware of the key issues. Toolbox talks will be coordinated by the Health and Safety team, Environmental Manager and foremen with all staff, including subcontractors, required to attend. The Project's environmental specialists will be invited to attend toolbox talks on an as required basis.

4.1.6 Training and induction resources and records

Environmental induction and training records will be maintained on site by the Environmental Manager and will include:

- Who was trained;
- When the person was trained;
- The name of the trainer;
- General description of training content;
- Level of competence achieved by the trainee; and
- Expiry dates of training courses/certifications as appropriate.

The Environmental Manager will be responsible for:

- Project staff receiving appropriate environmental training in relation to their position and that appropriately trained personnel are undertaking site activities; and
- Dissemination of all Project environmental procedures to staff.

1 Environmental Management

This section outlines the environmental management measures that will be implemented during construction of the Project to avoid, remedy, mitigate or offset adverse environmental effects. More detail is provided in the management plans appended to this CEMP.

1.1 Ecological and landscape aspects

As outlined in Section 3.1.1, the Project is located in a number of sensitive ecological and landscape areas, including the Mimi and Mangapepeke River catchments, and the swamp forest and non-forest wetland areas in the valley floor of the northern Mimi River catchment. The Project Area contains important ecological and landscape values as outlined in the ELMP included in Appendix D of this Plan and shown on the Ecology Constraints Map (Appendix A of the ELMP).

The ELMP has been prepared to identify how the Project will avoid, remedy, mitigate and offset potential adverse effects on the ecological, biodiversity and landscape values of the land within the Project Area and its surrounds. It comprises a series of discipline specific management plan chapters that address the management of:

- Landscape and Vegetation (including wetlands);
- Bats;
- Avifauna;
- Herpetofauna (lizards);
- Fish, kōura and kākahi;
- Streams;
- Invertebrates (peripatus species); and
- Rehabilitation and restoration planting.

The ELMP also provides detail on the following ecological and landscape mitigation and offset measures to be implemented as part of the mitigation, and biodiversity offset and compensation package for the Project (the Restoration Package), which is focused on achieving a net gain in biodiversity in the medium term following the completion of construction and includes:

- Management measures and protocols to avoid, remedy or mitigate the impact of construction on flora and fauna within the Project Area (such as vegetation clearance protocols, lizard salvage and relocation protocols, bat roost surveys, kiwi fencing etc) as outlined in the respective management plan chapters of this ELMP;
- Pest management measures, particularly the control of wasps, rats, possums, stoats, ferrets, cats, goats and pigs and livestock;
- Restoration planting, and replacement planting for significant tree species removed;
- Riparian planting and exclusion of livestock from existing streams;
- Relocation or cultivation of threatened plants found within the Project Area;
- Provision of fish passage;

- The physical mechanisms (e.g. fences) to protect the restoration and riparian planting from clearance and / or livestock on an ongoing basis; and
- Landscaping design and treatments (landform and planting), including rehabilitation of all areas used for temporary work and construction yards.

1.1.1 Management protocols

The ELMP identifies the main construction activities and adverse effects that may impact on ecological, landscape and biodiversity values and outlines appropriate measures to manage these effects. The Plan includes a number of protocols and management measures to minimise the impact of construction on flora and fauna, as outlined in Table 5.1.

Table 5.1- Ecological Management Protocols within ELMP

Ecological Protocol	Protocol Details
Vegetation Management Plan – Chapter 4	<ul style="list-style-type: none"> • Methodology for the removal and pruning of vegetation, and protection of vegetation to be retained during construction includes: <ul style="list-style-type: none"> ○ Physical delineation (such as fencing or flagging tape) of both the road margin and the Additional Works Area (AWA) to show the extent of vegetation clearance and where vegetation should preferentially be retained. ○ Physical delineation within the works area of sites suitable for placement of small wind-rows of vegetation will occur prior to vegetation clearance. ○ 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. ○ Vegetation will be directionally felled away from the physically marked edge, to prevent vegetation damage to the AWA and high ecological value area, unless deemed to be unsafe and hazardous. Methods for undertaking vegetation removal will be site specific and commonly will include use of an excavator, grapple and chainsaw on suitable land, and directionally felling trees using experienced tree-fellers. ○ Vegetation removal will be minimised within the AWA and will include only areas and trees which are essential for construction purposes. Where the AWA adjoins high value areas, ideally minimal vegetation removal will occur within the AWA. ○ Within the AWA vegetation removal will be managed by experienced arborists to reduce tree damage and to accommodate construction. This will preferentially involve pruning branches of large trees rather than felling where this would accommodate the construction requirements. ○ Supervision of vegetation clearance will also be undertaken by a suitably qualified ecologist. ○ Upon completion of each vegetation removal stage the actual

Ecological Protocol	Protocol Details
	<p>vegetation loss will be re-measured allowing the update of the Biodiversity Offsets Accounting Model.</p> <ul style="list-style-type: none"> • Methodology for the removal and relocation of forest resources includes: <ul style="list-style-type: none"> ○ Fallen decaying logs of greater than 50cm diameter and shall be placed in-situ. ○ Forest resources such as the heads of trees containing large epiphyte loads and logs deposited in-situ shall be managed so as to minimise indigenous vegetation damage, e.g. by placing logs perpendicular to the slope so they don't roll down hill and placing logs within canopy gaps. ○ Propagules of any threatened or regionally distinctive plant within the Project footprint will be harvested and material cultivated from these plants will be returned within restoration planting areas. ○ Any Gahnia found plants known or found within the Project footprint will be harvested, cultivated and returned to suitable restoration areas, such as at the top of cliff batters. ○ Stock piles of logs and forest resources shall be placed within canopy gaps and clearings. Stock piles shall be proportional to the size of the gap, of a relatively low height (<2 m) and be contained to minimise the footprint. ○ Forest resources will not be placed into water courses unless this is by design for stream restoration purposes. • Methodology for mulching and stockpiling wood/topsoil includes: <ul style="list-style-type: none"> ○ Mulching will be undertaken in a manner to prevent wood chips entering streams and ephemeral gullies. ○ Stockpiles will be managed to prevent anaerobic conditions and leachate developing. ○ Stockpiles will be located away from drains and streams and managed with sediment control measures to prevent sediment entering waterways. • Weed management will occur on soil stockpiles to prevent weed spread into rehabilitation areas where soil will be reused.
Bat Management Plan – Chapter 5	<ul style="list-style-type: none"> • 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 Plan – Chapter 6	<ul style="list-style-type: none"> • Pre-construction surveys to detect the presence of avifauna species, and the habitats they occupy. • Vegetation clearance methodology (links to the vegetation clearance protocol). • Specific management to avoid or mitigate effects on the North Island Kiwi.
Herpetofauna	<ul style="list-style-type: none"> • Pre-construction surveys to detect the presence of herpetofauna species,

