Transmission Gully Project – Draft Construction Traffic Management Plan

TRANSMISSION GULLY PROJECT: ASSESSMENT OF TRAFFIC & TRANSPORTATION EFFECTS

- Draft F
- May 2011

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Contents

Glossary

AADT	Annual Average Daily Traffic
CAD	Computer Aided Design
COPTTM	Code Of Practice for TTM
CTMP	Construction Traffic Management Plan
Designation	The area designated under the Resource Management Act 1991 for use as a motorway or other such public work within a district plan.
EED	Engineering Exception Decision
GWRC	Greater Wellington Regional Council
HCC	Hutt City Council
KCDC	Kapiti Coast District Council
MOTSAM	Manual of Traffic Signs and Markings
mVMS	mobile Variable Message Sign
NZTA	NZ Transport Agency
PCC	Porirua City Council
RCA	Road Controlling Authority
SSTMP	Site Specific Traffic Management Plan
STMS	Site Traffic Management Supervisor
Territorial Authority	A Council charged with the functions and purpose listed in section 31 of the Resource Management Act, 1991. Also called Territorial Local Authority
TLA	Territorial Local Authority
TOC	Traffic Operations Centre
TTM	Temporary Traffic Management
UHCC	Upper Hutt City Council
VMS	Variable Message Sign
WCC	Wellington City Council

1. Introduction

1.1. Overview

The application of effective Temporary Traffic Management (TTM) planning and implementation during the construction phase is critical to the success of the Transmission Gully project.

Transmission Gully intersects strategic roads into and out of Wellington, including SH1 and SH58.

This document outlines the policies, procedures, standards and methodologies that will be put in place in order to minimise the impacts of TTM implemented by the contractor on the travelling public and key stakeholders.

1.2. Objectives

The objective for the Transmission Gully Project in managing the effects of construction traffic is to minimise impacts on the Wellington region's local roads and residents by making best use of the State Highway and arterial road networks, which are designed for carrying traffic of this nature, while minimising travel disruptions on all affected roads.

The effects of proposed TTM measures will be assessed prior to implementation, and the extent and timing altered in order to minimise adverse impacts. Where necessary and practical, disruptive work will be carried out during low traffic demand periods such as nights and non-peak periods (as appropriate), with consideration given to noise constraints. A lot of work will be occurring away from the State Highway network and may be undertaken on a continuous basis if the impacts on the road network can be managed.

This Construction Traffic Management Plan (CTMP) outlines the procedures and objectives required to produce Site Specific Traffic Management Plans (SSTMPs). It also identifies the criteria to be used in developing SSTMPs, the standards and materials to be used in providing TTM and sets out strategies, systems and procedures required to deliver the traffic management.

All SSTMPs will be approved prior to implementation. As such, the term approval used in this document solely relates to approvals sought in the SSTMP development and implementation process. Approval will be sought from the delegated operations representatives for the relevant Road Controlling Authority (RCA) as defined by Section 8 of this document.

The Transmission Gully Project CTMP is based on the Code of Practice for TTM (COPTTM)[1] and takes into account New Zealand Transport Agency (NZTA) requirements, health and safety requirements and other standards as outlined in Section 2 - Standards.

[1] Code of Practice for Temporary Traffic Management, 3rd Edition, 2008

As this plan has been developed prior to engaging the preferred contractor and development of the final construction methodology, the information included in this plan is generic in some cases. This plan will be updated by the project contractor in line with the actual construction methodology and programme.

1.3. Document Structure

The remainder of this document is structured as follows:

- Section 2 "Standards" outlines the standards that will be adhered to in developing, planning and implementing TTM during the construction of the Transmission Gully Project.
- Section 3 "Traffic Management Objective and Issues" outlines the objectives of the TTM, as well as the proposed systems and procedures that will be implemented in order to meet those objectives.
- Section 4 "Mitigation of Effects" provides a summary of the mitigation of impacts resulting from TTM.
- Section 5 "Traffic Management Systems" outlines the framework that will allow responsive and effective TTM planning during the construction of the Transmission Gully Project.
- Section 6 "SSTMP Identification and Planning" details procedures that will allow for a comprehensive and robust system for planning TTM activities that respond effectively to the needs of the implementation team, stakeholders and the general public.
- Section 7 "SSTMP Development" details the requirements, structure and special considerations that will be considered in developing the primary TTM planning document, the SSTMP.
- Section 8 "SSTMP Approval Process" details the process that will be observed in gaining the required approvals prior to implementation of each SSTMP on the Transmission Gully Project.
- Section 9 "SSTMP Document Control" details the transparent and accessible process that will ensure that the most up-to-date SSTMP is used when and where required.
- Section 10 "SSTMP Implementation" details the ongoing co-ordination processes that will be observed for the safe and efficient and smooth implementation of TTM on the State Highway and local road networks.
- Section 11 "Team Structure" details the proposed team structure, including the responsibilities of key team members. It also outlines the key points of contact for the various stakeholders in relation to TTM.

Designation Considerations Please refer to the following sections for details of how the construction traffic activity associated with the Transmission Gully Project will comply with the designation conditions	
Conditions	**Section, Page**
TBC following confirmation of Notice of Requirement	

2. Standards

The following standards will be adhered to in planning, coordinating and implementing TTM during the construction of the Transmission Gully Project.

- NZTA "Code of Practice for Temporary Traffic Management" (COPTTM), 3rd Edition, 2008. This standard will be used in all aspects of the planning, design and implementation of TTM. It should be noted that while the COPTTM generally provides comprehensive guidance, there will be circumstances where other manuals will be required for guidance on specific areas. These are as follows:
  a) NZTA "State Highway Geometric Design Manual", Draft, 2005. This document will be employed for the design of temporary State Highway carriageways, albeit with reduced design speed as appropriate.
  b) NZTA "Manual of Traffic Signs and Markings", 2010, (MOTSAM). These documents will be employed for the temporary design and planning of signage, linemarking and road layouts affected by the construction of the Transmission Gully Project.
  c) Austroads "Guide to Road Design" and "Guide to Traffic Management". This document will be employed where design of traffic signals, road layouts, signage or other traffic engineering elements require more detailed analysis.

3. Temporary Traffic Management Objectives and Issues

3.1. Objectives

The following objectives have been developed for the delivery of TTM during the construction of the Transmission Gully Project:

1) Provide TTM complying fully with the COPTTM wherever practicable. Non compliance will be addressed through Engineering Exception Decisions (EEDs) signed off by the implementation team and the relevant RCA
2) Focus on leading industry standards with regard to TTM and safety
3) Minimise disruption on the State Highways and local roads wherever practicable
4) Limit where possible the number of construction vehicle trips on local roads and obtain access from arterial roads
5) Maintain existing flows and travel times on State Highways and local roads adjacent to the work site where practicable
6) Minimise the impact of works on pedestrians and cyclists
7) Minimise the effects of construction traffic on local roads used for access
8) Minimise the impact of construction parking
9) Develop SSTMPs having consideration for all key stakeholders i.e. residents, Greater Wellington Regional Council (GWRC), Upper Hutt City Council (UHCC), Hutt City Council (HCC), Wellington City Council (WCC), Porirua City Council (PCC) and Kapiti Coast District Council (KCDC)
10) Identify all issues and have a planned SSTMP submitted to and approved by the applicable council (RCA) and NZTA's network management consultant at least five days before implementation is required
11) Provide effective communication to affected parties
12) Implement TTM that provides stakeholders with exceptional service in terms of functionality and clarity of direction of travel through roadwork sites.

