Te Ara o Te Ata

WAKA KOTAHI NZ TRANSPORT AGENCY Mt Messenger Bypass

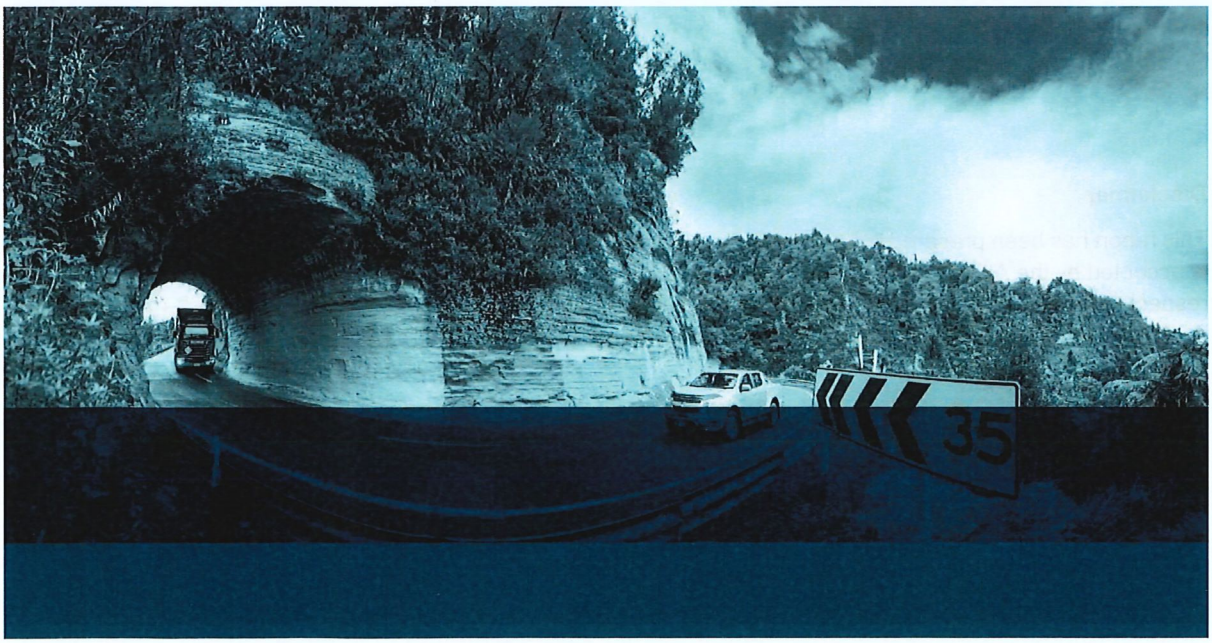
Construction Management Plan

06 December 2023

Hardus Pieters

DOCUMENT NO: MMA-CON-PLN-PW-GE-GE004

CONTRACT NO: 2018181



ACCEPTANCE				
	Name	Title	Signature	Date
Prepared by	Hardus Pieters	Construction Manager		09/11/2023
Reviewed by	Tony Pink	Alliance Manager		18/12/23
Approved by	Peter Millar	Project Alliance Board		20/12/23

REVISION SCHEDULE		
Rev. Number	**Date**	**Description**
1.0	27 September 2018	Draft issued to AMT review
2.0	15 October 2018	Issued to Alliance Manager
3.0	28 March 2019	Feedback Update
4.0	19 March 2021	Updated following scheduled review
5.0	18 August 2023	Updated following scheduled review
6.0	09 November 2023	Updated following comments from Pou Tiaki
7.0	06 December 2023	Updated with Tony Pink comments

Contents

Glossary

Term	Definitions
ALT	Alliance Leadership Team
ATW	Authority to Work
CEMP	Construction Environmental Management Plan
CDCR	Cross-Discipline & Constructability Review
CMP	Construction Management Plan
COP	Code of Practice
COPMA	Core Offset Pest Management Area
CWP	Construction Work Pack
DFA	Delegation of Financial Authority
DOC	Department of Conservation
H&S	Health and Safety
IFC Drawings	Issued for Construction Drawings
ITP	Inspection and Test Plan
JSEA	Job Safety and Environmental Analysis
KPI	Key Performance Indicator
KRA	Key Result Area
MMA	Mt Messenger Alliance
MP	Management Plan
MSE	Mechanically Stabilised Earth
NCR	Non-Conformance Report
NOP	Non-Owner Participant
NTSC	Notice to Sub Contractor
PAA	Project Alliance Agreement
PAB	Project Alliance Board
PMA	Pest Management Area
PTW	Permit to Work
QS	Quantity Surveyor
RFI	Request for Information
SAP	Site Access Point
SARNZ	Scaffolding, Access and Rigging NZ
SCWMP	Specific Construction Water Management Plan
STDP	Short Term Delivery Programme
SH3	State Highway 3
SH4	State Highway 4
TMP	Traffic Management Plan
WBS	Work Breakdown Structure

1 Introduction

The Construction Management Plan has been prepared for the Waka Kotahi's Mt Messenger Bypass Project (the Project. It is one of a suite of management plans to support the delivery of the Project.

The Whitecliffs and Mount Messenger Sites are collectively known by Ngāti Tama as Parininihi and were returned to the iwi in 2003 as part of a historical Treaty of Waitangi settlement. Parininihi is also referred to as *'Te Matua Kanohi o Ngāti Tama Whānui'*, 'The parent (principle) face of Ngāti Tama' The Project runs inland through *'Te Tahuhu o Ngāti Tama'* The Parininihi landscape is of great cultural, spiritual, historical, and traditional importance to Ngāti Tama, symbolising the spiritual links between this community and its environment.

The name Te Ara o Te Ata was gifted to Waka Kotahi by Te Rūnanga o Ngāti Tama to seal their partnership agreements. Te Ara is a pathway; Te Ata is the taniwha/guardian of the coastal landscape and sea of Parinihini. A new Mt Messenger route was announced in August 2017. The Mt Messenger Bypass is the largest and most complex project that makes up the Awakino Gorge to Mt Messenger Programme (the Programme) on State Highway 3 (SH3). The Mt Messenger Bypass along with the Programme's Awakino Tunnel Bypass and further SH3 safety and resilience improvements, will significantly improve road safety, reliability and route availability in this challenging environment.