Ecological Protocol	Protocol Details
Management Plan – Chapter 7	<p>and the habitats they occupy.</p> <ul style="list-style-type: none"> • Methodology for salvage and relocation to minimise loss of herpetofauna within the Project footprint, including timing and construction supervision details. • Relocation / mitigation site selection based on habitat suitability assessment and capability of supporting additional herpetofauna.
Fish Recovery Protocols – Chapter 8.3	<ul style="list-style-type: none"> • Methodology to minimise direct effects of construction on fish, kōura and kākahi (freshwater mussels) prior to works instreams. This will address: <ul style="list-style-type: none"> ○ Recovery of fish prior to instream works ○ Rescue of fish from any spoil ○ Relocation of fish ○ Reporting. <p><i>Note: The CWMP and SCWMPs will detail 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.</i></p>
Peripatus management – Chapter 10	<ul style="list-style-type: none"> • Pre–construction habitat assessment • Methodology for the translocation of peripatus found within the Project footprint • Release procedure

The Plan also outlines biosecurity management procedures (Chapter 11 of the ELMP) to be implemented during the construction works in order to minimise the likelihood of spread or introduction of invasive organisms (including invasive plant and animal species and the diseases of native plants and animals) as a result of Project-related activities.

Monitoring of ecological resources prior to and during the construction phase is detailed in the ELMP to measure the effectiveness of environmental controls and to provide feedback for the adjustment of the controls.

1.1.2 Other management plans

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 mitigation, dust management practises, and contaminated land and spill response procedures addressed in the CEMP and other sub-plans.

1.1.3 Proposed measures to offset and mitigate residual adverse effects on vegetation and the habitat of associate species

A range of measures will be undertaken to mitigate and offset the residual adverse effects on vegetation and the habitat of associate species. These include:

- Offset restoration of at least 6ha of kahikatea dominant forest (referred to as kahikatea/swamp forest restoration and Type 4 in the LEDF).

- Offset riparian planting of a length of 8.455 km of stream habitat (which equates to approximately 16.91 ha of terrestrial riparian margin).
- Replacement mitigation (dryland) planting of at least 9ha (referred to as Type 3 in the LEDF).
- Establishment of an integrated PMA over 3650ha of native forest to offset most vegetation removal.
- Planting of 3400 seedlings as replacement plants for the (up to) 17 significant trees that will be felled.
- Additionally, rehabilitation of site works will occur on modified landscapes (12.9ha) resulting in a total area of planting associated with all aspects of the Project of approximately 44ha.

Details about the management of all of these can be found in Section 4 of the ELMP (Landscape and Vegetation Management Plan) and Section 9 (Pest Management Plan).

Where the restoration planting is to occur on land not owned by the Transport Agency, the Transport Agency shall secure the necessary rights to carry out the planting

1.1.4 Pest management

Introduced animal pests have a significant impact on the indigenous plants and animals in the forest and wetland areas within and adjacent to the Project footprint. Pest management is the priority focus for offsetting Project effects as it will result in the most immediate and sizeable ecological benefit.

As outlined in the Pest Management Plan (Section 9 of the ELMP), the intention is to manage target pest species over a 3650ha largely forested area (PMA) adjacent to the Project Area. The primary objective is to reduce all target animal pests and manage them permanently at or below target densities within the PMA.

The pest management will include:

- A combined aerial and ground-based approach over the PMA to reduce and maintain rats, possums, mustelids, cats, goats and pigs to low levels in perpetuity; and
- A hunting programme to reduce and maintain feral goats and pigs to low densities in perpetuity.

Details regarding the pest management can be found within Section 9 of the ELMP.

1.2 Construction water management

1.2.1 Earthworks, erosion and sediment control

During construction, there is the potential for sediment laden discharges to occur from exposed surfaces. While these discharges can have a negative impact on receiving environments, the proposed controls as detailed in the CWMP (Appendix E) will avoid, remedy or mitigate these construction effects.

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.

Detailed SCWMPs will be prepared for specific geographic work locations and/or Project wide construction activities (refer to Section 5.2.1.1 for further detail).

The focus of construction water management during works will be as follows:

- Erosion control will be a key priority to reduce the sediment generation, requiring subsequent treatment.
- The main erosion and sediment control risks associated with earthworks include:
 - exposure of bare land (potential dust generation));
 - receiving environments and their associated values;
 - works within and adjacent to watercourses and wetlands (stream diversions, bridge works, culvert placement);
 - stockpiling of spoil materials; and
 - pumping of sediment laden water from excavations.
- Key structural measures for sediment control include:
 - sediment retention ponds with chemical treatment;
 - diversion channels;
 - decanting earth bunds;
 - silt fences and super silt fences; and
 - container impoundment systems.
- Management of open areas will be critical due to minimise potential for sediment generation. This will be done through prompt stabilisation of areas not actively worked. The CWMP provides further detail on this stabilisation trigger.
- Progressive stabilisation including seeding, mulching and geotextiles will occur throughout the course of the project to minimise erosion and dust generation.
- Regular informal monitoring of controls will be undertaken by foremen with notes for repairs noted in their daily diaries.
- Regular documented weekly inspections will be undertaken by the Environmental Manager (or delegate), checking the controls for compliance and maintenance requirements.
- Daily weather reports including the five day look ahead will be sent to the construction team by the Environmental Manager (or delegate).

