Technical Specification

Transport and Main Roads Specifications
MRTS02 Provision for Traffic

March 2021

Queensland Government

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1 Introduction

This Technical Specification applies to the control of traffic during roadworks and describes the project specific requirements for control of all traffic through the work site.

This Technical Specification shall be read in conjunction with MRTS01 *Introduction to Technical Specifications*, MRTS50 *Specific Quality System Requirements* and other Technical Specifications as appropriate.

This Technical Specification forms part of the Transport and Main Roads Specifications Manual.

1.1 Principal's documents for control of traffic during construction of roadworks

This Technical Specification forms part of the suite of documents to be applied for provision for traffic during road construction and maintenance activities. The suite of documents includes:

- Transport and Main Roads Specification MRS02 *Provision for Traffic*, including Annexures.
- Transport and Main Roads Technical Specification MRTS02 *Provision for Traffic*, including Annexures (this document).
- Queensland *Manual of Uniform Traffic Control Devices* – Part 3, Traffic Control for Works on Roads (MUTCD Part 3) including amendments published on the Department of Transport and Main Roads website.
- *Queensland Guide to Temporary Traffic Management* (QGTTM) – Parts 1 through 10, including amendments published on the Department of Transport and Main Roads website.
- *Traffic Management for Construction or Maintenance Work – Code of Practice 2008* (Workplace Health and Safety Queensland and Department of Justice and Attorney General).
- *Guidline – Traffic Management at Works on Roads* (TMWOR) including amendments published on the Department of Transport and Main Roads website.
- *Traffic and Road Use Management Manual* (TRUM), Volume 1 – Guide to Traffic Management, Part 3: Traffic Studies and Analysis published on the Department of Transport and Main Roads website.
- Technical Notes: Traffic Engineering including amendments published on the Department of Transport and Main Roads website.

Where any conflicts occur between the requirements in these documents, the order of precedence shall be as listed above except:

- where document precedence is specified in the contract
- if not specified in the contract, shall be approved in writing by the Administrator, and
- where there are conflicting provisions in the MUTCD Part 3 and the QGTTM, seek advice from the department's Traffic Engineering Practice team at trafficengineering.support@tmr.qld.gov.au.

1.2 Departures from standards and innovation

The requirements and recommendations set out in this Technical Specification and the associated Principal's documents for control of traffic during construction of roadworks (refer Clause 1.1), should not be inferred to preclude innovative or alternative traffic management solutions that provide improved value for money outcomes which meet the intent of this Technical Specification.

The primary principle in developing a Traffic Management Plan (TMP) and Traffic Guidance Scheme (TGS) is to ensure the safety of road workers and road users. Safety should at all times be maintained or improved.

The secondary principle of the TMP and TGS is to balance the:

a) efficient movement of traffic, and

b) construction and traffic management costs.

Innovative treatments that provide improved value for money outcomes are therefore encouraged. Such treatments may include:

- Changes to the work scheduling / programming to occur during periods of lower traffic demand. Planning for greater network impacts through reducing the Level of Service (LOS) for the road user typically enables works to be undertaken in a more time efficient manner.
- Innovative treatments for the deployment of devices.
- Alternative device layouts using new / improved devices.

Contractors undertaking works on roads are encouraged to propose / submit innovative or alternative traffic management solutions that provide improved value for money outcomes. These solutions may involve impacts outside the specified requirements but will be considered against the benefits that are provided and submitted as an Alternative Tender, as set out in the Conditions of Contract. Safety should at all times be maintained or improved. Any Alternative Tender shall be submitted in addition to a Conforming Tender.

Further guidance on innovations and preparing an Alternative Tender is provided in the Conditions of Tendering and the Conditions of Tendering Annexure.

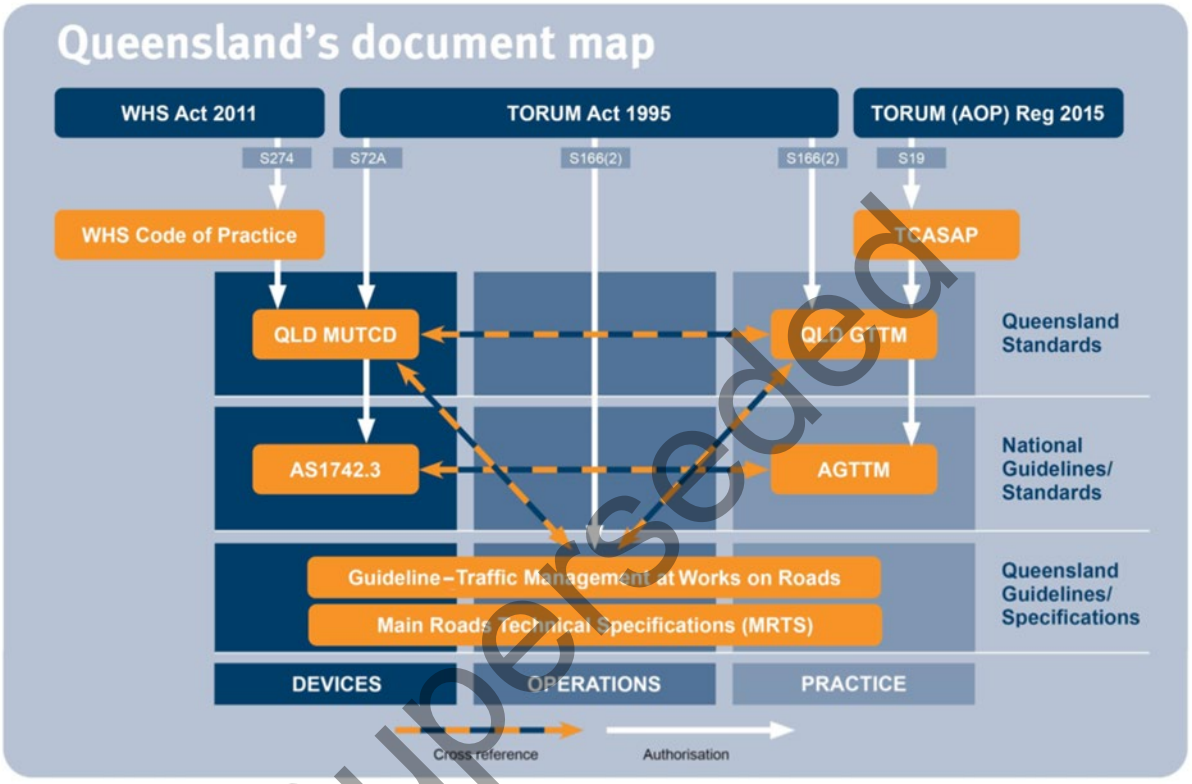
It is also recognised that in some cases, conditions specific to the site and proposed traffic management layout may result in it not being possible to implement all the requirements as outlined in this Technical Specification and the associated departmental documents for control of traffic during construction of roadworks (refer Clause 1.1). In those cases where compliance is impractical, the Contractor should propose minor departures from the standards and / or alternative traffic management solutions in the Traffic Management Plan (TMP) (Clause 5).