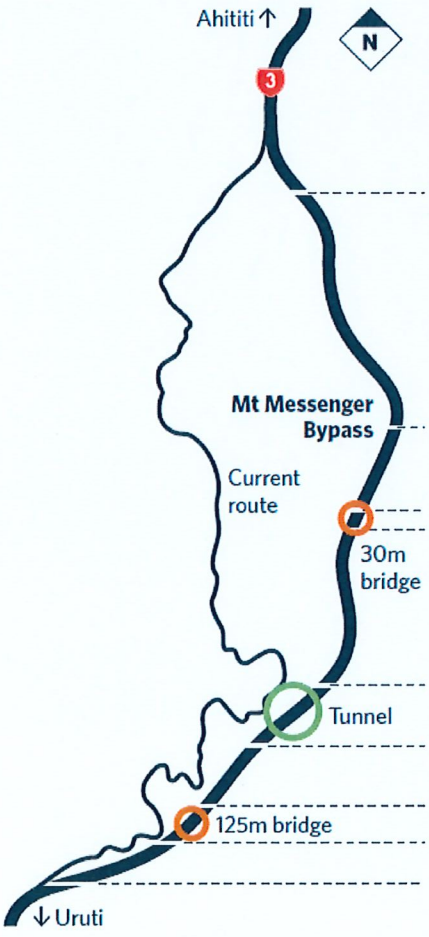
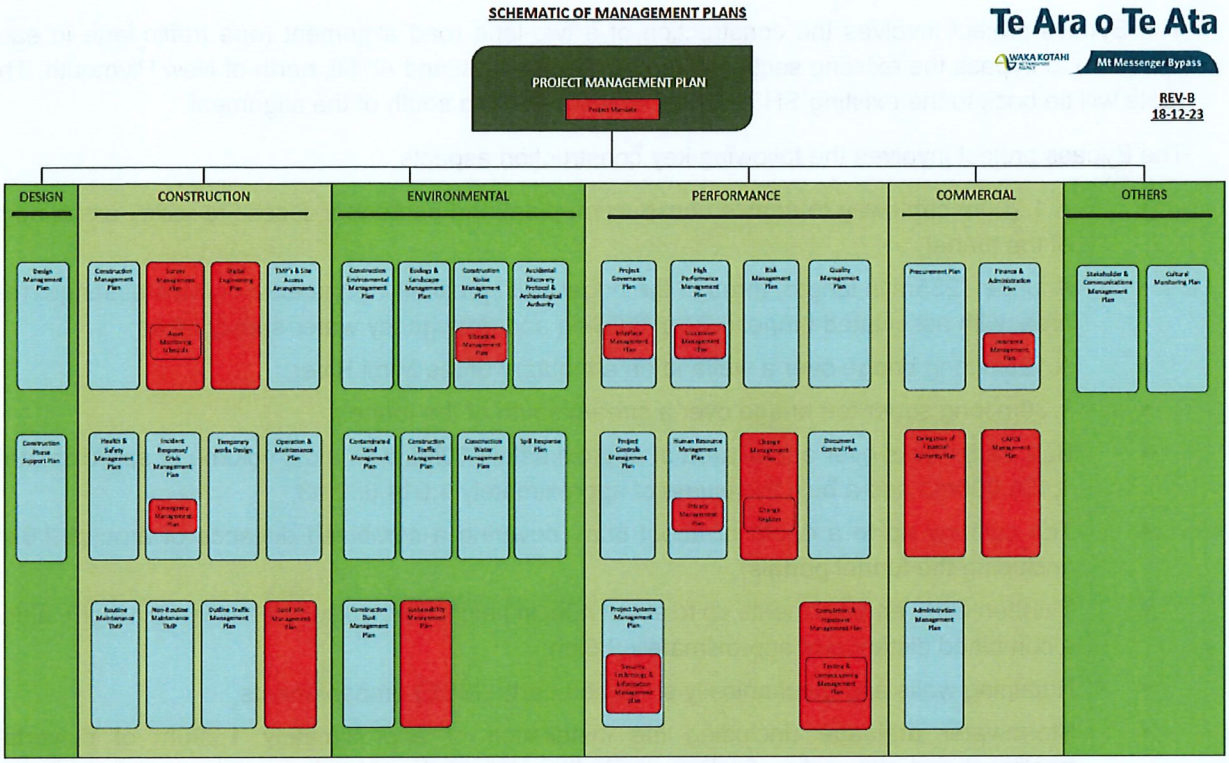


Figure 1

The Project involves the construction of a new 6 km bypass, located east of the existing highway, between Uruti and Ahititi to the north of New Plymouth. It aims to improve safety, resilience and route

availability. The bypass is lower and less steep than the existing route and includes a bridge over the edge of a significant wetland and a new tunnel under the ridgeline south-east of Mt Messenger. Following statutory approval, construction of the bypass has commenced in mid-2021 and expected to be opened for traffic by end of 2027.

The MMA is to deliver a project that meets the project objectives (as defined in the Project Alliance Agreement) and that demonstrates high performance, as articulated by the Alliance goals and associated targets. The relationship of this Construction Management Plan with the overall suite of management plans is shown in the diagram below:



2 Purpose of the Plan

The purpose of this Construction Management Plan is to describe how the alliance intends to undertake construction of the Mt Messenger Bypass project. It also describes assigned responsibilities and authorities in this process and identifies other key aspects of the programme that have a significant potential impact upon the successful delivery of the construction stage.

The purpose of this plan is to assist the Construction Team in delivering the project works. The objective of this plan is to provide a process that ensures:

- Alliance Policies and procedures are integrated into construction activities.
- The Alliance achieves the Project Objectives during the delivery and operations phases of the Project;
- Tikanga manaaki will be at the forefront of the Project, so to ensure the correct procedures are implemented and conducted in a culturally safe manner.
- Cultural values of Ngāti Tama are woven into construction planning in accordance with Te Tuhinga Motuhake/ Ngāti Tama Cultural Monitoring Plan.
- Proper consideration is given during design to operations and maintenance requirements
- Construction processes are integrated with the overall project cost control processes.
- To record the intermediate level of project management planning that lies between the over-arching Management Plan and operations specific Work programmes and Work Packs
- To ensure construction activities comply with resource consent conditions and relevant management plans
- Construction management and delivery is undertaken to assist the project obtaining IS Rating

3 Scope

The Bypass 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 north and south of the alignment.

The Bypass project involves the following key construction aspects:

- A 1,200m cableway to enable construction plant and personnel access to valley areas north of the tunnel
- 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 125m long bridge over a wetland on a tributary of the Mimi River;
- A 30m long super tee bridge over a stream south of the tunnel;
- Bulk earthworks over a total area of approximately 19ha, with a cut volume of approximately 1,154,000m3 and a bulk fill volume of approximately 1,014,000m3;
- Ten cuttings up to a depth of about 60m, covering a combined distance of around 2.6km (including the tunnel portals);
- Thirteen earth embankments up to about 40m in height (but typically less than 5m high), along a combined distance of approximately 2.5km;
- Retaining walls and mechanically stabilised earth (MSE) embankments;
- Stormwater 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 an extensive largely forested area (the Pest Management Area – PMA) adjacent to the Project Area and intensively manage target pest species over a central 250 ha Core Offset Pest Management Area (COPMA) within the PMA, along with restoration planting.