1.2.1.1 Specific Construction Water Management Plans

SCWMPs are detailed erosion and sediment control plans that will be prepared for specific work areas or activities within the site. Any SCWMP that was not provided at the hearing will be submitted to TRC for certification. They 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 the 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 including:

- The specific construction activity to be undertaken and associated risk;
- The area and volume of the earthworks and / or streamworks at specific locations;
- 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;
- Specific construction water management methodologies and design criteria; and
- Details of chemical treatment (flocculation).

The SCWMPs will take into account the environmental and ecological values of the specific work areas and determine the most effective and appropriate form of erosion and sediment control devices and management practices on a site-by-site basis.

The SCWMP process also allows for improvement in management measures as a consequence of learning from the Project's comprehensive monitoring programme.

1.2.1.2 On-site monitoring

A comprehensive monitoring programme (Appendix C to the CWMP) will be implemented during construction. The focus of this monitoring programme is the management of sediment resulting 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 continuous 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 generated from the Project. Monitoring will include a continual feedback loop until it has been verified that the implemented responses have been successful.

1.2.2 Temporary stormwater management

Stormwater generated within the construction footprint will be managed in accordance with the CWMP and SCWMPs. These plans cover the management of earthworked areas during the construction phase. The construction related sediment controls must remain in place until all earthworks in the catchment are stabilised in accordance with the CWMP and / or relevant SCWMP, and permanent stormwater devices are operational. In addition, sign off from the Alliance Environmental Manager will be obtained before any controls are removed, and the TRC Manager will be informed not less than 2 working days prior to the removal and decommissioning.

1.2.3 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, or be directed to a pond or container for treatment.

1.3 Hazardous substances and spill response

The Project will involve the use of a variety of construction plant and machinery. The majority of this plant will be motorised and will require a regular supply of fuels and oils. These can become a pollutant if discharged to ground or water.

Other materials used in the construction process including concrete, bonding agents, sealants, flocculants, degreasers and paints can result in environmental impacts if they are not managed carefully and are discharged to the environment in an uncontrolled manner.

Industry best practice will be used for the storage, handling, transport and disposal of hazardous substances during construction as required by guidelines set up under the HSNOA and the Health and Safety at Work Act 2015 (refer also to Table 3.2). Specifically:

- Spills will be contained within the site boundary as far as practicable.
- Fuel for construction plant will be delivered by mini-tanker and refuelling of construction plant will only be carried out in areas separated from environmentally sensitive areas e.g. watercourses.
- Spill kits will be located throughout the construction site and immediately adjacent to high risk activities. In the event of a spill, the 'Controlling a Spill' Procedure will be followed (Appendix K).
- Hydraulic oils, greases and other construction materials including small quantities of fuel required for hand tools and pumps may be stored at the site compound, in a secure, covered and bunded area, away from watercourses.
- A copy of all relevant Safety Data Sheets will be kept on site, including at specific storage locations.
- Specific concrete wash-down areas will be provided and clearly signed.

- Major plant maintenance will not be carried out onsite unless absolutely necessary. Minor repairs will be undertaken away from the edge of watercourses.
- Emergency response procedures and incident management are further discussed in Section 5.15 of this CEMP.

1.4 Contaminated land

Previous testing of soil in the Project Area has not detected contaminant levels above assessment criteria for the protection of human health and the environment in areas along the alignment where potentially contaminating activities have, or are likely to have been undertaken.

However, there remains the potential to encounter unexpected contamination during the proposed works.

The Contaminated Land Management Plan (CLMP) in Appendix L outlines:

- The procedures to manage earthworks, including so that any unexpected contaminated or potentially contaminated soils encountered during the works are identified, handled and disposed of in an appropriate manner;
- Soil sampling procedures, should unexpected contaminated soil is encountered during works
- The procedures to manage potential ground contamination effects on human health and the environment during ground disturbance activities associated with proposed earthworks in accordance with the NES Soil; and
- Reporting requirements.

1.5 Construction machinery and vehicle emissions

Excessive smoke and odour from diesel-fuelled trucks, generators and other machinery is primarily caused by poor engine maintenance. Failure to maintain air filters, fuel filters, and fuel injectors to manufacturers' specifications may cause excessive black smoke and objectionable odour.

These discharges are very unlikely due to the use of modern machinery as far as practicable and regular servicing of vehicles.

Construction machinery will generally be delivered to site by truck and will either be delivered to the closest construction yard or to the location on the project where it will be working using the site access tracks.

1.6 Dust

Dust can create nuisance effects for nearby receivers, and in sensitive human receivers, can cause a health issue. Dust can also be deposited on paddocks and crops making these less palatable for animals and humans. Rainfall and wind speed are the two key meteorological conditions which can have the greatest effect on dust mobilisation along with the extent of construction area which is 'open' at any one stage.

A CDMP is included in Appendix F. The purpose of the plan is to outline the measures to be implemented during construction to avoid, remedy or mitigate the adverse effects of dust and odour and promote proactive solutions to control these discharges from the site. The CDMP outlines:

- Potential sources of dust taking into account construction activities and the construction programme;
- Sensitive receptors likely to be adversely affected by emissions of dust, including the dwelling at 2397 Mokau Road, located adjacent to the southern spoil disposal site;
- Methods for managing and mitigating adverse dust effects that may arise from construction activities, particularly in proximity to sensitive receptors. Where appropriate depending on construction activities, weather conditions and proximity to sensitive receptors, these methods may include:
 - the use of water carts or sprinklers to apply water to areas generating dust;
 - reducing vehicle speeds on unsealed surfaces; and
 - the use of commercial dust suppressants.
- Methods of monitoring for potential dust generation, including assessment of weather conditions, soil conditions and visual dust assessments.

1.7 Construction noise

Construction hours will generally be Monday to 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:

- work on the existing SH3 corridor including site access points and tie-ins connecting the new road to the existing SH3 to minimise disruption to SH3 traffic;
- the delivery of oversized material and equipment (such as bridge and tunnelling equipment), to minimise disruption to SH3 traffic;
- tunnelling works, which will be undertaken around the clock during the construction of the tunnel. The ability to work at all hours on the tunnel is a significant program and cost advantage, for example allowing the tunnel supports time to cure and gain the required concrete strength before the construction team is able to work under it to progress the tunnel excavation again;
- early morning concrete pours, to allow for efficient use of people and resources; and
- servicing of plant and equipment onsite, to minimise impacts on the construction programme.