Where any innovation, alternative traffic management treatment or departure from standards is proposed, it shall be identified in the TMDs risk assessment, as part of that proposal, in accordance with MUTCD Part 3 Clause 1.9 and the QGTTM Part 2.

1.3 Traffic control principles

The purpose of traffic control at roadworks is to clearly communicate to all road users, including vehicle operators, pedestrians and cyclists, the path and speed at which it is safe to travel through, past or around the roadworks site. The MUTCD Part 3 and QGTTM provide detailed guidance on the devices and most appropriate forms of traffic control for roadworks sites respectively, these documents should be applied as the optimal treatment at works on roads.

A summary of the documents relevant to Temporary Traffic Management (TTM) practice in Queensland, and their linkages, is provided following:



When applying the relevant TTM standards in Queensland, the following apply:

- The MUTCD Part 3 shall be read in conjunction with Australian Standard AS 1742.3 *Manual of uniform traffic control devices, Part 3: Traffic control for works on roads*, and
- The QGTTM shall be read in conjunction with *Austroads Guide to Temporary Traffic Management* (AGTTM).

The TGS and its relevance / relation to the roadworks site needs to be clear for the scheme to be accepted and credible to the road user, and effective in its implementation. Unless there is clear reason to comply with the TGS, drivers may disregard traffic control devices, most notably speed limit signs. It is in both the Contractor's and Principal's interest that speed limit choices in the TGS are realistic, self-enforced by road users, and enforceable.

As a result, there will be a focus on ensuring that the following requirements are met:

- Roadwork signage shall be in accordance with the TGS, MUTCD Part 3, QGTTM and installed and maintained to the required standards.

- Reduced speed zones shall be kept to minimum lengths. This requires speed limit reinstatement signs to be in place as close to the end of the works requiring the limit as practicable.
- Reduced speed zones shall be kept to minimum durations. This requires speed signs to be changed or removed as soon as they are no longer appropriate.
- A speed zone for road worker safety shall only be in place if there are road workers present and while they are undertaking the works for which the speed limit is required.
- A reduced speed zone in place for road user safety (as a result of changes to the road environment) shall be justified and the danger shall be evident or made evident to the road user by the installation of appropriate warning signage. Portable VMS may be used in advance of the work area to advise changed road conditions.
- A reduced speed zone in place to protect works (for example, as outlined in the early trafficking requirements in MRTS11 *Sprayed Bituminous Treatments (Excluding Emulsion)*) shall be justified and the reason shall be evident or made evident to the road user, and
- Speed zones should be implemented as close to the time of commencement of works as practicable, and no longer than one hour prior to the commencement of works requiring the speed zone, and should be removed as soon as practicable, and within one hour following the completion of the works requiring the speed zone.

The Contractor retains ultimate responsibility for traffic control and management and is responsible for ensuring that the traffic guidance system is adequately designed, installed correctly and regularly reviewed on site.

Re-inspection costs will apply for breaches of these situations as identified at Clause 8.3.

2 Definition of terms

The terms used in this Technical Specification shall be as defined in Clause 2 of MRTS01 *Introduction to Technical Specifications*. Additional terms used in this Technical Specification shall be as defined in Table 2.

Table 2 – Definition of terms

Term	Definition
Anti-gawking screen	An opaque screen attached to a Temporary Road Safety Barrier (TRSB) to shield the construction work from the view of passing motorists.
Community Control Plan	A document that outlines how information about the project will be communicated to the community.
Dynamic deflection	The largest transverse deflection of a TRSB system recorded during an actual crash or during a full-scale impact test.
End Treatment	The collective term for devices and features at the leading and trailing ends of TRSB systems, which are selected on the basis of traffic speed and composition, the type of TRSB system and the particular site constraints.
May	A permissive condition that indicates that usage of the device is conditional, or optional.

Term	Definition
Nominated Traffic Officer	A person responsible in accordance with Clause 5.2 for preparation and implementation of the TMP, TGS and managing onsite monitoring of TTM performance (for example, speed management, traffic delays, condition of devices).
Principal	The State of Queensland acting through the Department of Transport and Main Roads.
RPEQ	Registered Professional Engineer of Queensland
Shall	A mandatory condition. Where certain requirements in the design or application of the device are described with the 'shall' stipulation, it is mandatory that, when an installation is made, these requirements be met.
Should	Indicates a recommendation. Where the word 'should' is used, it is considered to be recommended use, but not mandatory. Any recommendation that is not applied must be based on sound traffic engineering judgement and documented.
Speed Management Plan	A document that outlines the proposed speed limits during and outside of work hours, the measures to be taken to monitor speeds and remedial actions to ensure compliance with the speed limit.
Substantial (change in traffic)	These are changes introduced by a Traffic Guidance Scheme which result in: • reduction in the available road space by one lane or more including bicycle lanes • realignment of carriageway by more than one lane width, and • geometric change to an intersection operation.
Traffic Controller	A person authorised in accordance with Clause 5.6.2 to control traffic at roadworks.
Traffic Guidance Scheme (TGS)	An arrangement of temporary signs and devices to warn traffic and guide it through or past a work area or temporary hazard.
Traffic Management Plan (TMP)	Prepared by the Contractor in accordance with the requirements of the Contract. It outlines how the works are integrated into the operation of the road network, identifies and considers all foreseeable risks, and assesses the impact on all road users, and identifies requirements for TTM monitoring.
TRSB	Temporary Road Safety Barrier

3 Referenced documents

Table 3 lists acronyms for documents referenced in this Technical Specification.