This Plan is applicable to all construction works undertaken by the Construction Team as part of the Alliance

3.1 Work Streams

The project consists of the work streams listed below;

- Ecological management
- Erosion and sediment control
- Cableway construction and operation
- Access roads into and around the worksite
- Vegetation removal as part of the clearing process

- Large-scale Earthworks and clearing
- Geotechnical stabilisation above and below the road
- Drainage construction
- Retaining structures
- Bridge Construction
- Pavement and Surfacing construction
- Tunnel Construction
- Traffic services
- Propagation, Landscaping and planting

Each of these work streams will have a specific work instruction written around methodology and programme, this will be documented in the Construction Work Packs (CWP)

3.2 Outline Methodology

Due to delays to the northern property acquisition and limited access from current SH3 route a decision was made in 2020 to erect a cableway crane system to mitigate programme delays. The cableway allows early access to the valley north of the tunnel across the whenua of Ngāti Tama. Consequently, the tunnel methodology also changed to a south to north direction.

The above methodology change enables the tunnel construction to commence early and off the critical path. The critical path is through northern property access date, Access Track 01, Bridge 00, Fill 12 embankment and Zone 2/3 pavement activities.

The activities leading up to this include:

- Vegetation clearance
- Ecological Constraints clearance within seasonal calendars
- Cableway Construction
- Access Track 02 construction to Fill 13
- Fill13 stream diversions and filling to Southern Tunnel portal cut
- Fill12 stream diversions to a point for access to Northern Tunnel portal cut
- Tunnel construction – Top heading

Bridge 01 construction has been delinked from gaining access to the north abutment by opting for the consenting and installation of a temporary staging bridge west of the permanent bridge position to construct the steel superstructure. Crane access will be from south, via Zone 7 (cut 15 and 14).

Prior to any of the above works being undertaken above, sites shall be checked and or cleared for construction team access. This will consist of Ecological constraints clearance, Vegetation clearance, Ngāti Tama Tāngata Tiaki/Cultural Monitors will ensure tikanga practices are carried out in a safe manner over the above works.

3.3 Delivery Strategy

The project has been split into 10 Zones. Nine of these are construction zones, zone 10 works include disposal and temporary stockpile/material handling sites. The project Work Breakdown Structure (WBS) are detailed below:

Zone	Start Chainage	End Chainage	Key Elements
1	0	350	North pavement tie-in
2	350	2350	Cut 2 to Cut 8 & Fill 2 to Fill 9
3	2350	3400	Cut 9 to Cut 11, Fill 10 to 12 & Bridge 00
4	3400	3640	Tunnel
5	3640	4150	Cut 12 to Cut 13 & Fill 12
6	4150	4275	Bridge 01
7	4275	4820	Cut 14 to Cut 17 & Fill 14 to Fill 16
8	4820	5250	Cut 18 & Fill 17/18/19
9	5250	5720	Cut 19

The WBS splits the project into logical and manageable pieces that can be distributed to the construction team to ensure clarity of scope and responsibility. The WBS is followed throughout the project from design, programme and construction to commercial and administration. This has been built up with the Project delivery model in mind.

The Delivery Organisational Chart has been established based on the Zone structure, timing of works and specialist technical disciplines. Project staff will be requested through the NoP's in the first instance before going to market.

The summary programme with detailed staging and updated timing for each element above is included in Appendix A

3.4 Budget /Cost Codes

The main budget holder for direct construction cost will be the Construction Manager, who has delegated authority to Discipline Managers, Superintendent and Project Engineers.

The Project Controls Team will provide a detailed Budget Package comprising of a set of unique cost codes with an allocated budget attached to them for the appropriate Construction Delivery Structure.

4 References

4.1 Relevant Regulations, COP and Standards

This procedure shall apply to the preparation of all Construction Work Packs and associated documentation prepared by the Alliance. All works shall be in accordance with Project Minimum Requirements and Specifications.

In the absence of specific project documentation industry regulations, CoPs, and National standards shall apply. Should Engineering teams be unsure of detailed specifications a RFI (Request for Information) shall be raised for design clarity.

If the standard was not meet by the construction team a NCR (Non-Conformance Report) shall be raised for design acceptance or remedial works to be undertaken as set out in the project Quality Management Plan.

5 Construction Goals and Targets

The Construction Team has the primary goal of delivering the Alliance works:

- With respectful consideration to MANAAKI values and practices highlighted in Te Tuhinga Motuhake/Ngāti Tama Cultural Monitoring Plan.
- On time
- To budget
- To specification
- With Zero Harm to people
- To achieve IS Rating
- With Zero Harm to the Environment
- With full understanding of ecology constraints
- To implement competency assessments and training
- In Compliance with Designation and Resource Consent conditions

The objective for the Construction Team is to execute the works safely, within the timeframes set and at best possible Value-for-Money for the Alliance. The way we will do this is by executing the Project Values Principles and the KRA/KPIs.

The Alliance objectives are reflected in the Key Result Areas. Preliminary KRAs/KPIs have been identified and are set out in the High Performance Management Plan

6 Construction Team Organisation

The construction team is structured as per the Organisation Chart graphic included in Appendix B.

- The Engineering Team will lead the planning and reporting of the construction works
- The Supervision team will lead the execution of the work to the plan

All Construction Team members have a responsibility to actively contribute and provide input to constructability discussions, sessions and documentation including drawings.

The Engineering Team and Supervisory staff will have specific aspects of the Alliance works for which they are responsible.

The Project Engineers and Site Engineers will be assigned to a specific Discipline Manager.

6.1 Supervision requirements

Under the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 (the GRWM Regulations), a person conducting a business or undertaking (PCBU) must ensure, so far as is reasonably practicable, the information, training, instruction and **supervision provided to workers is suitable and adequate**.

Different work activities can require different levels supervision.
Certain work activities require higher levels of supervision for workers and others in the workplace to remain healthy and safe.

Examples of work that may require higher levels of information, training, instruction and **supervision** are:

- working in confined spaces
- working at heights
- working with substances hazardous to health
- remote or isolated work.
- Lifting works
- Tunnelling

When defining supervision requirements as part of the JSEA and CWP/MS the engineer, in discussion with the workforce and supervision as part of the document's development will include, but is not limited to the following;

- what level of experience/competence your trainers or supervisors need to have
- if your workers have previous experience with the work
- will new inexperienced workers be intensively supervised until they are shown to be competent to carry out the tasks unsupervised?
- will new inexperienced workers be comprehensively trained for all tasks they may need to carry out in one go, or will they be trained/supervised on a task-by-task basis as needed?
- will experienced workers only be supervised for new tasks for the first time?

Further information is available as part of the *Work Safe New Zealand Fact Sheet on – Providing information, training instruction or supervision for workers.*

7 Construction Control

7.1 Reference Schedule of Work Programme, Work Packs, JSEAs and ITPs

It is envisioned that, following the WBS, each WBS Zone will produce a high-level Work programme detailing the planning for the area and the respective site-specific restrictions and consent requirements.

From this overarching document, trade or task-specific Work Packs will be generated to control the works and meet the requirements of the Work programme and design drawings.

The Work Packs will include, but not be limited to, Method Statements, JSEAs(Task analysis Sheets), ITPs, Permits, Temporary Works Drawings, SCWMP, Material Schedules, Pou Tiaki and/or Tāngata Tiaki, and Testing Criteria etc.