There is the potential that construction works outside Monday to Saturday 7.30am—6pm will exceed the relevant construction noise limits when undertaken in proximity to occupied dwellings and will need to be managed in accordance with Sections 5 and 6 of the CNMP (Appendix I). However, much of the alignment has large setbacks to the nearest receivers and natural shielding by the local topography, which may enable compliance with the night-time noise limits.

The southern spoil disposal site shall be operated as outlined in Section 2.13.

Construction noise can be a very emotive issue for stakeholders located close to construction projects. The key to managing construction noise issues is to ensure: residents are well informed of what can be expected; that there is an effective complaints system in place; and to mitigate the effects of construction noise activities as far as practicable. Refer to the CNMP for details of these measures.

If night works are required in close proximity of a dwelling, consultation will be undertaken with the occupants prior to the works occurring. Night works in excess of the limits should not occur near any one dwelling for longer than 5 nights, depending on the overall level and duration. Specific mitigation measures may be required to manage construction noise received at the dwelling at 2397 Mokau Road associated with the operation of the southern disposal site as outlined in the CNMP.

1.8 Construction traffic management

The Project will largely be constructed off-line from the existing SH3 corridor, with most of the earthworks cut material being used on site as outlined in Section 2 of this CEMP. As such, there will be relatively little interaction with general traffic using the existing State highway network, or interruption to private property access gained via this section of SH3. The scope for adverse traffic effects associated with construction of the Project will be limited in this regard.

The construction activities that have the potential to generate adverse traffic effects will generally be limited to:

- Operation of the site access points located along the state highway network where construction vehicles will enter and exit the site;
- Construction of the tie-ins to the existing SH3 at the northern and southern Project extents;
- Travel along the existing section of SH3 by construction vehicles (trucks and light vehicles), particularly through the Mt Messenger Tunnel; and
- Works across or close to the three private property accesses and the Kiwi Road walking track in zone 7, where there is potential to affect temporarily access during construction works.

Temporary traffic management will be undertaken in accordance with the CTMP in Appendix G. The CTMP identifies how construction traffic will be managed to:

- Protect public safety;
- Minimise delays to road users;
- Minimise disruption to property access; and
- Inform the public about any potential impacts on the road network.

Specifically, the CTMP outlines:

- Details of traffic management activities and sequencing proposed for the Project;

- Methods for managing construction related traffic movements;
- Provisions to ensure that as far as practicable, road users will not be held up by construction activities for an unreasonable period of time;
- Provisions for access to properties; and
- Provisions for emergency services access.

Temporary traffic controls may include localised traffic restrictions, temporary shoulder closures and reduced speed areas, particularly during the establishment of site access from SH3 and the construction of the tie-ins to the existing SH3 network. Prior warning will be provided to affected parties and stakeholders prior to temporary restrictions being implemented, as outlined in the CTMP.

1.9 Historic heritage

No known archaeological or other historic heritage sites will likely be impacted by the Project. However, potential still exists to encounter unrecorded subsurface settlement remains within the wider Project Area, although these are unlikely to be significant.

An Archaeological Authority under Section 44(a) of the HNZPTA 2014 has been sought for the Project. The management of any pre-1900 archaeological sites exposed within the Project Area must be carried out in accordance with the conditions of the Archaeological Authority.

Works will be undertaken in accordance with the Project Accidental Discovery Protocol (ADP) contained within Appendix M. This Protocol has been developed in conjunction with Ngāti Tama.

Pre-construction briefings and cultural induction will be given to Project staff to inform them of the nature and form of archaeological material that may be encountered during excavations.

1.10 Construction lighting

During construction, temporary lighting will be required in the main construction areas where work is carried out during the hours of darkness. Light spill has the potential to cause nuisance to surrounding residents while glare from temporary lighting has the potential to impact motorists. Light spill also has the potential to impact terrestrial ecology. The Project Ecologist will be involved in the both the temporary and permanent lighting design for the Project.

The Alliance will minimise light spill by selecting and procuring light fittings that provide a defined directional beam. Lights will be mounted in elevated positions so that they point down towards the works, rather than across the work space and increasing the risk of light shining into adjacent land / vegetation.

Construction yard lighting will be reduced to low levels for security purposes when yards are not in use, as practicable.

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

1.11 Waste management and resource efficiency

Opportunities around resource efficiency and waste management will be implemented during construction of the Project and align with the Greenroads credits, as practicable.

Construction sites have a variety of waste streams including:

- officer paper;
- lunch wastes;
- cans and bottles from smoko sheds;
- concrete;
- wood (treated and untreated);
- steel;
- plastics;
- packaging; and
- general waste.

With construction and demolition wastes accounting for 30% of all landfill waste, opportunities for re-using and recycling construction materials will be investigated and implemented where practicable. Opportunities for reusing and recycling waste within the local community through the Waste Exchange will also be investigated.

Large skip bins will be located throughout the site to ensure waste materials and recyclable materials are stored and disposed of appropriately. These will clearly identify what materials go in which bins.

Skip bins will be located be at construction yards where the bulk of construction materials will be delivered to. Wrapping and packaging will be recycled as practicable.

Officer paper, cardboard and bottles, cans and plastic will be recycled as practicable.

Opportunities for recycling concrete, plastics and wood into other value added products and possible reuse back on site will be investigated.

The tidiness of the site will be assessed during weekly site inspections and corrective actions provided to relevant supervisors to ensure all areas of the site are kept in a tidy state. General site tidiness will also be included within the Project induction training session.

1.12 Energy use

The Alliance is committed to minimising the use of fossil fuels and the corresponding release in greenhouse gas emissions (GHG emissions). Where practical, renewable energy sources will be used and methods to reduce energy use and GHG emissions will be implemented, such as:

- Use of biofuel;

- Use of hybrid and/or energy efficient equipment;
- Use of LED lights;
- Operator and driver training; and
- Optimisation of equipment maintenance.