It should be noted that construction dust and noise will be managed throughout the construction process. While some reference is made to these issues in this document, their management is dealt with in the Construction Noise Management Plan and the Construction Dust Management Plan.

3.2. Issues

In order to provide TTM that will meet the above objectives, outstanding issues have been identified that will affect the performance and delivery of quality TTM which require mitigation. These are:

- Communication and the need to inform the public of changes or of activities occurring on the network
- The need to have feedback from key stakeholders with regard to TTM performance and improvements
- The ability to measure the performance of SSTMPs
- The effect that TTM activities will have on traffic flows
- The impact of incidents/crashes within the road network affected by the Project
- The effect of incidents/crashes outside of the immediate project areas and how they will impact Transmission Gully Project works;
- The effect of TTM activities on key stakeholders
- The impact of Transmission Gully Project work on State Highway and local road traffic flows
- Special events (concerts, parades, sports events etc) and increased holiday flows resulting in exceptional traffic flows through the State Highway and local road network adjacent to the site
- The impact on the condition of the existing road assets from the use of construction traffic or the effects from the construction of the project
- The effect on the safety of road users (vehicular, cycle, pedestrian) from the use of construction traffic of the effects from the construction of the project.

4. Mitigation of Effects

TTM can have a significant impact upon the operation of the overall road network. With careful assessment of the variety of issues and identification of effective mitigation, the impacts can be significantly reduced.

This section outlines the potential location of impacts of TTM activities. If the principles set out in this CTMP are followed and appropriate mitigation measures developed, the effects will be able to be managed. In general, the following key limitations will be placed on the implementation of TTM in order to mitigate impacts:

- Where TTM could impact upon the capacity of the road network, this will generally be installed on Sunday through Thursday nights only. Friday and Saturday night closures are considered less appropriate due to the increased crash risk. Limited circumstances may require that TTM is implemented over this period, however only with the written consent of the RCA and the Police
- TTM activities will be prohibited over public holiday periods (unless under exceptional circumstances and as approved by both the NZTA and the appropriate RCA)
- TTM implementation and coordination will take into account special events and the needs of stakeholders in the area
- TTM will not be implemented during inclement weather or during periods of reduced visibility
- Use of residential roads for site and materials access will be minimised
- Where possible, mini-buses will be used to limit the number of workers vehicles accessing the site via the local access roads
- Parking of site vehicles on local roads will be prohibited. Designated site parking will be provided as appropriate
- Safe pedestrian and cycle access will be maintained at all times
- Noise and dust impacts from construction vehicles will be managed through the appropriate management plans. In general, wheel-wash facilities will be provided at all access points as appropriate to ensure that material is not tracked onto the road network and tarps used to cover all loads that may present a dust nuisance on local roads used for access.

It is of course noted that some long-term traffic management will need to be maintained at all times during construction.

The key locations where physical construction activities are likely to affect operating conditions on existing road networks have been identified as:

- Linden Interchange
- Kenepuru Drive

- MacKays Crossing
- Waitangirua Link (Warspite Ave)
- Whitby Link (James Cook Drive)
- SH58 / Transmission Gully Interchange.

TTM measures will be developed for each of these locations to mitigate and manage the effects on traffic conditions and all road users. These locations have been developed based on the indicative methodology for constructing the Transmission Gully Project and assessing its impacts. The final methodology will be determined by the contractor appointed to undertake the works.

It is envisaged that that there will be major site offices and compounds at the following locations. However, depending on the contractor's methodology, there may be a need for satellite offices at other locations such as Takapu Road, James Cook Interchange, Wainui Saddle and MacKays Crossing.

- 548 Paekakariki Hill Road (south of Battle Hill Farm Forest Park)
- SH58 Interchange
- Kenepuru Interchange.

A specific SSTMP will be produced for each site detailing vehicular access, parking arrangements and protocols and procedures to be used by all staff accessing the site offices.

Construction traffic accessing the site has the potential to have adverse effects on local road residents and businesses. Indicative construction vehicle numbers (based on a possible construction methodology) and access points are shown in Figure 4-1 along with the proposed site offices. These volumes have been developed by McDonald International who has undertaken the construction assessments for the project and these volumes are considered to be a conservative maximum. The exact method of construction and the need to use each access will be determined by the successful contractor but all potential access points have been included in this document to ensure that flexibility is maintained to use a number of access points. For each access, the volumes presented represent a likely use if that access was to be utilised. In reality, not all accesses will be utilised to the extent indicated.

The indicative construction traffic volumes in Figure 4-1 include two figures. The first is indicative light vehicle (car) numbers if minibuses are used to ferry workers to the site. The next is the light vehicle numbers if private vehicles were used. Through the 'Principal's Requirements' for the project, contractors will be encouraged to use minibuses to ferry workers to the site in order to reduce overall vehicle numbers, therefore the light vehicle numbers (without minibuses) is assumed to be the worst case of the two scenarios.

The physical condition of all public roads being used to afford access to the Transmission Gully Project will be monitored throughout the construction process and any repairs required to maintain their serviceability will be managed through the relevant RCA and their maintenance contractor/s.