Table 3 – Referenced documents

Reference	Title
–	*Limitation of Actions Act 1974*
–	*Transport Operations (Road Use Management) Act 1995*
–	*Transport Operations (Road Use Management – Accreditation and Other Provisions) Regulation 2015*
AGTTM	*Austroads Guide to Temporary Traffic Management*
AS 1742.3	*Manual of uniform traffic control devices, Part 3: Traffic control for works on roads*

Reference	Title
AS 3845	*Road safety barrier systems*
AS/NZS 1158	*Lighting for roads and public spaces*
AS/NZS ISO 31000	*Risk Management – Principles and Guidelines*
Austroads guide	*Guide to Traffic Management Part 3 – Traffic Studies and Analysis*
Austroads AP-R403-12	Austroads Report – *Implementing National Best Practice for Traffic Control at Worksites – Risk Management, Auditing and Field Operations*
MRTS01	*Introduction to Technical Specifications*
MRTS11	*Sprayed Bituminous Treatments (Excluding Emulsion)*
MRTS14	*Road Furniture*
MRTS45	*Road Surface Delineation*
MRTS50	*Specific Quality System Requirements*
MUTCD	Queensland *Manual of Uniform Traffic Control Devices*, Transport and Main Roads as harmonised with AS 1742.3
QGTTM	*Queensland Guide to Temporary Traffic Management*, Transport and Main Roads as harmonised with the AGTTM
RPDM	*Road Planning and Design Manual*
TC2320_2	*Sign layout prior to deployment of speed cameras at roadworks sites*
TIPDS	*Transport Infrastructure Project Delivery System*
TMWOR	*Guidelines – Traffic Management at Works on Roads, Transport and Main Roads*
TRUM	*Traffic and Road Use Management Manual*, Transport and Main Roads

4 Quality system requirements

4.1 Hold points, Witness Points and Milestones

General requirements for Hold Points, Witness Points and Milestones are specified in Clause 5.2 of MRTS01 *Introduction to Technical Specifications*.

The Hold Points, Witness Points and Milestones applicable to this Technical Specification are summarised in Table 4.1. There are no Witness Points defined.

Table 4.1 – Hold Points, Witness Points and Milestones

Clause	Hold Point	Witness Point	Milestone
5.3	1. Approval of Traffic Management Plan		
6.2	2. Approval of Traffic Guidance Schemes*		
7.5			Submission of Traffic Management Inspection Report

*Unless specified in Clause 4 in Annexure MRTS02.1, approval of TGS shall be a Hold Point for approval of proposed speed limits only.

4.2 Conformance reporting

The Contractor shall establish and keep updated records to show the Contractor's conformance to the requirements of this Technical Specification and other relevant reference documents. These records shall be submitted to the Administrator on a monthly basis, or otherwise as directed.

5 Traffic management planning

5.1 TMP – General

The TMP outlines how the works are integrated into the operation of the road network. The outcome of the TMP is to describe how all road users will be accommodated throughout the duration of the works and the impacts on both road users and the construction process. Indicative staging of long-term traffic management changes align to the proposed construction methodology and form the basis on which the TGS is subsequently developed.

5.2 Nominated traffic officer

The Nominated Traffic Officer shall be accountable to the Contractor and responsible for the preparation, implementation, and ongoing monitoring of the TMP and all TGS and other requirements contained within the TMP. The Contractor shall submit to the Administrator the name of its Nominated Traffic Officer.

The Nominated Traffic Officer shall have the requisite level of training / experience outlined in Table 5.2.

When dealing with innovations, alternatives and departures from the MUTCD Part 3, or QGTTM, the Nominated Traffic Officer will either be an RPEQ or have access to an appropriately experienced RPEQ with Transport and Main Roads approved Traffic Management Design training. See MUTCD Part 3 Clause 1.5 and 1.9.

Table 5.2 – Nominated traffic officer training / experience requirements

Level of Complexity	Nominated Traffic Officer – Level of Training / Experience
Complex traffic management schemes which have significant impacts on delays or traffic rerouting	Successful completion of Transport and Main Roads approved Traffic Management Design Training course delivered by a registered training provider. Additional qualifications and / or experience as nominated in Clause 1 of Annexure MRTS02.1
Innovations, alternatives and departures from standards resulting in treatments other than specified in the MUTCD Part 3 or QGTTM	An appropriately experienced RPEQ with successful completion of Transport and Main Roads approved Traffic Management Design Training course delivered by a registered training provider
TGS is selected from a suite of generic TGSs	Successful completion of Transport and Main Roads approved Traffic Management Implement course delivered by a registered training provider
TGS are developed using the principles from the MUTCD Part 3 and QGTTM to develop site specific diagrams	Successful completion of Transport and Main Roads approved Traffic Management Design Training course delivered by a registered training provider

Notes:

- Statements of successful completion must be obtained through training delivered by a registered training organisation which meets the requirements of Traffic Management for Construction or Maintenance Work Code of Practice 2008.

5.3 Traffic management plan submission and approval

A TMP shall be submitted by the Contractor to the Administrator, for a direction from the Principal as to its suitability, at least 21 days before commencement of its implementation, or as nominated in Clause 2 in Annexure MRTS02.1.

Where the Work under the Contract consists of Separable Portions or other clearly identifiable sections, the TMP may be separated into identifiable sections.