During construction, data from energy use will feed into carbon footprint calculations in order to monitor actual energy use and to help measure the effects of innovations and improvements that have been implemented.

Inductions and tool box meetings throughout the Project will highlight the energy use goals and the measures that individuals can take to help achieve the goals.

1.13 Water use

Water is a resource often used without consideration due to its apparent abundance in New Zealand. However, as with other material use, it should be used with consideration and care as there are environmental costs associated with its delivery and treatment.

The Project has two water takes for the purpose of dust suppression. These are:

- up to 150m³/day at a rate of up to 5L/s from the Mimi River; and
- up to 300m³/day at a rate of up to 5L/s 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 use will be monitored during the Project to track performance and promote considerate use. Where practical water saving opportunities will be implemented such as:

- Re-use of construction water as practicable;
- Capture of rain water for use on site for non-potable requirements (i.e. wheel washing, concrete mixing etc); and
- Water efficient workers' amenities.

Water losses can contribute to significant water use, as such, meter readings will be completed weekly to identify significant increases in water use that are unexplainable. The Project Environmental Inspections will include checks of hoses and water connections for leaks.

1.14 Material use

Due to the very nature of construction, significant volumes of materials will be used. In order to reduce the environmental, social and economic impacts associated with material usage a number of initiatives will be undertaken where practicable, including:

- The use of environmentally certified materials;
- The use of renewable resources;
- The use of recycled products (provided they meet specification); and
- The use of locally sourced products.

1.15 Emergency and incident response

There is the potential for unforeseen events to occur that may impact on the environment and will require emergency response.

Prompt and effective emergency preparedness and response reduces losses and the consequences of natural and man-made disasters. The following sections detail how environmental incidents or emergencies will be managed by the Alliance.

1.15.1 Environmental Incident management

An environmental incident is an occurrence which has (or potentially could have had) an 'adverse' effect on the environment that was not anticipated by the Project. An adverse effect is something that causes (or could have caused) environmental harm. An environmental incident can also be a deviation from the Project environmental management system, this CEMP or management plans i.e. failure to follow the established process or procedures, such as spill management.

Environmental incidents include but are not restricted to:

- Discharge of hazardous substances (i.e. fuel, oil or chemical spill) to water or land;
- Failure of erosion and sediment control measures / excessive discharge of sediment to the stormwater system / discharges from non-stabilised areas that are not treated by erosion and sediment control measures as required by the CWMP or SCWMP;
- Failure of any temporary stream diversion;
- Inappropriate hazardous material disposal;
- Unauthorised vegetation damage or clearance; and / or
- Reoccurring or major exceedances of noise or air quality limits or resulting in adverse effects beyond the project boundary.

There are a range of environmental incidents that may occur, some with the potential to cause an adverse effect and some which do cause an adverse effect. Accordingly, the level of response to an incident will vary according to the incident and level of effect.

The Alliance has prepared procedures (Section 5.15.4) that outline how environmental incidents will be managed and notified to TRC and / or NPDC.

The procedures shall be provided to Council on request, and a copy of the procedures kept onsite at all times during works.

1.15.2 Emergency response

The Alliance's emergency response procedure will be displayed in prominent locations around the site and all Project personnel, subcontractors and relevant emergency agencies will be instructed in the requirements of the emergency response procedure.

The procedure is based on the following:

- **SAFETY FIRST** – if it is not safe to mitigate the effects of the incident in accordance with the Project Safety Management Plan, contact immediately emergency services who

will attend the site as required.

- If it is safe to do so:
 - Stop the source of pollution;
 - Relocate the polluting source to an area where it can be contained;
 - Use available site resources to prevent any further migration of the pollution off site; and
 - Use available resources to clean up any contamination.
- Contact the Environmental Manager (or delegate) who will notify the Alliance Manager and Transport Agency Representative who will contact regulatory agencies.

The emergency response procedure will incorporate the following components:

- Emergency contact list;
- Emergency Reporting Instructions;
- Emergency Muster Point Location;
- Emergency Response Co-ordinator Action Plan; and
- Emergency Personnel and Equipment.

1.15.3 Spill response

The Project Spill Response Protocol will outline the specific procedures to follow in the event of a spill to ensure that any spills will be contained within the site boundary, and minimise any discharge of contaminants to the wider receiving environment. The management of spills at the site will differ depending on the quantity, type of material and location of the spill.

Spill kits and signage relating to spill response procedures will be located at each vehicle entrance to the site during each stage of work. All workers will be trained in spill management and the Project spill response procedure as part of site inductions. All spill kits will be checked and re-stocked following an environmental incident.

1.15.4 Environmental incident/emergency response forms

Should an incident occur, a full environmental investigation will be carried out utilising the Environmental Incident Reporting and Investigation provided in Appendix N to this CEMP.

Investigations are not undertaken to lay blame but to identify improvements in order to prevent incidents reoccurring. The findings of the investigations will be discussed in tool box meetings and environmental alerts will be generated for wider dissemination where appropriate.

Learnings from the investigation carried out following the event will be disseminated to the Project team and discussed at appropriate Project meetings or tool box talks, with the aim of avoiding similar issues or occurrences in the future.

2 Stakeholder Communication and Engagement

The purpose of stakeholder engagement and communications is to inform stakeholders and the wider community of the Project, the construction works, and progress and timing so there is a 'no surprises' approach during works. The Alliance will provide all stakeholders with easy and timely access to Project communications. The Alliance stakeholder and communications team will be responsive to stakeholder needs, in order to minimise disruption to the community and road users and minimise the potential for stakeholder issues during works.

The focus of communications and stakeholder management during the Project will be at two main levels:

- a A high-level public awareness and relations campaign, to provide information and education to a general audience, including the local community, community groups and wider road user groups; and
- b Direct and regular communications with particular individuals or groups (affected landowners/neighbours, specific road users and regulatory groups) to manage specific activities and construction effects, using notification and response procedures.