Figure 4-1: Indicative Construction Traffic, Accesses and Site Offices

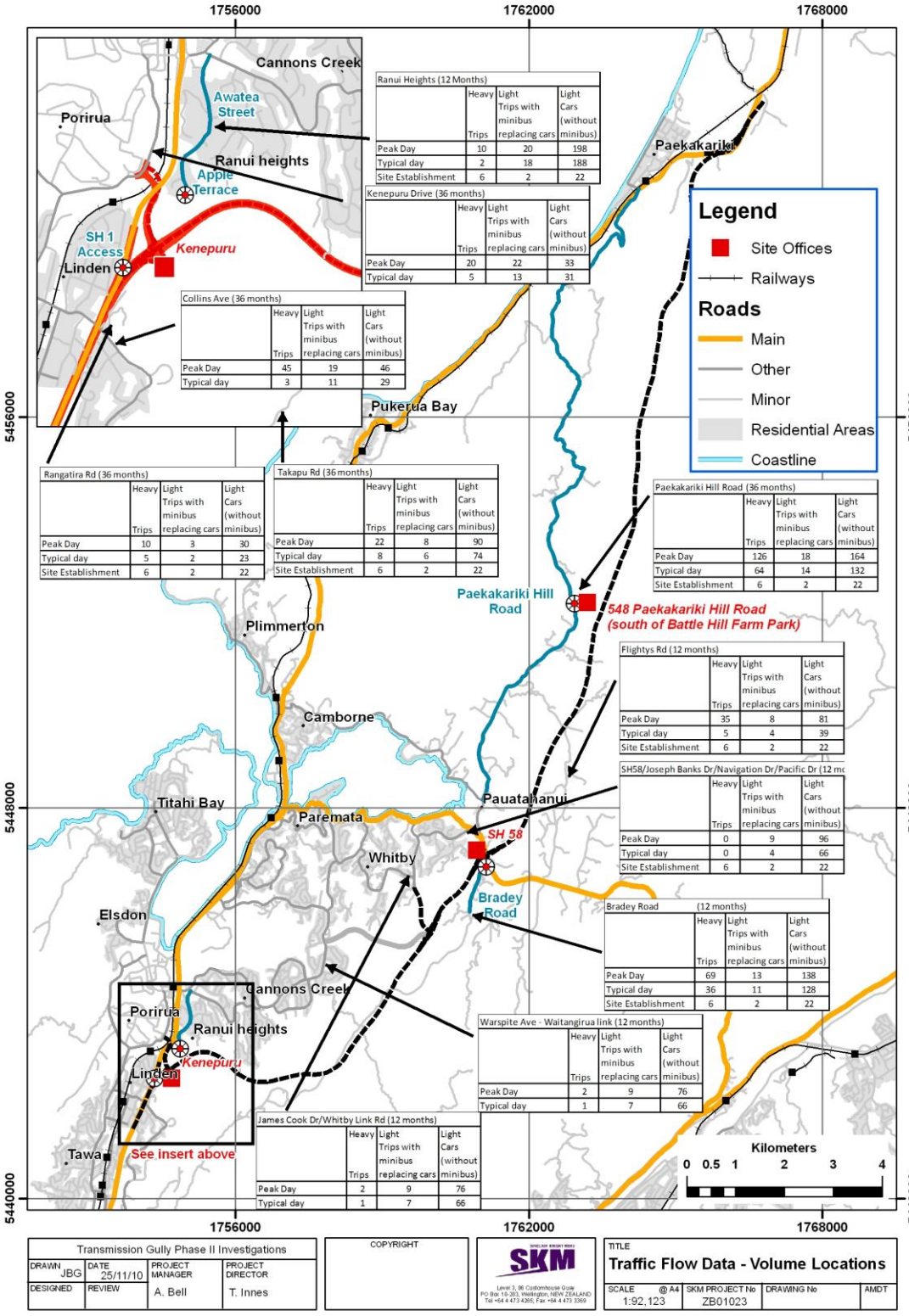


Table 4-1 describes the types of activities that could be expected to be implemented over the course of the Transmission Gully Project construction as well as their expected impacts and some proposed mitigation measures. Note that activities, timeframes and mitigation measures are only a guide; and that actual forms and implementation times will be dependent on the final construction methodology and approved SSTMPs. As such, this management plan will be updated by the contractor prior to construction. It is not intended that any haul roads will cross local roads at grade.

If the principles of TTM detailed in this plan are implemented, the traffic effects of construction can be managed accordingly to reduce disruptions to road users and to local residents and businesses on access routes.

Table 4-1: Potential Management Methods and Mitigation

TTM Activities on Project						
Activity					**Impact**	**Potential Management Methods and Mitigation**
RCA	**Activity**	**Road**	**Duration (approx)**	**Frequency (approx)**		
NZTA	Shoulder Closures on SH1	SH1	Up to 4 years	Ongoing	Potential delays due to rubbernecking	Screens placed as appropriate
NZTA	Lane Closures on SH1	SH1	1 night	nightly	Capacity reduction leading to delays	Undertake during low flow periods and undertake calculations to determine appropriate working windows
NZTA	Closure of SH1	SH1	1 night	Very infrequent	Significant delays to regional and interregional travel	Signed diversions. Duration to be limited. Significant communication exercise to manage demand during closure
NZTA	Shoulder Closures on SH58	SH58	4 years	Ongoing	Potential delays due to rubbernecking	Screens placed as appropriate
NZTA	Lane Closures on SH58	SH58	1 night	nightly	Capacity reduction leading to delays	Undertake during low flow periods and undertake calculations to determine appropriate working windows
NZTA	Closure of SH58	SH58	1 night	Very infrequent	Significant delays to regional and interregional travel	Signed diversions. Duration to be limited. Significant communication exercise to manage demand during closure
PCC	Site Access Via Paekakariki Hill Road	Paekakariki Hill Road	Up to 3 years	Ongoing	Construction traffic on local residential roads leads to potential amenity and safety concerns especially through Pauatahanui Village	Construct alternative access along main alignment from SH58 Use minibuses for access where possible Minor safety improvements to Paekakariki Hill Road such as improved delineation, temporary speed restrictions through Pauatahanui Village, curve easing, inter-visibility improvements etc. Also, heavy vehicle access restrictions at the intersection of SH1 and Paekakariki Hill Road due to safety deficiencies (visibility and geometric alignment) at the intersection. Development of a maintenance intervention strategy with RCA Noise and dust management through appropriate management plans
PCC	Site Access Via Flightys Road	Flightys Road	Up to 12 months	Ongoing	Construction traffic on local residential roads leads to potential amenity and safety concerns	Construct alternative access along main alignment from SH58 Use minibuses for access where possible Development of a maintenance intervention strategy with RCA Noise and dust management through appropriate management plans
PCC	Site Access Joseph Banks Dr / Navigation Drive / Pacific View	Joseph Banks Dr / Navigation Drive / Pacific View	Up to 12 months	Ongoing	Construction traffic on local residential roads leads to potential amenity and safety concerns	Construct alternative access along main alignment from SH58 Use minibuses for access where possible Development of a maintenance intervention strategy with RCA Noise and dust management through appropriate management plans
PCC	Site Access via Ranui Heights	Awatea St and Apple Terrace Route	Up to 12 months	Ongoing	Construction traffic on local residential roads leads to potential amenity and safety concerns	Construct alternative access from SH1 Use minibuses for access where possible Avoid heavy vehicle access during school drop-off / pick –up times Development of a maintenance intervention strategy with RCA Noise and dust management through appropriate management plans
WCC	Site Access via Collins Ave, Linden	Collins Ave and Rangatira Road Route	Up to 3 years	Ongoing	Construction traffic on local residential roads leads to potential amenity and safety concerns	Construct alternative access from SH1 Use minibuses for access where possible Avoid heavy vehicle access during school drop-off / pick –up times Development of a maintenance intervention strategy with RCA Noise and dust management through appropriate management plans