The TMP shall comply with any project specific requirements stated in Clause 2 of Annexure MRTS02.1

No traffic rearrangements shall be carried out until after the Administrator has advised the Contractor that the submitted, and amended as directed, TMP is approved and suitable for use. **Hold Point 1**

5.4 Scope of traffic management plan

The TMP shall:

a) Include all TMP elements as detailed in Clause 3 of the QGTTM Part 2, including but not limited to:
   i. traffic demand
   ii. traffic routing
   iii. traffic control (including proposed speed limits while workers are present and not present and their justification)
   iv. provision for all road users including users of paths and adjacent transport infrastructure
   v. special vehicle requirements, and
   vi. site conditions including property accesses and roadside facilities (e.g. Bus stops, parking bays).

b) Describe traffic arrangements which provide for any necessary sequencing of the work under the Contract while minimising disruption and confusion to road users, local traffic, public transport, emergency vehicles, pedestrians and cyclists.

c) Where required, describe how the construction work area shall be physically and visually isolated from road users.

d) Provide details of how local access to communities and adjacent private properties and businesses will be maintained.

e) Provide details of arrangements to be made for detouring traffic.

f) Identify arrangements for managing the movement of oversize vehicles through the work site (height and width clearance constraints shall be provided by the Principal).

g) Provide details of all road closures and / or traffic lane restrictions required to undertake the work under the Contract.

h) Provide details for timely notification and engagement of the community (business owners, road users and other stakeholders) in advance of alterations to existing traffic conditions. The extent of notification required will depend on the scope, impact and duration of the works and will be guided by the requirements of the Community Control Plan (CCP). This process shall incorporate the Principal's requirements with respect to public notifications.

The notification advice should include:

- the physical changes to the road
- expected delays and traffic impacts, and
- alternative route and transport mode options.

Transport and Main Roads is currently reviewing and refreshing its systems and processes relating to event and incident management, traveller information, and road occupancy permitting. A key driver of this work is to provide a better service to our customers.

With respect to roadworks and traveller information, one area currently under investigation is the ability for detailed information about roadworks and changes to road conditions to be more efficiently shared with the department, for publication on Transport and Main Roads traveller information services and for sharing with third party stakeholders. This will allow users of traffic management applications to automatically share roadworks information, removing the need to manually communicate details, and providing richer information for our customers to allow journey planning and achieve better road safety outcomes for road users and road workers alike.

It is anticipated that Transport and Main Roads will require 'real-time' notification advice to mitigate the risk of end of queue crashes that occur when vehicle speeds are significantly reduced, or when vehicles are stationary as a result of lane closures, traffic operating under single lane reversible flow (shuttle flow) or congestion is occurring due to roadwork operations or a traffic crash or incident.

This advice will encompass:

- the worksite location and direction of travel of the traffic flow that is affected
- what is affecting the traffic flow – a lane closure on a multi-lane road, traffic operating under single lane reversible flow on two-lane way roads (controlled by traffic controllers or portable traffic signals), reduced speed limits due to roadwork operations or a traffic crash / incident
- the time and date at which the traffic control measure (lane closure, traffic controllers, portable traffic signals, reduced speed limit, traffic crash or incident) was implemented and removed
- the lane that has been closed (if a lane closure has been installed)
- the principal contractor and nominated traffic officer names and telephone numbers
- the traffic control company name and telephone number, and
- whether workers are present.

A data specification for communicating roadworks information for applications has been published and is available on www.qldtraffic.qld.gov.au.

i) Include a Speed Management Plan detailing the measures to be taken to monitor traffic speeds and to implement remedial actions should traffic speeds exceed the speed limits posted for the works. The Speed Management Plan should be prepared in accordance with the guidance in Appendix A.

j) Include the following administrative items:

- provision for participation of a senior member of the Contractor's site personnel on any traffic coordination committee convened by the Principal
- the names and contact details of the nominated out-of-hours representatives as specified in Clause 5.6.3
- the name of the Nominated Traffic Officer and evidence of the Nominated Traffic Officer's experience in compliance with the requirements of Table 5.2 (including RPEQ where required)
- details of the Contractor's organisational structure for traffic management issues including a list of the duties and responsibilities of each position nominated in that structure, and
- include a schedule of TGS giving a general description of the relevant traffic arrangements and the TGS submission date for each arrangement. Each TGS shall be prepared and submitted as specified in Clause 6.

k) Provide the following information where independent inspection of the traffic management is required as specified in Clause 7:

- name of the officer undertaking the inspection
- the schedule of inspections, and
- description of the methodology for undertaking the inspections

5.5 Implementation of traffic management plan

The Contractor shall:

a) implement the TMP in accordance with the schedule included in the TMP

b) provide details of the TMP, or any changes to that TMP, to any organisations or parties nominated by the Administrator

c) monitor the continued effectiveness of the TMP during the Contract and revise and update the TMP where necessary, and

d) monitor the continued effectiveness of the speed limits posted as part of the works and revise and update the speed controlling measures in accordance with the Speed Management Plan.

5.6 Administration of the traffic management plan

5.6.1 Traffic management registration

When traffic control is required, only organisations registered with the department's Traffic Management Registration Scheme shall be used. A listing of registered traffic management organisations can be obtained from the departmental website at http://www.tmr.qld.gov.au

5.6.2 Traffic controller accreditation

A Traffic Controller shall hold an appointment as an accredited person under Section 21 of the *Transport Operations (Road Use Management) Act 1995* to perform the functions of a traffic controller as prescribed by the *Transport Operations (Road Use Management – Accreditation and Other Provisions) Regulation 2015*. The Traffic Controller shall carry their Transport and Main Roads issued Traffic Controller Accreditation Scheme accreditation identity card at all times while working as a traffic controller.

Traffic control shall be undertaken in accordance with the Traffic Controller Accreditation Scheme: Approved Procedure (available at http://www.tmr.qld.gov.au).

5.6.3 Out-of-hours representatives

The Contractor shall nominate a minimum of two representatives to address traffic management issues, one of whom shall be available at all times outside of the Contractor's normal working hours. These two representatives may include the Nominated Traffic Officer. The Contractor shall notify the Administrator of the name, address and telephone number of the nominated persons. Such persons, when requested by the Administrator, shall coordinate and expedite immediate repairs to and maintenance of such part of the work under the Contract as may be considered necessary by the Administrator and shall carry out such work to the satisfaction of the Administrator.