With regards to trades that are common across the project, some of the Method Statements and JSEAs may be generic for said task and be incorporated in the appropriate Work Pack.

7.2 Key Dates

Refer to the Master Programme for start and completion dates of each of the operations. This programme will be maintained by the Alliance Programmer who will gather information from the project team on methodology, progress and forecast to complete.

The Master Programme is updated and reported on Monthly which includes Key Milestone Dates.

The Work Packs have a section on planning and programming detailing each of the activities.

7.3 Temporary Works

The Alliance acknowledges that temporary works is high risk. Work will therefore be planned and always executed in a manner that reflects this. The planning and implementation of temporary works shall be delivered in line with the works procedure outlined in the project Temporary Works Management Plan

The following temporary works are envisaged for the project:

- Cableway Construction, operation, maintenance and use.
- Temporary bridges over the streams
- Temporary traffic management (i.e. site access)
- Temporary Access Roads
- Temporary tunnel support
- Suspended pours
- Rockfall protection
- Environmental Control Systems (i.e. silt ponds, bunds)
- Working Crane and Piling Platforms
- Sheet pile retaining structures (retaining structures or for drainage)
- Working under steep high cuts
- Bridge Construction
- Tunnel temporary power supply and Ventilation
- Tunnel Establishment
- Tunnel M&E Installation

7.4 Site Facilities

The site main compound yard will include project site offices, lunchroom facilities, toilets, showers, kitchen, washdown, drying room, vehicle servicing etc.

Satellite yards will be established for specific long-term areas such Northern Property, Cableway Tower, Tunnel and bridge construction with office, lunchroom and toilets.

7.5 Survey and Set Out

Survey and Set Out will be done as per the design team outputs (IFC drawings, the 12D-model, etc.) with the appropriate equipment by experienced surveyors.

Procedures are set out in the project Survey Management Plan.

The supervisory/engineering team will raise survey requests for their survey needs.

Machine Control will be used in engineering works, tunnelling execution, tunnel support, earthworks detail works, pavement finishing and various other works.

The Engineering team will be responsible for ensuring the data used by machine control systems is correct. The Construction Manager has ultimate responsibility, due to the high risk.

NOPs challenge reviews will occur every 6 months, or prior to high-risk work. (Safety, budget, resource, machinery, method, materials, lessons learnt).

7.6 Site Access

Site access points are established at critical points around the work site and will be managed in accordance with the overarching approved NPDC Construction Traffic Management Plan and the SSTMPs. Sufficient and appropriate signage will be implemented at the SAPs. Site access layouts will take into account any specific land agreement conditions.

7.7 Corridor Management

SSTMP's will be provided where required, i.e. for the work area access and exit from major roads. Haul routes that have an interface with public roads will be managed in a similar fashion. Project Engineers with assistance from our site based STMS are responsible for SSTMPs within their areas. This includes preparation, approval and auditing of all active SSTMPs.

8 Programme Monitoring and Reporting

8.1 What is to be Monitored

Performance will be monitored against the relevant Key Milestone dates set for each zone.

Such items are monitored closely in terms of progress and productivity to ensure that the milestones and Project Finish Date is achieved. Progress indicators include Master Milestone Programme, 12 week and 3 week short term delivery lookahead programmes, reviews and cost reviews.

8.2 How is this to be Monitored

The master programme is reviewed and monitored on a monthly basis and reported to the PAB.

All activities on the master programme that have a float of fewer than 20 days are considered to be critical and are closely monitored and reported on as such. Any changes to critical paths must be approved by the Alliance Manager. Significant changes to end dates can be altered by the Alliance Manager/ALT.

The 12 Week LAH is derived from the master programme but focusses on the short to mid-term (i.e. up to 3 months ahead), is monitored on a weekly basis (and reported fortnightly) in the Construction Team Meetings where progress and upcoming activities are discussed and reported on.

Zone Programmes are prepared by leads/Project Engineers with assistance from supervision team. As well as construction leads such as Project zone or discipline, Zone leads also includes activities including riparian planting, stakeholder engagement and communications and Ecology

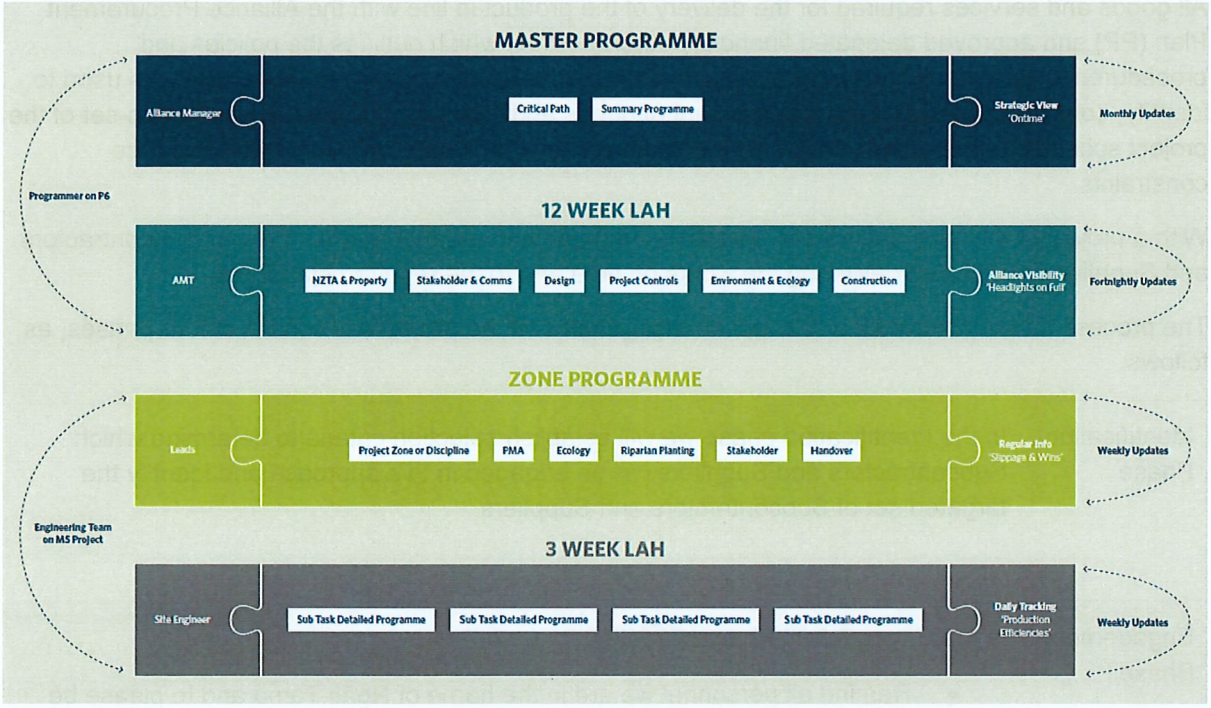
The 3 Week LAH are the micro detail programmes down to daily activities, these programmes are managed by Site Engineers and will include productivity targets and tracking, haul road traffic to identify clashes.