TTM Activities on Project						
Activity					Impact	Potential Management Methods and Mitigation
RCA	Activity	Road	Duration (approx)	Frequency (approx)		
WCC	Site Access via Rangatira Rd, Linden	Rangatira Road Route	Up to 12 months	Ongoing	Construction traffic on local residential roads leads to potential amenity and safety concerns	Construct alternative access from SH1 Use minibuses for access where possible Avoid heavy vehicle access during school drop-off / pick –up times Development of a maintenance intervention strategy with RCA Noise and dust management through appropriate management plans
PCC	Site Access via Bradey Road	Bradey Road	Up to 12 months	Ongoing	Construction traffic on local roads leads to potential amenity and safety concerns	Construct alternative access from SH58 via the new Pauatahanui Stream bridge and the main alignment Use minibuses for access where possible Stop/go control at the single lane bridge on Bradey Road (during periods of high heavy vehicle demand) to avoid opposing vehicle conflict. Development of a maintenance intervention strategy with RCA Noise and dust management through appropriate management plans
PCC	Site Access via Endeavour Drive / Pacific View	Endeavour Drive / Pacific View	Up to 3 years	Ongoing	Construction traffic on local roads leads to potential amenity and safety concerns	Construct alternative access along main alignment from SH58 Use minibuses for access where possible Development of a maintenance intervention strategy with RCA Noise and dust management through appropriate management plans
WCC	Site Access Via Takapu Road	Takapu Road	Up to 3 years	Ongoing	Construction traffic on local residential roads leads to potential amenity and safety concerns	Construct alternative access along main alignment from SH1 Use minibuses for access where possible Minor safety improvements to Takapu Road such as improved delineation, temporary speed restrictions, curve easing, inter-visibility improvements etc. Development of a maintenance intervention strategy with RCA Noise and dust management through appropriate management plans
PCC	Kenepuru Link Connection and Site Access	Kenepuru Drive	Up to 3 years	Ongoing	Potential delays due to rubbernecking Impacts on pedestrians and cyclists Impact on property access Construction traffic on local residential roads leads to potential amenity and safety concerns	Screens placed as appropriate Accesses to be maintained at all times Pedestrian and cyclist access to be maintained at all times or alternative routes provided Use minibuses for access where possible Development of a maintenance intervention strategy with RCA Noise and dust management through appropriate management plans
PCC	Waitangirua Link Connection and Site Access	Warspite Ave	Up to 12 months	Ongoing	Potential delays due to rubbernecking Impacts on pedestrians and cyclists Impact on property access Construction traffic on local residential roads leads to potential amenity and safety concerns	Screens placed as appropriate Accesses to be maintained at all times Pedestrian and cyclist access to be maintained at all times or alternative routes provided Construct alternative access along main alignment from SH58 Use minibuses for access where possible Development of a maintenance intervention strategy with RCA Noise and dust management through appropriate management plans
PCC	Whitby Link Connection and Site Access	James Cook Drive / Navigation Drive	Up to 12 months	Ongoing	Potential delays due to rubbernecking Impacts on pedestrians and cyclists Impact on property access Construction traffic on local residential roads leads to potential amenity and safety concerns	Screens placed as appropriate Accesses to be maintained at all times Pedestrian and cyclist access to be maintained at all times or alternative routes provided Construct alternative access along main alignment from SH58 Use minibuses for access where possible Development of a maintenance intervention strategy with RCA Noise and dust management through appropriate management plans

5. Temporary Traffic Management Systems

5.1. Introduction and General Requirements

The duration and scale of the Transmission Gully Project dictates that TTM may be implemented for periods ranging from a few minutes to more than four years, and may vary from small to very large construction works.

TTM measures will be planned and implemented to a level appropriate for the activity or work site. In accordance with COPTTM, TTM measures will be implemented in order to fully consider the safety and level of service provided as the travelling public approaches, passes through and continues beyond the project area.

Supervising staff must be familiar with the SSTMP and the agreed procedures for implementation. A senior person will be on site day and night with the responsibility of directing the operations in the event of emergency or implementation of contingency plans. In accordance with COPTTM, the Site Traffic Management Supervisor (STMS) will be less than 30mins away at all times.

6. SSTMP Identification and Planning

SSTMPs are the documents that outline the procedures and measures to be implemented so that traffic, vulnerable road user (pedestrian and cyclists etc) and worker safety is maintained at a high level continuously throughout the duration of each and every construction activity on the Transmission Gully Project. Each SSTMP will outline the measures to be implemented so that all road users may negotiate the site safely, and it will also outline the procedures required to be followed by construction workers in order to maximise the safety of the site for themselves and all road users. Pedestrian, cyclist and general public safety will be a key focus in each plan.

Planning for effective TTM must begin during the initial stages of construction planning. Following programming of construction tasks, associated TTM requirements will need to be identified for each task. The situations when a SSTMP is required is set out in COPTTM and for this project will include when any construction activity or access to site is likely to affect road users or local residents and businesses.

This process will allow for a 'no-surprises' approach to TTM planning where TTM requirements feed into the construction planning process at an early stage.

The relevant generic SSTMP must be identified at the construction planning stage for implementation along with work site mobilisation. If a SSTMP has not been developed previously, the need will be flagged for development and the programme of works adjusted accordingly. The process employed for development and approval of SSTMPs is outlined in Sections 7 and 8 below.

A SSTMP will be prepared so that every construction activity is conducted using an approved methodology, with the agreed mitigation measures in place and to the correct standard. Every construction method plan should have an appended SSTMP; however there will not be a unique SSTMP for every construction method plan. Instead, where appropriate, generic STTMPs will be used.

7. SSTMP Development

Preparation and implementation of SSTMPs will be conducted so that a consistent approach is applied where practicable, and that adjacent activities do not conflict with one another.

Each SSTMP will comply with each of the relevant standards outlined previously in Section 2. Care will be taken in identifying the safety requirements of both road users and construction workers.

A template of the standard SSTMP may be found in Appendix A.

Two types of SSTMPs will be developed for the Transmission Gully Project.

- **Long-term (on-going) SSTMPs.** Long-term SSTMPs relate to work sites that require continuous TTM for the duration of the particular work activity which will last for some considerable time, such as the following activities:
  - Excavations
  - Foundation or piling works
  - Pier works
  - Bridging works
  - Retaining walls
  - Barrier construction
  - Deep lift pavement works.
- **Short-term SSTMPs.** Short-term SSTMPs relate to work sites that require completion under discrete construction packages due to the sensitivity of the work area, such as the following activities:
  - Surfacing pavement works
  - Localised deep lift pavement works
  - Planting
  - Remedial works
  - Overhead signage
  - Linemarking changes
  - Delivery of plant and materials
  - Installation of long-term work sites including temporary barrier installation.

At the completion of works under discrete TTM closures, the site must be made safe for the travelling public, so that no hazard has been introduced or left behind as a result of the work. This philosophy does not explicitly limit the type of activity that may be conducted under either form of

closure, however it limits the construction methodologies such that the safety and level of service provided to the travelling public is maintained at all times.

Long-term SSTMPs will include the short-term TTM required for establishment of the closures.

7.1. SSTMP Structure

Each SSTMP will include the following:

- **SSTMP Proforma.** This is the text of the document, which outlines the requirements, methodologies and standards required in observing the SSTMP. Details included in each SSTMP will vary depending on the activity requiring TTM, however they will each include the following key components:
  - Contract, Road Controlling Authority, SSTMP Summary
  - STMS ID number, contact details
  - Backup STMS and contact details
  - SSTMP preparer and reviewer
  - Date the SSTMP is approved for implementation
  - Duration of the activity
  - Location of the activity (including route positions on NZTA State Highways)
  - Road type and level (as classified by COPTTM)
  - Visibility standards
  - Safety zones employed
  - Temporary speed limits employed
  - Permanent speed limit
  - Critical intersections
  - Site access locations and procedures
  - Relevant Road AADTs (Annual Average Daily Traffic)
  - Likely delays to traffic including delay or queue calculations where applicable
  - Special events
  - Communications employed
  - Standards employed in any alterations to road layout
  - Barriers installed
  - Installation methodology
  - Site specific emergency procedures
  - Reference to established emergency management procedures
  - Site safety standards

- Site maintenance and inspection standards.