If a nominated person leaves the employ of the Contractor during the period of the Contract, the Contractor shall immediately nominate another person and provide the full details of that person.

5.6.4 Inspection and records

The Contractor shall inspect all traffic control devices and traffic control arrangements in accordance with QGTTM Part 6 Clause 7.

As an alternative to the record keeping arrangements outlined in the MUTCD Part 3, photographic and / or video evidence of the TGS is permitted. Photographic and / or video evidence shall include date and time stamps and GPS location and be of sufficient resolution to accurately identify and locate traffic control devices. GPS coordinates shall be in World Geodetic System 1984 (WGS84) format or Geocentric Datum of Australia 1994 (GDA94) format, with latitude and longitude in decimal degrees. Time and date stamping shall be in Australian Eastern Standard Time (Coordinated Universal Time [UTC] + 10 hours).

Records shall be retained by the Contractor in accordance with the *Limitation of Actions Act 1974*, for actions associated with personal injury (plus as long as required for any claims to be resolved). Records shall be provided to the Administrator at the end of each month, and at other times upon request by the Administrator. Where requested by the Administrator, records shall be provided in a timely manner.

When required, the Contractor, and in particular the Nominated Traffic Officer, shall provide evidence in Court in the event that a speeding infringement notice is challenged, or in the event of a traffic incident within the site, or outside the site but contributed to by activities of the site.

5.6.5 Traffic crashes and incidents

In the event of a traffic crash / incident within the site, the Contractor shall record the date and take time and date stamped photographs of the signs / devices present in the vicinity of the crash. In the event of a traffic crash / incident that requires notification to Police and relevant Emergency Services, the Contractor shall make the appropriate notifications. All crashes / incidents shall be recorded in the incident log. A copy of the incident log shall be forwarded to the Administrator within 24 hours of the incident, and at other times upon request by the Administrator.

The Contractor shall assist with the mitigation of the impacts of incidents so far as is reasonably practicable.

5.6.6 Complaints and requests for information

The Contractor shall keep a register of all complaints received and actions taken to address each complaint. The complaints register shall be forwarded to the Administrator on a weekly basis. The Contractor shall similarly keep a register of requests for information from the public. This public information request register shall also be forwarded to the Administrator on a weekly basis.

5.7 Traffic management provisions

5.7.1 General

The provision of traffic management at works sites should at all times address the need to maintain safe and effective traffic flow that minimises traffic delays and the risk of off-site incidents and driver frustration.

Further guidance is available in TMWOR, with regards to methods for the assessment of impacts on traffic (available at http://www.tmr.qld.gov.au).

5.7.2 Works restriction

Work shall conform to the following principles unless approved otherwise:

Work on shoulder areas – in any section, is limited to one side of the road, or of a divided road's carriageway.

Vertical clearance – not less than 4.6 metres vertical clearance shall be provided from the trafficked surface, including any side-tracks or detours, to any obstacle.

The Contractor shall make the necessary arrangements and obtain the necessary approvals from the appropriate Electricity and / or Communications Authority in the case of overhead cables.

Length of 40 km/h zone – in sections of the project where the speed restriction is 40 km/h, the maximum length of roadway with a 40 km/hr speed limit, excluding tapers and acceleration zone shall be in accordance with QGTTM Part 3 Clause 5.5.1.

Hazardous lift events – during the erection of bridge girders, deck units and other bridge components and / or while lifting and fixing street light poles and sign gantries no traffic shall be allowed under or within the distance the lifted item could fall. Traffic shall be temporarily stopped or diverted while such work is carried out.

Specific restrictions on work which impacts on traffic – work which impacts on traffic is not permitted on:

- Thursday before Easter
- Anzac Day
- during the period from the day prior to Christmas Day until New Year’s Day, both inclusive, and
- during any other event deemed by the Administrator as set out in Clause 3.1 of Annexure MRTS02.1 to be a major commercial, sporting or cultural event, where the Administrator considers that such closure would cause an unacceptable level of disruption to the traffic operations associated with such events.

Prohibition Notice – the Principal is subject to a Prohibition Notice which restricts personnel from crossing multilane divided roads with posted speed limit of 100 km/h or greater. The Contractor is to conform to the requirements of this Prohibition Notice and at all times refrain from crossing these roads without the use of lane closures or speed reductions.

5.7.3 Traffic lane restrictions

Lane restrictions shall conform to the following principles unless approved otherwise.

Minimum lane requirements – the minimum number of lanes to be maintained on a midblock section of road will be determined from:

- the requirements of Clause 3.2 of Annexure MRTS02.1 which sets out the minimum requirements for various time periods and for various locations in the work site
- the requirements of Table 2.4 QGTTM Part 3, or
- where specified in Clause 3.2 of Annexure MRTS02.1 the required lane availability shall be determined through a traffic operational Level of Service assessment in accordance with the requirements of TMWOR Chapter 2 Section 3.

Where the number of traffic lanes is not listed in Clause 3.2 of Annexure MRTS02.1, recent historical traffic information shall be used to provide data for the assessments under b) and c) of Clause 3.2 of Annexure MRTS02.1.

The 24 hour traffic count information at the site is to conform to the following requirements:

- be less than 12 months old
- not be collected during school holidays, and
- be undertaken on a day of the week which is expected to have the greatest traffic volumes.

The source of the traffic count information shall be documented, and, in addition to confirmation of adherence to the requirements listed above, shall be provided to the Administrator upon request.

The use and interpretation of any traffic count information is entirely at the Contractor's own risk.

The minimum lane requirements to be maintained at an intersection shall be determined as per method (A), (B) or (C) of Clause 3.3 of Annexure MTRS02.1.

Single lane reversible flow (Shuttle flow) – where single lane reversible flow (to serve both directions) is allowed, the Contractor shall maintain traffic flow under the control of traffic controllers or portable traffic signals in such a way that no road user is delayed in excess of the maximum delay specified in Clause 3.4 of Annexure MRTS02.1. In all cases, the length of one-lane, two-way operation shall be limited to one kilometre. See also QGTTM Part 3 Table 5.4.