2.1 Communication objectives

Key objectives for stakeholder engagement during the construction phase of the Project 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.
- Continue to foster good relationships with stakeholders and provide opportunities for learning about the Project.
- Mark major Project milestones as appropriate.
- Respond to stakeholder queries and complaints.

The Alliance will implement a number of stakeholder engagement and communications methods during the Project to manage communication and engagement with stakeholders and the wider community throughout construction.

2.2 Key Project stakeholders

Key Project stakeholders include:

- Iwi, primarily Ngāti Tama as mana whenua, along with neighbouring iwi Ngāti Mutunga (south) and Ngāti Maniopoto (north);
- The Department Of Conservation (DOC);
- Affected landowners and Project neighbours;
- TRC and NPDC;

- Taranaki and Waikato Regional Transport Committees;
- SH3 Working Party;
- Road users;
- Transport and freight organisations, including Mainfreight, Port of Taranaki, Fonterra;
- Venture Taranaki;
- Emergency Services;
- Roading Maintenance Contractors (Downer and Transfield); and
- Recreational users of walking tracks in the Project area, in particular hunters using the Kiwi Road walking track.

2.3 Engagement methods

To ensure an effective level of communication with stakeholders and the wider community, a number of different communication tools and methods will be adopted by the Alliance. The frequency of communication for the various tools outlined below will be as required, depending on the nature of the activity to be undertaken and the potential impacts on various stakeholders.

The Alliance will have a dedicated Community Liaison Manager supported by a stakeholder engagement team who will be the face of the Project to stakeholders and the community, and the voice of the community to the Project team. Their role is to keep all Project stakeholders and local community informed of works ('no surprises') and manage any concerns/issues in a responsive and empathetic manner.

The team will provide early information on key Project milestones, such as:

- Commencement of site establishment works (construction of site access points, haul roads, construction yards etc);
- Commencement of bulk earthworks;
- Bridge construction;
- Tunnel construction;
- Landscape and restoration planting (including pest control);
- Tie in works to connect the new road with the existing SH3; and
- Project completion and opening of the route.

The stakeholder team will also work closely with any stakeholders who may be directly impacted by construction works, for example, works undertaken outside typical working hours or where works may temporarily impact private property access (refer to the CNMP and the CTMP for further detail around communications in this regard).

Table 6.1 provides an overview of the types of methods and tools that may be used to engage and communicate with stakeholder groups during the Project.

Table 6.1: Communication and Engagement Methods

Channel	Details	Stakeholder groups
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Channel	Details	Stakeholder groups
Face-to-face contact	<ul style="list-style-type: none"> Regular meetings/presentations/briefings/hui with key stakeholders will be held during construction. Formats for this interaction will be tailored to suit stakeholders and their interests in order to build trust, inform and educate, enable feedback and manage potential impacts and issues. 	<ul style="list-style-type: none"> Directly affected landowners Ngāti Tama DOC SH3 Working Party Regional Transport Committees Council staff Venture Taranaki
Website	<ul style="list-style-type: none"> Project information will be available on the Project website – https://www.nzta.govt.nz/projects/awakino-gorge-to-mt-messenger-programme/mt-messenger/ The website will be regularly updated throughout the life of the Project with information including Project updates and milestones, videos and photos, Project newsletters, FAQs, and Project contact details. The website will also include a 'Contact Us' section with key Project contact details 	All stakeholders
SH3 email address	<ul style="list-style-type: none"> A dedicated Project email enabling people to contact the Project directly with enquiries. The email will be monitored by the stakeholder engagement and communications team and all incoming issues or enquires acted upon as soon as possible. 	All stakeholders, in particular directly affected landowners, Project neighbours, local communities and road users
Project hotline	<ul style="list-style-type: none"> A Project hotline (Freephone) will be established prior to construction and will operate for the duration of the Project to provide easy access for stakeholder queries and any complaints. The hotline will be managed by the stakeholder engagement and communications team, manned 24/7, on a weekly roster basis. 	All stakeholders, in particular directly affected landowners, Project neighbours, local communities and road users
Project Newsletter	<ul style="list-style-type: none"> A Project newsletter will be prepared and circulated to all stakeholders on the Project stakeholder database. It will provide an overview of Project progress, key milestones and achievements, innovations, good news stories and an overview of upcoming work and potential effects. 	All stakeholders (where contact details supplied)
Social media	<ul style="list-style-type: none"> Social media channels, such as Facebook and Twitter will be used to inform local communities and other stakeholders about Project activities. 	Local communities

Channel	Details	Stakeholder groups
Video	<ul style="list-style-type: none"> Short videos present audio-visual content about the construction progress showing the physical works and construction team in action. 	Local communities
Letters / works notifications	<ul style="list-style-type: none"> Letters or works notifications will be prepared as required during works, to provide stakeholders with detail on upcoming works, potential impacts or to address a particular issues with a specific stakeholder. 	Directly affected landowners Project neighbours Key stakeholders
News media	<ul style="list-style-type: none"> Media releases about key activities or Project milestones will be provided to national and local print and broadcast media. They are invited to provide coverage of the activity to a broader community. Other media opportunities maybe looked throughout the Project phases. 	Local communities
Stands at community events	<ul style="list-style-type: none"> The Project will have a mobile information stand that can be used by the Alliance to engage with the wider community at public events, markets and other forums as appropriate 	Local communities
Information kiosk	<ul style="list-style-type: none"> Information kiosk providing key Project information, including photos, flyovers shots and information panels keep communities informed about the Project's progress. 	Local communities
Project billboards / signage	<ul style="list-style-type: none"> Project signage will be erected at appropriate locations on SH3 to inform local communities and road users of the Project, who is working in the area and how to contact the Alliance. It is likely that the main signage will be at the northern and southern Project extents. The Alliance may also use Variable Message Signs, to convey messages about potential works on the SH3 network (i.e. tie-in works) and any potential travel disruptions. 	Local communities, road users
Public notices	<ul style="list-style-type: none"> Public notices will be placed in local media, as required, to inform the wider community about key Project related activities, such as traffic disruptions 	Local communities, road users

2.4 Stakeholder database

A stakeholder database will be used to log and track all communication and correspondence with Project stakeholders and the community for the duration of the Project.