- **EEDs.** All EEDs applicable will be appended to the SSTMP
- **CAD (Computer Aided Design) drawings.** CAD drawings will be employed for illustrating the closures defined by the Proforma, and will include the following elements:
  - Dimensions sufficient to correctly display the size, scale and practicality of the closure, including details such as length of tapers, width of trafficable lanes, length of barriers, sign spacing etc
  - Signage as required by COPTTM
  - Proposed delineation including barriers, cones, safe-hit posts etc
  - Construction areas
  - Safety zones with key dimensions highlighted adjacent to construction zones
  - The drawings will be to scale and will display compliance with all the relevant standards
  - The drawings will accurately represent local road conditions and layout, including the following:
    - Road marking and road layout
    - Bus stops and bus lane configurations
    - Affected or relevant existing traffic signs
    - Staging drawings will also need to be added where the complexity of the activity is great enough to warrant them
    - The drawings will be clearly identified with a drawing number, date, and other information necessary to enable document tracking and control.
- Communications strategy. This will outline the proposed strategy for informing the public of the works. This may include public notifications in local newspapers, advertisements, radio communications, flyer or posters, Variable Message Signs (VMS) strategies, or driver information signage installed. See Section 7.2.10 for details of the communications strategies that may be employed.

7.2. Special Considerations

7.2.1. Network Capacity

The main indicator of the impact of TTM on the road network is the delay caused by the activity. Under COPTTM, delays are not permitted to be greater than 5 minutes. This applies to both the traffic passing through the closure and delays caused along diversions routes.

All practical steps will be taken to minimise traffic network effects caused by construction activities or TTM measures. Activities that may impact upon the traffic network may include (but are not limited to) the following:
Short-term mobile closures for installation of TTM

- Site access manoeuvres
- Lane closures
- Carriageway closures with associated diversions
- Lane narrowing
- Shoulder narrowing
- Visibility of construction activities (rubbernecking)
- Road layout alterations.

The impact of TTM will be considered in each SSTMP, with queue modelling, delay estimates or traffic modelling conducted where applicable in order to reasonably satisfy the relevant RCA that the impacts are well understood and less than 5 minutes prior to implementation. It is expected that the RCAs would apply appropriate engineering judgement to agree the level of analysis required.

Where the delays are deemed to be unacceptable, construction staging methodologies will be investigated in order to reduce the duration or impacts of the activities. Only under exceptional circumstances will activities that create queues with greater than 5 minute delays be deemed unavoidable, in which case pre-conditioning of road users will be conducted through a communications campaign. This will attempt to reduce the demands on the road network so that delays are reduced.

Works may also be programmed for school holiday periods or other lower traffic demand periods during which traffic demands are reduced and there is a higher proportion of discretionary trips on the network. These will be investigated on a case-by-case basis, with an approach agreed with the relevant stakeholders no less than 6 weeks prior to the proposed activity.

7.2.2. Peak Hour Capacity

The contractor will take all practical steps to reduce the impact of construction activities or TTM measures during peak hours. Activities that may impact on the capacity of the adjacent carriageway (as outlined above) will be restricted depending on the type of activity and the level and traffic characteristics of the affected carriageway.

Activities that impinge upon capacity for a brief period (less than 5 minutes) will be considered on a case-by-case basis and only conducted under an approved SSTMP.

Only under exceptional circumstances will any activities that impinge upon capacity for duration greater than 5-minutes be permitted. The relevant approved SSTMP will include mitigation for the impacts of the activity, including communications required and methodology implemented for reducing the duration and severity of the activity.

The restrictions will be outlined in each SSTMP, which will be agreed with the RCA on a case-by-case basis.

7.2.3. Site Accesses

Site access will be subject to the same restrictions as activities that impact upon the capacity of the network and peak hour activities. Each site access will be required to have an approved SSTMP which will outline the systems and procedures required for safe operation.

Site access points will be installed as detailed on the SSTMP drawing. The site specific requirements for installation and use of site accesses will be outlined in the SSTMP, which may include (but is not limited to), the following:

- Required signage and delineation
- Permitted entry / exit movements to / from the site access
- Permitted hours of use
- Entry / exit escort procedures to be implemented
- Types of vehicles allowed, and any procedures relating to particular classes of vehicles (articulated trucks or oversized vehicles)
- Measures to be put in place to ensure pedestrian, cyclist and general public safety
- Provision for manned accesses where required.

Through the course of the Transmission Gully Project works, various site accesses will be developed. Site access plans (separate to but consistent with the associated SSTMP) will be prepared and updated for each area when any change is made to the nature of the access. Copies of the site access plan will be sent to all suppliers and orders will specify which access the delivery is to be made to.

Entry and exit will be operated in a manner that will minimise disruption to the road user, including pedestrians whilst safety will be maximised. Accordingly, all drivers of vehicles using the access points will be specifically briefed.

In addition to the above, each SSTMP produced for site accesses will also consider the impacts of construction traffic travelling to and from site. It will identify key routes and any measures required to minimise the impact of construction traffic along those routes.

7.2.4. Traffic Diversions

Full closures and the associated traffic diversions will be implemented only where the construction methodology precludes the possibility of TTM measures such as contra-flow, lane narrowing, lane closures or shoulder closures. Full closures will generally only be installed during the night time unless under exceptional circumstances (or on low volume roads).

All full closures and the associated diversions will be implemented under an approved SSTMP. The RCA with roads affected by a diversion will be consulted prior to finalisation of the SSTMP.

Diversion routes will follow arterial roads where possible, so that impacts on residential streets are minimised.

The traffic diversion route will be analysed in order to determine the maximum capacity of the critical link or movement on the detour route. This maximum capacity, based on the peak hour flow on a typical weekday, will then be used to limit the closure timing on the carriageway to be affected. Only when diverted volumes are less than the maximum capacity will the closure be implemented. Traffic counts will be conducted by the STMS prior to implementation.

In some circumstances construction staging or methodology will require that closures and diversions be implemented where the diverted flow is greater than the maximum capacity of the critical movement on the detour route. Under this circumstance, steps will be taken in order to improve the capacity of the detour route by implementation of the following:

- Signal cycle time alterations (in consultation with the WCC and NZTA's Wellington Traffic Operations Centre (TOC))
- Traffic modelling to determine the maximum theoretical capacity of the intersection
- TTM measures installed at the critical intersection to provide greater capacity
- Closure of feeder roads on the approach to the closure.

Pre-conditioning of road users will also be considered and then implemented through a communications campaign. This will attempt to reduce the demands on the road network so that delays are reduced.

Details of any analysis, modelling, mitigation measures or communications will be included in the SSTMP for approval by the affected RCAs.