Stopping traffic in both directions – the Contractor may stop traffic in both directions simultaneously only for purposes of construction of specific work and during the specific period stated in Clause 3.5 of Annexure MRTS02.1. The maximum delay to any road user shall be as stated in Clause 3.5 of Annexure MRTS02.1.

Specific periods where lane closures are not permitted – work under the Contract involving lane closures, stop / slow arrangements or construction traffic entering or leaving any through traffic lanes shall not be carried out during any periods stated in Clause 3.6 of Annexure MRTS02.1 and unless otherwise stated, such restrictions shall apply 24 hours per day.

Measuring traffic delays – where stated in Clause 3.7 of Annexure MRTS02.1, the Contractor shall undertake surveys prior to, and following, any changes to the TTM provisions to monitor the impact of the activities on the road user.

Traffic surveys shall be undertaken as stated in Clause 3.7 of Annexure MRTS02.1 and according to the Part 3 Supplement of Queensland *Manual of Uniform Traffic Control Devices* (available at http://www.tmr.qld.gov.au). Typical periods during which delays shall be recorded include during full road closures and during all road closures which require detours off site. Baseline traffic conditions prior to the commencement of works shall be measured for comparison.

5.7.4 Traffic management for route alterations

5.7.4.1 General requirements for traffic route alterations

A traffic route alteration refers to the act of closing one section of road and redirecting traffic onto another road. The traffic route alteration refers to the re-direction task only and once traffic is flowing safely on the new road, the traffic route alteration is deemed to be finished. Traffic route alterations include re-directing traffic to and from:

a) the road under construction

a) a detour on an existing road, and

b) a side-track.

When specified in Clause 3.8 of Annexure MRTS02.1, traffic may be altered from its existing route via one of these means.

5.7.4.2 Specific traffic management requirements for detours

When specified in Clause 3.8 of Annexure MRTS02.1, traffic may be detoured away from the Works via existing roads. Detours that involve the diversion of traffic off the work site are not permitted except for the express purpose of implementing a full carriageway closure to allow specific construction activities.

Any proposed detour shall be fully documented in the TMP and the relevant TGS. The Contractor shall provide details within the TMP to demonstrate that detours proposed for the purpose of implementing a full carriageway closure have sufficient capacity and are capable of supporting the traffic volumes expected during the use of the detour. The TMP shall show:

a) maximum extra length added to motorist trips

b) maximum extra delay for motorists

c) maximum number of hours for which a detour is to be implemented, and

d) any parking or other restrictions required to accommodate the detour.

The Contractor shall liaise with and make all necessary arrangements with the relevant Local Government(s) and / or other authorities concerned. These arrangements shall include making provision for such matters as the issuing of public notices in respect of the detour and ensuring the classification and condition of the roads concerned are adequate for the volume and composition of traffic to be detoured.

5.7.5 Over dimension, over weight and dangerous goods vehicles

The Contractor shall not reduce pre-existing provisions for the movement of heavy vehicles including over dimension, over weight and dangerous goods vehicles that have approval from the Administrator and / or other relevant Authorities.

5.7.6 Access to private property

Existing accesses to private properties affected by the work shall be maintained in useable condition during the construction, or alternative access arrangements acceptable to the property owners / tenants shall be made. The Contractor shall permit and provide for the free movement of traffic in and out of the properties at all times except as otherwise agreed to by the property owners / tenants.

The Contractor shall, at no expense to the Principal, make good any damage to accesses to private properties which results from the Contractor's operations during the construction of the work under the Contract.

5.7.7 Vulnerable road user movements

Where it is necessary to provide for pedestrian and / or cyclist access along or across portions of the work under the Contract, the Contractor shall provide such temporary pathways as necessary in accordance with the requirements of the QGTTM Part 3.

The pathways shall be clearly delineated, signed and fenced to prevent unintended access to the remainder of the work under the Contract. Signs shall be provided adjacent to the pathway to clearly indicate that access to the remainder of the work under the Contract is prohibited.

Adequate illumination shall be provided during all periods of darkness.

Where a large volume of pedestrian traffic has to cross the work site, consideration shall be given to directing pedestrians to suitably constructed and protected crossings.

Special provision for pedestrians may be required where the direction of traffic flow is opposite to that normally expected.

5.8 Incident management

For sites of longer than three days duration, an incident management plan is to be prepared by the Contractor and submitted to the Administrator, detailing the measures to be implemented in the event of a traffic incident occurring within the worksite or on any detour route.

The Administrator or Police may direct the Contractor as per Clause 5.6.5 to implement detours for incident management, without preparation of an incident management plan or without acting in accordance with any existing plan.

5.9 Contingency planning

On occasions a traffic route alteration can lead to excessive unforeseen delays and other impacts not predicted within the TMP.

The Contractor shall include in the TMP, a contingency to address this possibility which can be implemented immediately should traffic operation delays or safety issues exceed those identified within the accepted plan. This contingency plan may include restoration of the route in existence prior to implementation of the traffic route alteration until such time that alternative arrangements can be developed.

6 Traffic guidance scheme (TGS)

6.1 General

A TGS shows all traffic control devices and their layouts on a plan and shall be consistent with the approved TMP.

Where any change to existing traffic arrangements is proposed or where construction conflicts with normal traffic movements, the Contractor shall prepare a TGS which clearly details the revised traffic arrangements at all locations affected by the change or conflict. A separate TGS is required for each stage of the works where changes are made to the traffic control devices.

Traffic shall be controlled at all times, during construction, in accordance with the provisions of the MUTCD Part 3, QGTTM and the TMP.

The requirements and recommendations set out in the MUTCD Part 3, QGTTM and this Technical Specification and its Annexure do not preclude innovative or alternative traffic management solutions, as outlined in Clause 1.2.