8.3 Reporting Structure and Process

Weekly meetings are held to update and track the Short-Term Delivery Programme (STDP). The STDP will be used to coordinate works on site and update the overall project programme.

The Project Engineers will use the 3 Week LAH detail to update the Zone Programme and report progress to the Construction Manager.

This information is also shared with the Project Programmer who will analyse and update the master programme accordingly or will advise that appropriate mitigation measures have to be considered to bring the project back on track should there be slippage.



9 Labour Management

The Site Superintendent will be primarily responsible for the identification, hiring and return of site labour. Labour sourced directly from the NOPs will be managed in accordance with the Human Resources Management Plan.

The hiring and return of Labour-hire personnel will be managed in accordance with the procurement agreement administered by the Construction Manager.

There are several Safety requirements to be fulfilled before any person is permitted to work on an MMA site. These are detailed in the Safety Management Plan and include:

- Pre-start Drug and Alcohol Test in accordance with MMA policy (Arranged by the employer prior to commencement)
- Health, Safety & wellbeing Induction
- Cultural Induction on Pukearuhe Marae
- MMA Site induction (Given on site)
- CWP Briefing and Sign-on (Given on site)
- Daily Briefing and Sign-on (Given on site)
- Health, Safety & wellbeing Induction

10 Subcontractor Management

All goods and services required for the delivery of the product in line with the Alliance Procurement Plan (PP) and approved delegated financial authority (DFA) which outlines the policies and procedures to be followed. An output of the procurement plan, the procurement schedule, is used to identify, control, and monitor the procurement of goods and services for the project as a sub-set of the project schedule (construction programme), to ensure they are procured in time and resource constraints.

With a project of this size, the careful selection, engagement and management of our Subcontractors and Suppliers is critical in delivering the works on time and to the required standards.

The process for subcontractor and supplier engagement on the project will consist of four phases, as follows:

Identification Phase	In the Identification phase we will establish selection criteria to determine which Subcontractors and Suppliers will be engaged in this approach and identify the targeted set of Subcontractors and Suppliers.
Engagement Phase	In the Engagement Phase we will: • Remind all personnel we are in the home of Ngāti Tama and to please be respectful towards their tikanga practices and values cast over Te Ara o Te Ata. • Develop and use a standard Contract that details out the H&S Policies on the Alliance. • Facilitate functional area specific procurement briefings that provide an opportunity for all subcontractors and suppliers to gain a clearer understanding of the Alliance requirements and the commitment to break new ground in a collaborative approach to delivering exceptional whole of life performance. • Conduct initial discussions with the appropriate representatives of each subcontractor o Gain insights into their history from NOPs and Waka Kotahi, projects in particular with respect to positive. negative past projects.

	○ Understand what is strategically, commercially and organisationally most important to them ○ Enlist their interest and readiness to enter into more collaborative approach • Facilitate a dialogue between the relevant Alliance and Subcontractor and Supplier representatives to enable them to: ○ align around mutually beneficial objectives and outcomes ○ agree to a set of principles and practices to underpin a successful collaboration, including monitoring and managing performance and the ongoing relationship over the course of the project delivery. ○ Identify specific contractual or other arrangements they consider necessary to further anchor the relationship. ○
Delivery Phase	In the Delivery Phase we will: • Monitor and manage the relationship between the Alliance and each of the Subcontractors and Suppliers • Monitor and manage key performance milestones established by the Alliance Project Schedule. • Identify opportunities to address either breakdowns or opportunities to elevate performance • Design and facilitate the most appropriate intervention to address those opportunities.
Completion Phase	In the Completion Phase we will: • Conduct a process of exit interviews with each subcontractor and supplier, upon the completion of their work on the project, to gain insights and learning to improve the ongoing delivery of this, and future projects.

The Subcontract manager, or other appropriate person with appropriate DFA, will approve payment certificates which have been prepared by the Quantity Surveyor.

The measurement of progress will be undertaken by the Engineering team.

- Subcontractors are to provide a monthly program and forecast
- All notifications of variation claims are delegated to the Construction Manager for approval

The Supervisory Team is to keep the Subcontract Manager aware of all issues, related to the Subcontractor and, where time allows, convey all formal communication through the Subcontract Manager.

11 Materials Management

The Site Supervisors will be responsible for Materials Management on site.

11.1 Deliveries

Due to the logistical difficulties of the tight site footprint and laydown space, it will be coordinated as follows;

Construction Manager, Superintendent and Engineering team reach agreement on what plant and materials are required through the planning process. Major procurement items must be identified with sufficient lead time in advance to allow for procurement and shipping.

Plant items will be called for through NOPs in the first instance and implementation will be selected through specific process (safety, task etc) on best-for-project basis.

The list of required items is sent to the procurement manager.

All decisions on what to prioritise should be agreed by the Construction Manager.

Trucks are to be loaded and unloaded by MMA site staff or subcontractors unless the truck driver is full site- inducted and has documented safety items and competency on the crane, Hiab or forklift being used.

11.2 Consumables

The Site Storeman will place regular top-up orders to maintain minimum stock levels of common consumable materials. The minimum stock level will be set by the Site Superintendent.

The provision of materials from stores will require a supervisor's sign-off and a valid cost code

12 Plant Management

The Superintendent will be responsible for the selection of plant. Procurement arrangements for the plant will be administered by the Project Engineers, Procurement personnel and Construction Manager. A Plant and Equipment Schedule will be generated and maintained by the project engineers. This schedule will endeavour to gain the best use, efficiency and productivity out of Alliance, NoP's, Subcontractor and External Hire plant and equipment. Repairs and maintenance costs will be considered and tracked. Consideration will also be given to hire vs buying the entirety of the plant.

Below lists some of the critical and specialised plant and equipment used on the project:

- Large size excavators (including GPS)
- Articulated Dump Trucks
- Graders
- Bulldozers (including GPS)
- Wick drain installation equipment
- Ground Improvement Equipment
- Large Mobile and Crawler Cranes
- Rollers and Pavers
- Tunnelling road header, Rock bolt Jumbo, Shotcrete robot, trucks & ventilation equipment
- Cable Way
- Hydroseed / Mulching sprayer

Plant condition and competency are manged via the following ways;

- All plant is to be inspected on arrival to site. MTMA have a standard plant checklist that is to be used upon arrival.
- Tickets are checked during the induction process and competencies are confirmed by Superintendent during initial plant use and recorded on plant competency verification form created by H&S department.
- Daily plant checksheet books are completed by all operators prior to starting up plant.