2.5 Complaints management

At all times during construction of the Project, all complaints will be managed, investigated and resolved (as appropriate) in accordance with the following process (unless where specific requirements are outlined in the respective management plans, such as responding to construction noise and dust complaints):

- Enquiries and complaints will be dealt with in a responsive manner so that stakeholders feel their concerns are being seriously dealt with and not dismissed. This will assist in building a relationship of trust and reliability between the community and the Project team.
- The stakeholder engagement and communications team will handle the enquiries and complaints that arise on a project.
- If any member of the Project team is approached in the field by someone distressed or concerned about the Project, they will notify the Stakeholder Engagement and Communications Manager immediately
- When a complaint or enquiry is received, either electronically or via telephone, acknowledgement of the complaint shall be provided within 2 working days (preferably within 24 hours for construction noise complaints – refer to the CNMP for further detail on this process). The stakeholder engagement and communications team shall promptly investigate and identify the level of urgency in respect of the complaint and communicate that to the complainant as soon as possible.
- When a complaint or enquiry is received by a member of the wider Project team, details of this shall be forwarded to the Stakeholder Engagement and Communications Manager via a complaints / enquiry form. On receipt of this information, the Manager shall contact the complainant / enquirer within 2 working days (preferably within 24 hours for construction noise complaints – refer to the CNMP for further detail on this process) and follow the protocols outlined above.
- Within 10 working days of receiving the complaint (or such sooner time as may be reasonably necessary in the circumstances), the Alliance shall take reasonable steps to remedy or mitigate the matters giving rise to the complaint, if there are reasonable grounds for the complaint.
- All complaints will be responded to in accordance with the relevant management plans (as appropriate), which may require the monitoring of an activity or the implementation of mitigation measures.
- Details of all enquiries and complaints are to be recorded and maintained in the stakeholder database. The database will have the facility to raise and close out 'actions'. Each month a record of activity will be printed out, to ensure all actions have indeed been closed out.
- A report detailing complaints and responses will be regularly provided to TRC and NPDC.

2.5.1 Environmental complaints form

All enquiries, issues and environmental management-related complaints will be recorded on the Non Conformance and Opportunity for Improvement Form and investigated using the Incident Investigation Report (refer to Appendix N).

The forms will record the following information:

- Name and address of complainant (unless they elect not to provide this information);
- Identification of the nature of the complaint;
- Date and time of the complaint and alleged event;
- Weather conditions at the time of the complaint, including wind direction and cloud cover if the complaint relates to noise or air quality;
- Known Project construction activities occurring on site at the time of the complaint;
- Any other activities in the surrounding area unrelated to the Project construction that may have contributed to the concern or complaint, such as non-Project construction, fires, traffic accidents or unusually dust conditions;
- Remedial actions undertaken (if any) and the outcome of these, including monitoring of the activity and/or the result of any investigation or inquiry carried out in respect to the complaint; and
- Relevant parties, including the complainant, and TRC / NPDC if appropriate, informed of the results of the complaints inquiry and actions taken.

2.5.2 Environmental complaints register

A stakeholder database of all queries relating to the Project will be managed by the Stakeholder Engagement and Communications Manager. It will contain all complaints received in relation to the Project.

These complaints will be discussed at regular meetings held between the Alliance Manager Construction Manager, Stakeholder Engagement and Communications Manager and the Environmental Manager, along with the Transport Agency representative.

3 Monitoring and Reporting

This section describes the procedures for monitoring construction activities undertaken during the Project and the reporting of that monitoring, in order to evaluate compliance with legal requirements, the Project designation and resource consent conditions, the CEMP and management plans, along with relevant standards and guidelines.

3.1 Environmental monitoring

Monitoring of environmental compliance, in accordance with the Project designation and resource consent conditions, and sustainability measures will be implemented throughout construction of the Project. This will enable the overall effectiveness of the environmental controls and compliance measures to be determined and allows areas of non-compliance or opportunities for improvement to be identified and appropriate actions taken.

In general, monitoring will be undertaken on a routine basis. Additional monitoring may be required in the event of a complaint or incident, after a rain event in the case of water quality monitoring, or in the instance of potential cumulative effects. The management plans outline monitoring requirements for particular environmental disciplines, the frequency of the monitoring to be undertaken and the appropriate responsible person.

The Environmental Manager will be responsible for planning and implementing all Project environment monitoring. Monitoring results will be reported to relevant parties (i.e. TRC, NPDC) as required by the designation and resource consent conditions.

3.2 General site monitoring

Site inspections are a process of assessing a task or work situation through observation, discussion, reinforcement of positive effects, and correction of any negative aspects. A key purpose of the site inspection is to raise awareness of environmental, sustainability, safety and operational issues.


In addition to formal environmental monitoring, the following general site monitoring will be undertaken:

- **Daily** – Informal inspections/observations in relation to key activities to check compliance with this CEMP and relevant management plans, such as daily inspections of erosion and sediment control measures or weather observations.
- **Weekly** – Formal site inspections are to be completed by the Environmental Manager. Site specific checklists will be developed to check compliance with resource consent and designation conditions, this CEMP and the management plans. Issues will be noted if they present significant environmental risks (e.g. erosion and sediment control device maintenance). Opportunities for improvement will also be considered.
- **Monthly** – The Environmental Manager along with the Construction Manager (or appropriate delegate) will undertake a monthly site inspection. The purpose being to confirm that environmental monitoring programmes and work procedures containing environmental controls are being implemented in accordance with the site specific CEMP, management plans, work instruction and resource consent and designation

conditions.

3.3 Site Reporting

General on site issues identified by the wider Project team will be recorded using an Event Pad form (refer Figure 7.1) and provided to the relevant manager (Environmental Manager for all environmental related issues).