7.2.5. Passenger Transport Services

All practical steps will be taken to reduce the impact of construction activities or TTM measures on passenger transport services.

Activities likely to impact upon passenger transport services will be identified at the construction planning stage, such as TTM measures impinging upon bus stops, bus lanes or train services. This will allow for the maximum possible available time to arrange for changes to services and timetables, or for methodologies to be developed that minimise impacts.

Consultation with affected parties will determine the best way forward to reduce impacts where deemed unavoidable. This consultation will be undertaken as part of the SSTMP development process, with the following parties as appropriate:

- GWRC
- WCC

- HCC
- UHCC
- PCC
- KCDC
- Public Transport Operators

Any impacts, mitigation or communications relating to passenger transport services will be outlined in the SSTMP for approval by the relevant RCA.

7.2.6. Property Access, Existing On-Site Parking and Manoeuvring Areas

All practical steps will be taken to reduce the impact of construction activities or TTM measures on property access (vehicular and pedestrian), existing on-site parking or manoeuvring areas. Under exceptional circumstances where construction methodology or staging prevents continuous vehicle and pedestrian access to property, communications with the affected parties will be undertaken. These communications may include (but is not limited to) the following:

- Information about the works
- Duration of the works
- Likely impact on access
- Date of the works.

All reasonable measures to reduce or mitigate the impacts of such activities will be put in place, which may include (but is not limited to) the following:

- Temporary access ways using metal plates or other methods
- Construction methodologies that allow access during critical time periods.

Provision of alternative parking or manoeuvring areas for the duration of the works to an equal or greater standard to that originally provided in compliance with the District Plan.

Activities that may impact on access and their associated mitigation measures will be outlined in the SSTMP for approval by the relevant RCA.

7.2.7. Pedestrian Access

All practical steps will be taken to reduce the impact of construction activities or TTM measures on pedestrians. Likely impacts upon pedestrian access or mobility will be identified at the construction planning stage.

Where pedestrian access is impeded as a result of construction works, safe and clearly identifiable alternative access arrangements will be implemented which may include (but are not limited to):

- Temporary access in accordance with COPTTM
- Temporary diversions
- Safety fences for restricted access zones
- Hoarding for long-term work sites with excavations or other hazardous environments
- Pedestrian bridges across uneven surfaces
- Pedestrian protection barriers for protection from traffic.

Long-term closures or closures of critical pedestrian infrastructure will result in communications with the public, consideration of public events, school or stakeholder timetables.

Any impacts upon pedestrian access and their associated mitigation will be outlined in the SSTMP for approval by the relevant RCA.

Safe pedestrian access through and to the affected Regional Parks will be maintained at all times.

7.2.8. Cycle Access

All practical steps will be taken to reduce the impact of construction activities or TTM measures on cyclists. Likely impacts upon cycle access or mobility will be identified at the construction planning stage.

Where cycle access is impeded as a result of construction works, safe and clearly identifiable alternative access arrangements will be implemented which may include (but are not limited to):

- Temporary access in accordance with COPTTM
- Temporary diversions
- Cycle bridges across uneven surfaces.

Long-term closures or closures of critical cycle infrastructure will result in communications with the public, consideration of public events, school or stakeholder timetables.

Any impacts upon cycle access and their associated mitigation will be outlined in the SSTMP for approval by the relevant RCA.

Safe recreational cycle access through and to the affected Regional Parks will be maintained at all times.

7.2.9. External Contractors

In addition to the contractors and sub-contractors working on the Transmission Gully Project there will be external contractors working on or adjacent to the site. TTM for external contractors working for utility operators or their agents within or adjacent to the site will be managed and co-ordinated by the Transmission Gully Project TTM team (refer to Section 11).

7.2.10. Communications for TTM

It is expected that communications campaigns will be undertaken for a wide variety of TTM activities throughout the construction of the Transmission Gully Project.

Each SSTMP will define the appropriate communications campaign as agreed with the affected stakeholders.

8. SSTMP Approval Process

8.1. Internal Implementation Team Procedure

An internal approval procedure will be implemented by the contractor which shall address all the relevant issues and provide the necessary notice and consultation prior to issue. Each SSTMP will follow a process of concept development, consultation and final documentation.

The SSTMP will be prepared by the contractor and reviewed for compliance with COPTTM and issued to the RCA(s) by an independent reviewer ("The Engineer") within the Transmission Gully Project team.

8.2. External Procedure

The impact of the proposed TTM measures on the road network will be assessed on a case-by-case basis, and the relevant RCA will be contacted for approval of the SSTMP.

For TTM exclusively on NZTA State Highways, the SSTMP will go to [TBA] (NZTA's network consultant for the Wellington Region) for approval by the TMC (Traffic Management Coordinator). Contact details are as follows:

TBA
DDI: TBA
Fax: TBA
Cell: TBA
email: TBA

The TMC has authority to approve SSTMPs and any associated EEDs. However it should be noted that State Highway temporary speed limits (TSLs) are approved by NZTA[2], and should be directed to [TBA] for approval. Contact details are as follows:

TBA
Area Engineer Wellington
DDI: TBA
Mobile TBA
email: TBA

For TTM exclusively on local roads, SSTMPs, EEDs and TSLs will go to the following contacts as appropriate:

WCC TBA
DDI: TBA
Fax: TBA

[2] Or the TMC if NZTA has given them delegated authority

	Cell: TBA email: TBA
PCC TBA	DDI: TBA Fax: TBA Cell: TBA email: TBA
KCDC TBA	DDI: TBA Fax: TBA Cell: TBA email: TBA

Exceptions from the two cases above where additional consultation with RCAs may be required include activities that result in one or more of the following:

- Traffic diversions onto local roads
- Lane closures that may have a significant impact on the operation of State Highways, hence creating queues or delays on local roads
- Activities that require 'pre-conditioning' of traffic, which may include advertising, public notices, mVMS (mobile Variable Message Signs) deployment or other communications activities
- Long-term work sites on State Highway sites that encroach upon the adjacent properties or the local road reserve.

All departures from COPTTM will be addressed via the EED process outlined by COPTTM, whereby the EED request is made along with a set of measures proposed to mitigate the departure from the code of practice.

A reviewed and approved SSTMP will be with the relevant RCA for review / consultation at least 10 working days prior to implementation of the plan. Where an EED is required, an additional 5 working days' notice will be required.

9. SSTMP Document Control

9.1. SSTMP Document Control

A Transmission Gully Project SSTMP document control system will ensure that the most recent revision of each SSTMP will be available for use by the various internal and external parties.

An electronic register will be maintained which will be updated following approval of each new or revised SSTMP. The register will detail the key milestones for each SSTMP revision, including the date of approval and expiry.

A distribution list will be maintained whereby the affected parties will be informed of the update and given access to an electronic copy that may be printed off as required. Electronic copies of superseded SSTMPs will have their current status illustrated on the cover in order to ensure that the correct document is in use.

9.2. Other Documents

Other documents are critical to the success of this project and whilst these documents may have some bearing on the TTM measures to be implemented, this document takes precedence over all other documents in establishing the SSTMP approval process.