6.2 Traffic guidance scheme submission and consideration

All TGS shall be prepared by suitably qualified and experienced persons and submitted by the Contractor to the Administrator for the Principal's consideration. Aspects of the TGS require approval in the following circumstances: **Hold Point 2**

- **Proposed speed limits:** TGS implemented for three days duration or longer (works need not be continuous over this period) shall be submitted for approval or rejection only for proposed speed limits, by the Principal. The Principal's review will consider the appropriateness of the posted speed limits when workers are present and when they are not present.
- **Improving compliance with speed limits:** as outlined in Clause 1.3, the Principal wishes to improve compliance with posted speed limits at roadworks. Together with improved speed limit choices it is intended to improve opportunities for enforcement of roadwork speed limits. Appendices A (Speed Management Plan) and B (Speed Enforcement at Roadwork Sites), outline remedial actions in response to non-compliance with the posted speed limit and the procedure with which departmental staff and contractors can request that Police undertake speed enforcement within roadwork sites, and
- **Specific circumstances:** where specified in Clause 4 of Annexure MRTS02.1.

The Principal may provide comments on other matters in the TGS.

TGS that require approval shall be clearly marked "For Approval" and be submitted at least 14 days prior to the date of the proposed traffic rearrangement, or as nominated in Clause 4 of Annexure MRTS02.1. Failure to comply with this requirement may result in the Principal deferring the date for traffic rearrangement. Such deferment shall not be a cause for an extension of time under the Contract.

TGS that do not require approval as outlined above shall be clearly marked "For Information" and be submitted to the Administrator at least three days prior to implementation.

Transport and Main Roads has made a policy decision to progressively remove itself from TGS approval. As a result “NO” should generally be chosen when completing Clause 4 of Annexure MTRS02.1. “YES” can be nominated during the transition in those Regions where it is evident that industry capability is lacking.

6.3 Scope of traffic guidance scheme

TGS shall be prepared in accordance with the requirements of the MUTCD Part 3 and QGTTM shall align with the site specific TMP.

The TGS shall show traffic control device layouts (including TRSB, temporary pavement marking and temporary islands), be fully dimensioned and shall generally agree with the construction sequence and other requirements shown elsewhere in the Contract.

The TGS shall also state the period for which the traffic control devices are to be in place (time and date) and the person who is responsible for installing, maintaining and removing them. Work site access arrangements shall form part of the TGS.

The TGS shall also identify those traffic control devices which are only to be in place during periods of actual work on site. Signs such as symbolic workers signs and speed limits, introduced due to reduced clearances to workers, should be covered or removed during periods when workers are no longer on site (e.g. at night). The Principal requires that speed limits are applied strictly in accordance with the QGTTM Part 3 Clause 5.5.1 unless accompanied by a supporting risk assessment and RPEQ approval or signoff.

Where the TGS includes changes to regulatory signs or devices, the Contractor shall include roadwork signing records in accordance with the QGTTM Part 6 and the MUTCD Part 1 Appendix B certified by the Nominated Traffic Officer.

6.4 Implementation of traffic guidance schemes

Should the Contractor wish to depart from the speed signage arrangements in the TGS that have been submitted to Police for enforcement (in accordance with Appendix B), an amended TGS shall be submitted to the Administrator seven days prior to implementation of any new arrangements, and if approved shall be supplied to the Police.

On a daily basis, the Contractor shall ensure that all applicable traffic redirection and / or warning measures and safety requirements are implemented prior to proceeding with any relevant work under the Contract.

The NTO shall monitor the effectiveness of the TGS and revise it in response to incidents and / or unexpected traffic disruptions.

Details of a TGS shall be provided on request to any other party nominated by the Administrator.

6.5 Traffic guidance provisions

6.5.1 General traffic control devices

Traffic control devices and their use shall conform to the requirements of the MUTCD Part 3, QGTTM and such other additional Standards as may be issued by Transport and Main Roads.

All traffic control devices shall be securely fixed in the correct position and maintained in an effective and clean condition suitable for day and night operations, and any reasonably expected weather conditions whilst employed on the work under the Contract. Devices which are damaged or worn, or which do not conform to the above requirements, shall not be used.

6.5.1.1 Portable Traffic Control Devices (PTCD)

PTCD shall be used in accordance with the QGTTM Part 7 and TMOR Chapter 5 Section 2. The principal may mandate the use of PTCD in specific situations stated in Clause 5.1 of Annexure MRTS02.1

6.5.2 Additional optional traffic control devices

6.5.2.1 Variable Message Signs (VMS)

VMS devices may be used to supplement other traffic control devices, particularly in communicating complex arrangements to drivers. Their need should be determined through a risk assessment either to supplement other traffic control devices or as an alternative traffic control device when site conditions constrain a preferred TGS layout.

Where they are used, the Contractor shall coordinate operation of temporary VMS with the operations of the traffic control room or traffic management centre as appropriate. The contractor shall comply with the requirements for VMS installations stated in Clause 5.2 of Annexure MRTS02.1.

Prior to the operation of the VMS at the site, the contractor shall ensure that any previous messages on the VMS have been deleted and only messages, symbols and time schedules that have been approved for the site are programmed into the VMS.

6.5.2.2 Use of police

Police presence should be limited to those occasions where:

a) a risk assessment indicates that their presence mitigates the need for other more costly measures, or

b) the situation is stated in Clause 5.3 of Annexure MRTS02.1.

Where police officers are to be employed to assist in the control of traffic around or through the work site, the Contractor shall be responsible for making all necessary arrangements with the local Police Station or relevant branch of the Police Service and for making all payments.

6.5.2.3 Speed enforcement

In addition to speed enforcement undertaken through Principal submission of speed limits for enforcement, the Contractor may implement additional speed enforcement at roadworks sites to ensure that traffic speeds are in compliance with the posted speed limits. This may result in savings associated with the TMP by being able to implement lower cost solutions by not having to cater for higher vehicle speeds.

Contractors wishing to implement site specific speed enforcement would do so at their own cost and would need to make the necessary arrangements with the Police.

6.5.2.4 Truck mounted attenuators (TMA)

The use of TMA's should be limited to the following situations:

a) in accordance with the requirements of the QGTTM and the TMWOR Chapter 4, or

b) where a risk assessment indicates that their presence mitigates the need for other more costly measures, or

c) the situation is stated in Clause 5.4 of Annexure MRTS02.1.