TRANSPORT AGENCY
WAKA KOTAHU

EVENT

01199

TYPE OF EVENT (Tick appropriate boxes)

PLANT / VEHICLE DAMAGE
 INJURY
 OBSERVATION CONVERSATION
 PLANT CONDITION
 ENVIRONMENT INCIDENT/SPILL
 NEAR MISS

SUGGESTION
 HAZARD
 PROPERTY DAMAGE
 COMPLAINT
 SYSTEM IMPROVEMENT
 OTHER

CONTRACT: PLANT NO / PERSONS INVOLVED:

PERSON REPORTING EVENT: DATE: ____/____/____

DESCRIPTION OF EVENT AND INITIAL ACTION TAKEN: TIME: ____/____/____

IS FURTHER ACTION REQUIRED? YES NO

FURTHER ACTION TAKEN / LEARNING SHARED	COMPLETED?

SIGNED: **DATE:** ____/____/____
Person Reporting Event

SIGNED: **DATE:** ____/____/____
Site Supervisor / Engineer to sign off and file when completed or direct further investigation or action

MPA ST05A Version 09/13

Figure 7-1 - Event Pad

3.3.1 Monitoring review

The Environmental Manager and Construction Manager or delegate(s) will regularly review the site inspection / event pad forms to confirm that the checks and subsequent works required are being carried out, and additional inspections are included as per construction progress.

The review will also focus on the results of the monitoring and assist with identifying opportunities for continual improvement of environmental practices. Learnings or findings

from Project monitoring reviews will be disseminated to the Project team and discussed at appropriate Project meetings or tool box talks.

3.4 Corrective action

Corrective action is required on the basis of the occurrence of substandard performance being observed or experienced, resulting in an environmental complaint, incident or emergency or where a significant environmental incident or emergency could have occurred.

As soon as practicable after an incident, the Environmental Manager and the Construction Manager (or delegate) shall:

- Determine the immediate actions to be taken to re-establish control measures where these have failed or have not been implemented in accordance with the relevant management plan as soon as possible.
- The corrective actions shall be implemented as soon as practicable, taking into account health and safety issues.
- As appropriate, liaise with TRC / NPDC to establish what remediation or rehabilitation is required and whether this is practicable to implement.

Corrective or preventative actions identified during environmental audits shall be appropriate to the magnitude of the problem and appropriate to the environmental harm encountered.

Ultimately the Environmental Manager has responsibility for closing out any corrective or preventative actions resulting from the inspections, audits and external regulatory compliance monitoring. Additionally, assessment and follow-up reviews on the effectiveness of corrective and preventive actions will be undertaken and the outcomes documented, communicated and implemented.

Compliance shall be included as a regular agenda item at management meetings and project meetings. Minutes from each meeting shall record and assign actions to individuals where appropriate.

A copy of the following forms related to environmental compliance and corrective action are provided at Appendix N to this CEMP:

- Incident Reporting and Investigation (MMA-PLN-RMA-FRM-1763); and
- Non Conformance and Opportunity for Improvement Form (MMA-PLN-RMA-FRM-1750).

The Environmental Manager is responsible for ensuring all relevant documentation is submitted and maintained within the Project filing and document control system.

Applicable documentation will include but not be limited to:

- All environmental incidents reports and investigation outcomes;
- Weekly and fortnightly environmental checklists and reports files by contractors;
- Formal and informal audit and environmental inspection reports;
- Any laboratory analysis submitted by external consulting groups;
- Records of environmental training;

- Chain of custody records; and
- Minutes of meetings.

3.5 Environmental auditing

Internal environmental auditing (by Project staff) is required to determine whether the Project's environmental management system conforms to planned arrangements, is properly implemented and maintained, and to assist the Project team with identification of opportunities for continual improvement of environmental practices.

Internal audits will be completed on a quarterly basis by the Environmental Manager (or delegate). Findings from the audits will be presented to the Construction Manager and Alliance Manager within two weeks of conducting the audit.

Internal audits will focus on environmental matters within a single operational procedure or a group of related operational procedures (e.g. erosion and sediment control procedures, waste management reporting).

External environmental audits (by personnel not involved in the Project or a suitably qualified consultant) will be completed at least annually, to assess the effectiveness of the Environmental Management System. Findings from the external audits will be presented to the Construction Manager and Alliance Manager within four weeks of conducting the audit.

4 CEMP Review

The CEMP will be reviewed and updated over the course of the Project to reflect significant changes associated with changes to construction techniques, the natural environment or due to unresolved complaints.

4.1 Review process

A review of the CEMP will be undertaken at least annually by the Alliance, in accordance with the resource consent and designation conditions for the Project. The review will be organised by the Environmental Manager and the Project team will be informed of any changes to the CEMP through the regular Project communications processes. The review will take into consideration:

- Compliance with the designation and resource consent conditions, the CEMP, management plans.
- Any significant changes to construction activities or methods that require the description of construction activities to be updated and/or any unanticipated more than minor adverse effects resulting from the Project.
- Key changes to roles and responsibilities within the Project team.
- Results of inspections, monitoring and reporting procedures associated with the management of adverse effects during construction.
- Relevant comments or recommendations from TRC or NPDC regarding the CEMP and/or management plans.
- Unresolved complaints and any response to complaints and remedial action taken to address the complaint.

The outcomes of any review will be provided to TRC and NPDC.

Where the CEMP is updated as part of a review, the on-site version shall be updated promptly and prior to any works associated with the amendment being implemented. A schedule of changes to the CEMP shall be captured in Appendix O.

4.2 Minor amendment

In accordance with the consent and designation conditions, minor amendments may be made to the final CEMP or management plans at any time. Minor amendment is any amendment where the adverse environmental effect arising from the amendment is the same or less than the effect that would result in the absence of the amendment.

Any changes to the CEMP or management plans shall remain consistent with the overall intent of the original version of the final management plan.

The Alliance shall provide TRC and NPDC with a copy of any amendment as soon as practicable and before any construction works associated with that amendment are implemented.

4.3 Material Amendment

Material amendments to this CEMP or management plans may be made at any time subject to certification by TRC and / or NPDC. Material amendments are any amendments that are consistent with the overall intent of the original version of the final management plan, but that are not minor amendments in accordance with Section 8.2.

In the event of material amendment to a management plan, the amendment shall be submitted to TRC / NPDC for certification 20 working days before commencement of works to which the amendment applies.

Works unaffected by the material amendment may continue during the certification process.

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