Any requirements from these other documents will be carried forward into the SSTMP for approval and where relevant to the TTM on the site.

Other documents may include:

- Project Management Plan
- Construction Environmental Management Plan
- Stakeholder Management Plan
- Compliance Monitoring Systems
- Health and Safety Plan
- Contract Quality Plan
- Contract Programme.

10. SSTMP Implementation

10.1. Traffic Control Co-ordination

TTM activities will be identified at the construction planning stage, with major activities highlighted at the weekly Regional TTM Coordination Meeting. This meeting is attended by the NZTA and its network representative, contractors on the network and other RCA representatives.

Each week a programme will be distributed to the various stakeholders outlining the closures required for the coming week, with a confirmation of each closure given by 9am the on the day of the closure or 2pm the day before the closure, for night time and daytime closures respectively.

10.2. Traffic Control Installation

Implementation of TTM activities shall be in accordance with COPTTM and the approved SSTMP. Where possible, generic mobile closure SSTMPs will be implemented for the installation of work sites, the name and reference number will be quoted in the work site SSTMP implementation methodology.

For example, a mobile closure with two attenuator trucks (with the work vehicle doubling as the shadow vehicle) will be implemented for the installation of lane closed signs or temporary speed limits on level two and three roads.

10.3. Minimum Equipment Requirements

All traffic control devices and personal safety equipment (including maintenance of) to be used for the implementation of approved TTM measures described in this TMP will, as a minimum, comply with Section B of COPTTM.

All equipment will be to a standard consistent with Level 2/3 as defined by COPTTM.

10.4. Material and Plant Delivery

All delivery of plant or material to the site shall be conducted via approved site accesses. Each site access will be covered by an approved SSTMP, which will outline the requirements and standard considered acceptable.

Where delivery of plant or material requires TTM, the activity will be conducted under an approved SSTMP.

10.5. Over-Dimension Vehicles

Over dimension loads are likely to be transported along State Highways and arterials and approved over-dimension routes. These activities will be implemented during night time hours where possible.

Should special measures be required for delivery, the transport company will be required to liaise with the STMS at least 24 hours in advance to arrange for special requirements. A SSTMP will be implemented where required.

Movement of overweight and over-dimension vehicles will be conducted according to the permit provided by the appropriate authority.

10.6. Emergency Action Plan

An emergency action plan will be produced prior to implementation of any TTM activities on the Transmission Gully Project.

The emergency action plan will outline the procedures, requirements and responsibilities in the case of emergency. In addition to the emergency action plan, each SSTMP will address site-specific requirements in the case of emergency. The SSTMP will outline the following key issues, where applicable:

- Diversion routes in the case of delayed works
- Secondary diversion routes in the case of incidents on the primary diversion routes
- Methodologies for reducing the risk of construction over-run, where applicable.

The emergency action plan will be used in the case of an emergency within the site, and will include procedures for co-ordination with the NZTA's Network Maintenance Contractor to implement the required response. Events that may require implementation of the emergency action plan include:

- Traffic accidents
- Emergency services requiring access to or through the site
- Natural disasters
- Unplanned construction events
- Emergency works
- Significant traffic congestion on State Highways or local roads
- Inclement weather.

In the event of a crash or significant incident the contractor will provide immediate assistance and where necessary, contact the relevant emergency services. Full support to those organisations will be provided to manage traffic whilst the incident is being brought under control. An incident report will be completed for each incident or near-miss. Significant incidents will require input from a variety of team members and may involve reporting to emergency services, Wellington TOC, or other external parties.

An attenuator and power broom will be available on site at all times for clearance of aggregate or other spills on local roads or State Highways. Signage for temporary speed restrictions and lane closures required in an emergency situation will be available on site with the attenuator vehicle.

In the event of an emergency before attending to the situation, the STMS must ensure the safety of all staff and public access through the site before notifying authorities.

The emergency action plan will include plans showing potential emergency diversion routes.

10.7. TTM Auditing

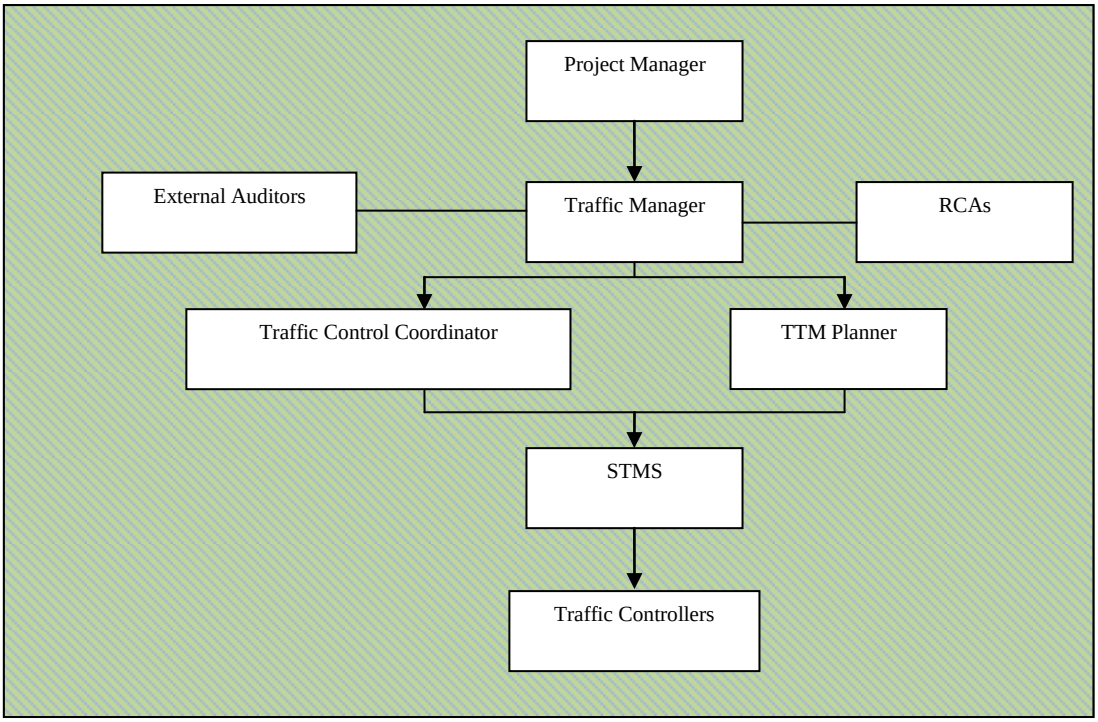
TTM audits will be undertaken in accordance with the requirements set out by COPTTM.

It is anticipated that 15% of TTM will be audited monthly in order to monitor the management of TTM. Additional audits will be carried out following major traffic control changes and changes to the SSTMP.

11. Team Structure

The TTM team is responsible for developing, implementing and managing all TTM measures in accordance with COPTTM and to the satisfaction of NZTA. The team structure is illustrated in Figure 11.1. All the staff involved in the preparation, review, and implementation of SSTMPs will be trained to STMS Level 2/3 non-practicing.