13 Site Establishment

The following principles will apply to site establishment:

- Fully Comply with property agreements and any other conditions in terms of boundaries, screening, etc.
- Protecting the Public from Site Hazards
- Control of Access to Site
- Compliance with Environmental Requirements
- Minimising disruption to site neighbours

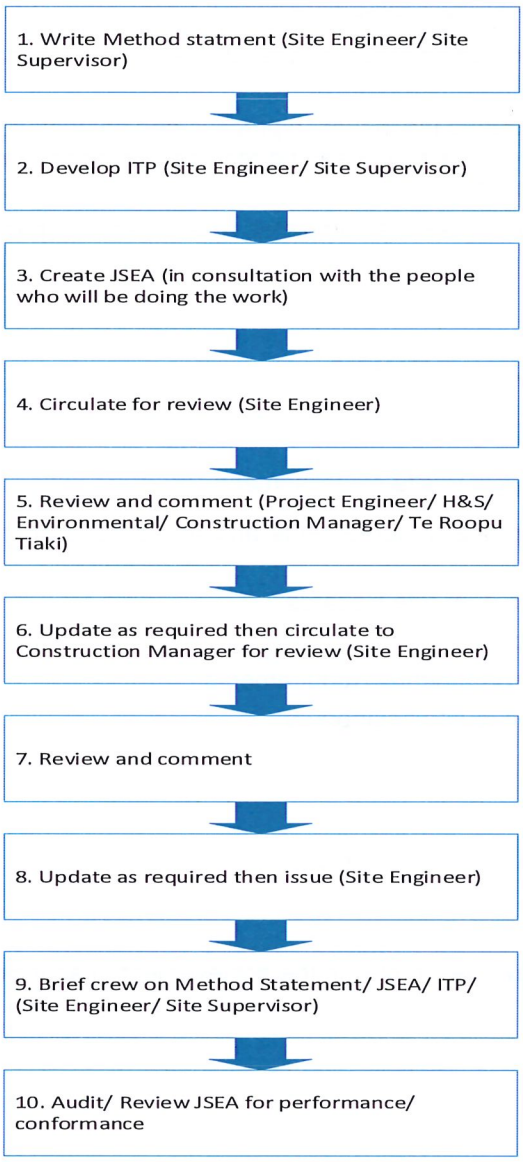
14 Safety Management

The entire Site Team have key roles to play in the achievement of an incident-free project.

14.1 Planning

The Engineering Team will lead the Construction Work Pack Planning process (covered in more detail in Safety Management Plan) which includes Safety Risk Identification, Assessment and Controls, Planning and Inspection and Test Plan preparation. The Supervision team is a key contributor to planning and must commit to the agreed plan. The HSE Manager and Safety Advisors are to review the quality of the Hazard Control Plans produced.

The CWP preparation and approval process is demonstrated in the flowchart below.



14.2 Execution

The Supervision Team is to play a vital role in taking prime responsibility for ensuring the safe method agreed in the Construction Work Pack Planning process is followed.

14.3 Monitoring

The Supervision team have the primary responsibility to monitor the site activities to identify:

- Compliance with the agreed methodology including hazard controls
- Good Safety behaviour for recognition and reward

The Engineering team have a secondary, but still important, role in monitoring the same whenever they are on site. Including any reporting positive events, innovations, incidents and near misses.

14.4 Managing Change

The Supervision team have the primary responsibility to monitor the site activities to identify:

- New Hazards are being identified and controlled and those controls are being added to the Daily Briefing and passed through to the JSEA. As long as the changes are minor and the validity of the methodology and JSEA are not compromised
- Any instance when a methodology/JSEA is not able to be followed without significant modification, the work involved will be suspended until an updated JSEA can be performed in conjunction with the Construction Work Pack Engineer and Safety Advisor
- Development of innovative construction delivery techniques

14.5 Interface with wider Programme Management Team

There are many interfaces for the Construction Team with the wider Project Management Team including Design, Procurement, Safety, Quality, Project Controls, Temporary Works and Engineering Team to ensure good planning, quality, Safety and cost management of the works.

Due to the tight footprint and the physical linear construction approach, the operations need to be coordinated well within the Disciplines of Earthworks, Drainage, Structures, Tunnel, Pavements and Services/Utilities to ensure access and logistics clashes are prevented.

15 Quality Management

15.1 Planning

The site engineering team, in leading the Construction Work Pack Planning process, will play a leading role in creating the Construction Pack and the Inspection and Test Plan and providing the detailed Inspection and Test Record sheets for completion during construction.

The Request for Information process is to be utilised to pursue clarifications to the technical specification or other design documents.

15.2 Execution

The site engineering team have the primary responsibility to monitor the site activities to identify:

- Compliance with the design documents
- Compliance with the methodology
- Compliance with the Inspection and Test Plan and booking in of the needed resources to perform the required inspections and test
- The good Quality behaviour for recognition and reward
- Supervisors followed by engineers will sign off ITP's

15.3 Managing Change

The Supervision team have the primary responsibility to monitor the site activities to identify:

- Any unexpected interfaces, existing site conditions or service locations etc, that may give rise to a need for the design to be changed or the methodology to be altered.
- Any instance when a methodology/ITP is not able to be followed without significant modification, the work involved is to be suspended until an updated CWP can be produced in conjunction with the CWP Engineer. This may require new RFIs and the involvement of the Designers. Change management will be a regular pre-start and toolbox conversation.

The CWP Engineer has a secondary, but still important, role in detecting and managing change whenever they are on site. This will be in the form of a monthly review and site audits. The engineering team will rotate around the areas which are not theirs and audit colleagues CWP for compliance.

16 Environmental Management

16.1 Planning, Execution Monitoring and Managing Change

In a similar way to Safety, Environmental issues are identified, and management strategies developed by the MMA Environmental Manager who is responsible for the development and upkeep of the Construction Environmental Management Plan (CEMP) and the Specific Construction Water Management Plans (SCWMP). The EMP is administered on site by the Environmental manager and advisors.

The development of the overarching Erosion and Sediment Control systems and resourcing is the joint responsibility of the environmental manager and construction manager.

The Superintendent, Supervisors and Project Engineer are then responsible for implementing and monitoring the controls, to ensure competent input in the development of SCWMPs.

Other Environmental Monitoring Parameters such as air quality, noise and vibration are the responsibility of Environmental Manager. The setup and frequency of monitoring and protocols are set out in the EMP. Construction staff may assist the Environmental Manager in the execution of these responsibilities.

17 Progress Measurement

Progress measurement will be the primary responsibility of the Project Engineers. Progress will be measured monthly as part of the earned value process explained in the Project Controls Management Plan. Measurement will be a combination of physical measurement in the field, plus UAV (Drone) , plus tallies from daily worksheet / DJRs.

Earthworks Material tracking refers to on-site quantities and volumes regarding earthworks, rockworks, pavements and surfacing, and stockpiles. It is assumed the survey team will provide this information to the construction team.

Volumes will be derived using a combination of manual survey, and UAV flights.

Volumes will be reported on monthly, in line with the project financial calendar and reporting time frames. Ad-hoc volume calculations will be required from time to time, and these will be undertaken and delivered at the discretion of the construction and survey teams.

Volumes will be reported on in a common spread sheet.

Each material type will be defined and quantified, including but not limited to; Bulk excavation, General Fill, Select Fill, Rock Armour, Subgrade(s), Pavement Layers.

18 Risk and Opportunity Management

The construction Discipline Managers will participate with the Risk Manager in monthly updates of risk and opportunity register to refresh the risk register and associated risk allowances in the "Cost to Complete". The ALT team will conduct a joint review of risk and opportunity register on a quarterly basis.

The entire site construction team is encouraged to identify potential changes to any aspect of the planned work, to reduce the risk of increase opportunity.

19 Maintenance period

A Completion and Commissioning Management Plan will be developed, which will detail the maintenance requirements and responsibilities. This Plan will cover activities such as listed below. The ITPs will detail the handover activities.

- Maintenance and Operations Plan for the Bridges and Tunnel sites will be prepared
- As-builts will be prepared for all works except temporary works

20 Meetings

20.1 Daily Supervisors Catch-up

The superintendent will run a daily supervisor catch either late afternoon or prior to prestart meetings. The purpose of the meeting is to confirm the detailed plan from the previous days' coordination meeting-adjusted for actual progress, weather & resource reallocation as required.

20.2 Operations Planning Meeting 3WLA/STDP

Zone Project Engineers, with assistance supervisors will produce the s week look-ahead or Short-term Delivery Programmes (STDP)

Weekly Last Planner meetings will be held to update and track the Short-Term Delivery Programme (STDP). The STDP will be used to coordinate works on site and update the overall project programme and coordination with all support disciplines.

Attendees will include invites to: Construction Manager, Construction Discipline Managers, Project Engineers, Site Engineers, Safety Manager & Advisors, Environment Manager & Advisors, Stakeholder Manager, Pou Tiaki and Tangata Tiaki, Superintendent, Supervisors, Project Programmer, Survey team & Project Controls Manager.

20.3 Construction Work Pack Methodology meetings

These will be required on an ad-hoc basis to debate and agree the best method of constructing each discrete package of work. For maximum benefit, they require the fullest attendance achievable from across the Engineering and Supervisory teams. They should also to be attended by the Pou Tiaki and Safety Advisor.

One the CWP has been finalised all team members including field staff will be briefed on the plan prior to work commencing.

These meetings will be led by the nominated CWP Engineer and Supervisor.

20.4 Design/Construction Weekly Meeting

Weekly coordination meetings will be held between representative from the Design, CPS and Construction team. The purpose of the meetings is to agree on priority and achievable target dates for closeout actions to finalise design and design/construction related queries. outstanding RFIs.

Discussion topics will include:

- Design Programme
- CDCR
- RFIs
- ITPs and NCRs

20.5 ALT Meeting

The Construction Manager represents the Construction Team at the weekly Alliance Leadership Meeting. This meeting is a regular forum with MMA leadership for discussions on performance against objectives and initiatives for continuous improvement as well as discuss and identify issues arising.

Members of the Engineering Team or Superintendent may be invited to speak to these meetings on specific topics.

20.6 Construction Team weekly Meetings

Construction Discipline Leaders will hold weekly meetings with their teams. These meeting will be attended by engineering and supervision teams and Pou Tiaki with optional invitations to H&S, environmental, quality and survey team.

Discussion topics will include:

- Pou Tiaki/Tāngata Tiaki
- Design Programme
- CDCR
- Health and Safety
- Environmental
- Programme
- QA/Design
- People Staff
- Plant
- Temp works
- Survey
- Materials
- Commercial

Further to the above the Alliance Manager and Construction Manager shall meet fortnightly with Construction Discipline leads. The focus of this meeting will overall coordination and discussion across site wide disciplines

20.7 Weekly Procurement Meeting

Weekly procurement meeting shall be held to ensure the Procurement process has sufficient lead time prior to resources being required onsite ahead of the construction programme. Priorities and planning will be set out in the Procurement Schedule.

The Procurement Schedule will be updated following the weekly meetings. The Procurement Schedule is used to identify, control, and monitor the procurement of goods and services for the project as a sub-set of the project schedule (construction programme), to ensure they are procured in time and resource constraints.

Attendees will include the Procurement Manager, Construction Manager, Construction Discipline Managers, Engineering Team as required, QS team and Ngāti Tama representatives.

21 Management Plan Review

21.1 Document Control

This management plan has been reviewed and approved for implementation by the ALT and PAB in accordance with the PAA.

Subsequent revisions to this plan will be authorised by the Alliance Manager.

21.2 Monitoring

Systematic internal audits will be undertaken to monitor compliance with this plan and to allow the plan to be assessed for suitability, relevance and effectiveness. The auditor will be appointed by the Project Controls Manager and will be independent of the activity being audited.

21.3 Review

This management plan is a dynamic document that is current at the time of issue. Ongoing development, amendment and updating of this plan will take place throughout the duration of the project to consider changes in the project management process or changes identified by continuous improvement of processes. To ensure the ongoing suitability, relevance and effectiveness of this plan are reviewed at least annually.

22 Records and Reports

The following records will be created to document the activity in the processes in this plan (many of which are detailed in other management plans in the set). All information will be stored on Synergy in electronic format. Some site office records may be temporarily stored in hard copy if we do not have full site electronic server connectivity.

1 Daily prestart crew briefing plan (VMP and site diagrams)
2 Toolbox records
3 3WLA Lookahead meeting records/Last Planner
4 Construction Work Pack
   a. Method Statements
   b. JSEA
   c. SCWMP
   d. ITP
   e. Handover Checklist
5 Subcontract Administration records (refer Procurement Plan)
   a. Notice to Subcontractor (NTSC)
   b. Progress claims
   c. Progress certificates
   d. Minutes of Meeting
6 Progress measurement records
7 Minimum stock levels schedule
8 Stores requisition forms