- **Figure 11-1: Basic Traffic Management Team Structure**



11.1. RCA (New Zealand Transport Agency / Territorial Local Authorities (TLA))

The responsibilities of the RCA are detailed in Clause A2 of COPTTM. Both the NZTA and the applicable Council are parties to this document and will therefore be consulted or advised (as required) in both content and appropriateness of TTM measures that have been applied or proposed.

11.2. Project Manager

The Project Manager will be responsible for delivering the resources to ensure TTM is managed and maintained in a safe manner.

11.3. Traffic Manager

The TTM team will be headed by the Traffic Manager. The Traffic Manager has responsibility for the safe operation of the traffic control measures and will head the team of experienced TTM personnel coordinating planning, design and delivery of TTM for all activities. The Traffic Manager will have responsibility for internal review and approval of SSTMPs.

11.4. Traffic Control Coordinator

The Traffic Control Coordinator will have day-to-day responsibility for co-ordinating the ongoing TTM and resources. The Traffic Control Coordinator will be available on continuous call to respond and coordinate any traffic control maintenance or emergency response as required.

11.5. TTM Planner

The development of SSTMPs will be carried out by the TTM Planner, who will be responsible for producing SSTMPs that effectively control and separate work areas from traffic/pedestrian areas, and comply with COPTTM.

11.6. STMS

The nature of the Transmission Gully Project will frequently result in day and night operations. A designated STMS will supervise TTM on the project site, providing 24 hour coverage if necessary.

The total number of STMS required will change over the life of the project to meet project demands and the requirements of COPTM. As a general principle different STMSs will be appointed for day works, and for night works.

The responsibilities of the STMS are detailed in section A4.3 of COPTTM. The STMS is the Head Traffic Controller on the site and has the ultimate responsibility for overall traffic management at the work site. The STMS will apply the COPTTM requirements along with this CTMP and will have complete authority on work being shut down in any situation that does not meet the requirements of these documents.

The STMS will inspect the site in accordance with COPTTM. All inspections will be documented on an inspection form. As required by COPTTM, the STMS will ensure all traffic control is in a satisfactory condition in accordance with the Code at the end of each working day.

11.7. Traffic Controllers

The responsibilities of the Traffic Controllers are detailed in section A4.4 of COPTTM. Traffic Controllers will operate under the control of the duty STMS.

11.8. External Auditors

The responsibilities of the External Audit Team include carrying out random monthly safety audits of the TTM in accordance with COPTTM. The auditors will assess all traffic control measures, active during the day / night of their audit. The audit team will generally be a two-person team, however it may be expanded as appropriate to include other traffic experts or contracted parties. The safety auditors will provide their report to the TTM Team within one week of the site inspection.

The audit will also cover compliance with measures and procedures set out in this CTMP.

11.9. All Other Site Staff

The responsibilities of individual site personnel are identified in Clause A4.5 of COPTTM. These responsibilities include being aware of the general configuration of signs and devices and reporting any defects to the STMS.

Key staff will be given, as part of the contract induction programme, training to Level 1 Traffic Control within one month of the staff being employed on the Transmission Gully Project.

All staff and subcontractors involved in motorway work will be issued with a 'Motorway Site Procedures Handbook'. All other staff will receive a verbal induction from either the STMS or Traffic Control Coordinator prior to starting work on site.

11.10. Communications

All communications on the implementation and operation of SSTMPs are to be directed to the STMS, who will then instigate any measures required to rectify identified issues. The STMS will keep a register of all Non-Conformance notices, and methods and time frame of rectification, and keep the Traffic Co-ordinator informed of these issues.

The STMS will be contactable by mobile phone and / or two-way radio for the duration of the temporary traffic measures being installed, maintained, and removed from site.

Communications on the preparation and updating of SSTMPs will be made to the Traffic Operations Manager who will provide any updates required. The Traffic Operations Manager will issue copies of revised SSTMPs to the appropriate Traffic Control Coordinator and STMS. Further copies will be distributed to GWCC, UHCC, HCC, WCC, PCC, KCDC, NZTA's network management consultant and NZTA as appropriate.

Appendix A – Traffic Management Plan Template

TRAFFIC MANAGEMENT PLAN

<table>
<tr><td>Traffic Management Plan Reference</td><td colspan="4"></td></tr>
<tr><td></td><td colspan="4">For Office Use Only</td></tr>
<tr><td>Organisation</td><td>Contractor</td><td colspan="3">Client</td></tr>
<tr><td>Contract Name/Number</td><td></td><td colspan="3">RCA Consent Reference</td></tr>
<tr><td rowspan="2">Location</td><td rowspan="2">Road Name(s)</td><td rowspan="2">Road Level (LV, 1, 2, 3)</td><td rowspan="2">Speed Limit</td><td>From RP</td></tr>
<tr><td>To RP</td></tr>
<tr><td>Description of Activity</td><td colspan="4"></td></tr>
<tr><td>Work Programme</td><td colspan="4"></td></tr>
<tr><td>Proposed/ Restricted Work Hours</td><td colspan="4"></td></tr>
<tr><td>Traffic Details (Main Route)</td><td>AADT</td><td colspan="3">Peak Hour Flow</td></tr>
<tr><td rowspan="3">Proposed Traffic Management Method</td><td colspan="4">Active:</td></tr>
<tr><td colspan="4">Unattended:</td></tr>
<tr><td colspan="4">Night:</td></tr>
</table>

Proposed Speed Restrictions	
Positive Traffic Management Measures	
Contingency Plans	
Public Notification	
Personal Safety	
On-Site Monitoring	**Attended:** **Unattended:** **Overnight:** **Other times:**
Other Information *(eg. delay calcs, EED issues, temporary speed issues, etc)*	

<table>
<tr><td>Layout Diagrams</td><td colspan="2"></td></tr>
<tr><td>EED Applicable?</td><td>Y/N</td><td>Attached Y/N</td></tr>
<tr><td rowspan="2">Traffic Controllers</td><td>Name (STMS)

Cert No:</td><td>Phone (24 hours)</td></tr>
<tr><td>Name (TC)

Cert No:</td><td>Phone (24 hours)</td></tr>
<tr><td>TMP prepared accurately to represent site conditions and submitted by</td><td>Contractor/Applicant

Cert No:</td><td>Date</td></tr>
<tr><td>Requires Amendment</td><td>Engineer

Cert No:</td><td>Date</td></tr>
<tr><td colspan="3">This TMP is Approved on the Following Basis
1. To the best of the approving Engineer's judgment this TMP conforms to the requirements of Transit New Zealand's Code of Practice for Temporary Traffic Management.
2. This plan is approved on the basis that the activity, the location and the road environment have been correctly represented by the applicant. Any inaccuracy in the portrayal of this information is the responsibility of the applicant. The STMS for the activity is reminded that it is the STMS's duty to "Postpone, cancel or modify operations due to the adverse traffic, weather or other conditions that affect the safety of this site" (reference A4.5).

Approving Engineer: .....
(Name and Certificate Number)

.....
(Signature)</td></tr>
<tr><td>Acceptance by TMC</td><td>TMC: .....

Cert No: .....

Signature: .....</td><td>Date: .....</td></tr>
</table>