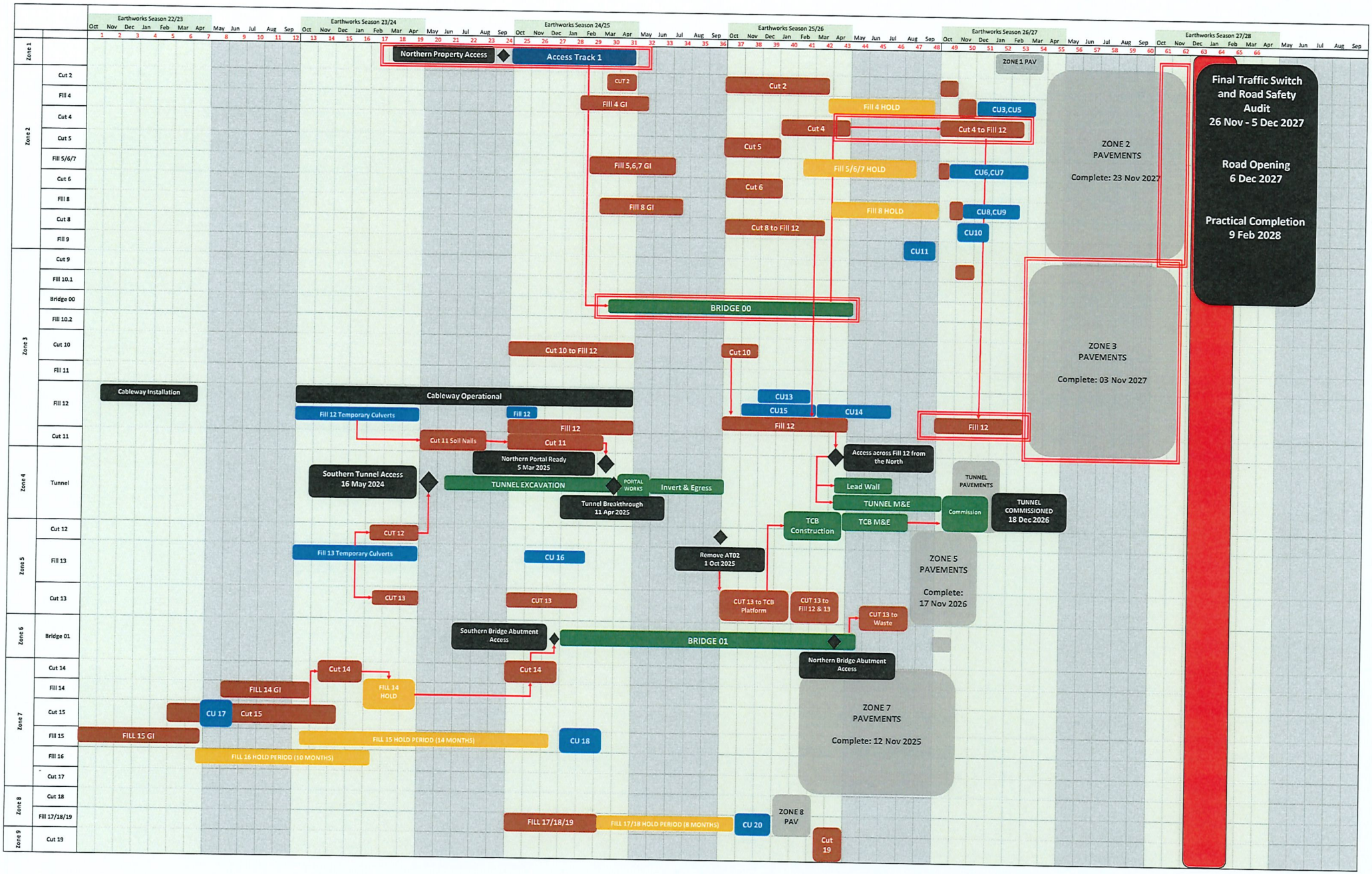
9 Materials Certificates
10 Wastage Measurement Records
11 Site Safety Inspection Records (refer Safety MP)
12 Request for Information (RFI) records
13 Change Proposal/Advice records (refer Risk MP for details)

14 Permits to Work (refer H&S MP)
   a. Confined Space
   b. Working at Heights
   c. Permit to Dig
   d. Hot Works
   e. Air Ops/Helicopter works
   f. Walk-in
   g. Temporary Works

15 Green cards - Kiwi Dog Sweep.
16 Temporary Works Certificates
   a. Lift Plans
   b. Deep Excavations
   c. Falsework and Formwork
17 Traffic Management Plans
18 Design and Construction Weekly Coordination Meeting
19 Construction Discipline Managers Meeting
20 Risk Register (refer Risk MP)
21 Construction Work Pack Methodology Meeting records
22 Design and Construction Weekly Meeting records
   a. IFC Design progress
   b. RFIs
   c. QA – ITPs and NCRs
   d. Critical Items

APPENDICES

Appendices	Where held
Appendix A	Summary Programme
Appendix B	Organisation Chart


Earthworks Season 22/23
Earthworks Season 23/24
Earthworks Season 24/25
Earthworks Season 25/26
Earthworks Season 26/27
Earthworks Season 27/28
Zone 1
Zone 2
Zone 3
Zone 4
Zone 5
Zone 6
Zone 7
Zone 8
Zone 9
Cut 2
Fill 4
Cut 4
Cut 5
Fill 5/6/7
Cut 6
Fill 8
Cut 8
Fill 9
Cut 9
Fill 10.1
Bridge 00
Fill 10.2
Cut 10
Fill 11
Fill 12
Cut 11
Tunnel
Cut 12
Fill 13
Cut 13
Bridge 01
Cut 14
Fill 14
Cut 15
Fill 15
Fill 16
Cut 17
Cut 18
Fill 17/18/19
Cut 19
Northern Property Access
Access Track 1
CUT 2
Fill 4 GI
Cut 2
Fill 4 HOLD
CU3,CU5
Cut 4
Cut 4 to Fill 12
Cut 5
Fill 5,6,7 GI
Fill 5/6/7 HOLD
CU6,CU7
Cut 6
Fill 8 GI
Fill 8 HOLD
CU8,CU9
Cut 8 to Fill 12
CU10
CU11
ZONE 1 PAV
ZONE 2 PAVEMENTS
Complete: 23 Nov 2027
BRIDGE 00
Cut 10 to Fill 12
Cut 10
ZONE 3 PAVEMENTS
Complete: 03 Nov 2027
Cableway Installation
Cableway Operational
CU13
CU15
CU14
Fill 12 Temporary Culverts
Fill 12
Fill 12
Fill 12
Fill 12
Cut 11 Soil Nails
Cut 11
Northern Portal Ready 5 Mar 2025
Access across Fill 12 from the North
Southern Tunnel Access 16 May 2024
TUNNEL EXCAVATION
PORTAL WORKS
Invert & Egress
Lead Wall
TUNNEL PAVEMENTS
TUNNEL M&E
Commission
TUNNEL COMMISSIONED 18 Dec 2026
Tunnel Breakthrough 11 Apr 2025
TCB Construction
TCB M&E
CUT 12
Fill 13 Temporary Culverts
CU 16
Remove AT02 1 Oct 2025
ZONE 5 PAVEMENTS
Complete: 17 Nov 2026
CUT 13
CUT 13
CUT 13 to TCB Platform
CUT 13 to Fill 12 & 13
CUT 13 to Waste
Southern Bridge Abutment Access
BRIDGE 01
Northern Bridge Abutment Access
Cut 14
Cut 14
FILL 14 GI
FILL 14 HOLD
CU 17
Cut 15
ZONE 7 PAVEMENTS
Complete: 12 Nov 2025
FILL 15 GI
FILL 15 HOLD PERIOD (14 MONTHS)
CU 18
FILL 16 HOLD PERIOD (10 MONTHS)
FILL 17/18/19
FILL 17/18 HOLD PERIOD (8 MONTHS)
CU 20
ZONE 8 PAV
Cut 19
Final Traffic Switch and Road Safety Audit
26 Nov - 5 Dec 2027
Road Opening
6 Dec 2027
Practical Completion
9 Feb 2028

Construction Organisation Chart