6.5.3 Traffic route alterations

6.5.3.1 Specific requirements for construction under traffic

When construction under traffic is permitted as per Clause 3.8 of Annexure MRTS02.1, the Contractor shall arrange its construction program and sequencing so traffic flow is maintained through the Works in accordance with the requirements of this document and the QGTTM, as supplemented or amended by any requirements in Clause 5.5 of Annexure MRTS02.1.

6.5.3.2 Specific requirements for detours

In implementing the detour, the Contractor shall:

a) inspect the route for adequacy for the entire length of the detour

b) implement any parking or other restrictions required to allow the suitable flow of detoured traffic

c) provide suitable directional signage and other infrastructure to guide motorists, and

d) restore or arrange restoration as necessary following cessation of the detour period to the approval of the relevant Authorities.

6.5.3.3 Specific requirements for side-tracks

Where re-directing traffic onto a side-track is permitted by Clause 3.8 of Annexure MRTS02.1, construction of the side-track shall comply with the requirements set out in this document and any additional requirements stated in Clause 5.6 of Annexure MRTS02.1. All aspects of the side-track design shall be signed off by an appropriately experienced RPEQ.

Design and construction – design and construction of side-tracks shall comply with the QGTTM Part 3. Materials for construction of side-tracks shall comply with the provisions of the relevant Technical Specification.

Location and route – the location and route of side-tracks shall be in accordance with the details provided in Clause 5.6 of Annexure MRTS02.1 and / or as shown on the drawings.

Surface and clearing – the ground surface of the areas on which a side-track is to be constructed shall be cleared, grubbed and stripped of vegetation and any other undesirable matter. Such operations shall extend for not less than the full width of the surface formation of the side-track. Any tree or other object within three metres of the edge of the side-track shall be removed, shielded or delineated.

Alignment – side-tracks shall be aligned, formed, graded, drained and maintained so as to provide for safe, comfortable passage of vehicles at the indicated speed limit. In general, not more than four percent surface cross-fall shall be provided.

Surface – the requirements for paving and / or sealing of a side-track shall be as stated in Clause 5.6 of Annexure MRTS02.1 or the QGTTM Part 3. Where paving and / or sealing of a side-track is required, the Contractor shall prepare the side-track formation and carry out the paving and / or sealing operations in accordance with the requirements of the relevant Technical Specification and such other requirements as may be stated elsewhere in the Contract. Materials for construction of side-tracks shall comply with the provisions of the relevant Technical Specification.

Geometric requirements – the minimum geometric standards of a side-track shall be as specified in Clause 5.6 of Annexure MRTS02.1.

Where a side-track is used as a part of an overnight road occupancy (e.g. crossovers on motorways between divided carriageways) only, the side-track may be designed for a lower posted speed. The Contractor shall ensure that the length of road, which the reduced speed is applied to, is as short as possible according to the QGTTM Part 3.

Width – the width of a side-track shall be as specified in Clause 5.6 of Annexure MRTS02.1. If the normal width of the road is less than six metres, suitable passing facilities, not less than 30 metres in length and providing an available width inclusive of the normal width of the road of not less than six metres, shall be located at minimum intervals of 800 metres along the side-track and at locations where sight distance is less than 100 metres.

Waterway crossings – unless the construction of special waterway crossings has been provided for elsewhere in the Contract, the form and design of waterway crossings along the route of a side-track shall be determined through an appropriate risk assessment provided by the Contractor and approved by the Principal.

The risk assessment shall consider the consequences of flooding, the time of year, and the traffic impact of road closures. When the waterway crossing design is based upon a rainfall Average Recurrence Interval that is lower than the current crossing, the Contractor shall advise this in their Offer.

The waterway crossing shall be constructed for the full width of the side-track. The edges of waterway crossings shall be signed and delineated effectively both day and night, in accordance with the requirements of the MUTCD, QGTTM and MRTS14 *Road Furniture*.

Traffic control – side-tracks shall be signed and delineated to ensure the clarity of the route.

Lighting – side-tracks shall be lit at the points of divergence from the existing roadway to comply with Clause 5.5 or at any other points where the driving task may be more difficult to comply with.

Reuse of side-tracks – where a side-track is to be reused, all temporary pavement markings shall be updated and / or removed as necessary to comply with the Contract.

Maintenance – side-tracks shall be maintained to the standard to which they were built and to always ensure safety of users. They shall be maintained such that:

a) pavement markings or delineation is clearly visible at all times, and

b) lane closures on the side-tracks only occur when maintenance is undertaken or traffic control devices are being moved.

Decommissioning – after a side-track has been used for the last time during construction, it shall be completely removed and rehabilitated. All temporary line marking used on any permanent road surface, including tie-ins on the approach / departure to the works, that becomes obsolete shall be obliterated from the permanent road surface, and the site shall be restored to a condition equivalent to that existing before the side-track was constructed.

Any removed materials shall be disposed of in accordance with Clause 11 of MRTS01 *Introduction to Technical Specifications*.

6.5.3.4 Implementation of traffic route alterations

Pilot vehicles may be required to implement a traffic route alteration during the process of transferring vehicles from or to an altered route.

6.5.4 Dust control

The Contractor shall take adequate precautions to effectively minimise the generation of dust, which may affect the safety and general comfort of the travelling public, the Contractor's employees and / or occupants of adjacent buildings, during the construction of the work under the Contract.

In this respect, the Contractor shall carry out regular applications of water or other palliative measures along the sections of the work traversed by the travelling public, as required, to minimise dust.

6.5.5 Night work

Only machinery fitted with reversing or other alarms, which adjusts the alarm sound output to no more than 5dB above the surrounding noise level and an alarm sound output range of 85dB – 115dB, will be used to work from midnight to 6 am.

6.5.6 Stored plant and materials

Where plant or materials are stored on the site, the Contractor shall comply with the minimum clear zone requirements of the *Road Planning and Design Manual* (RPDM). Any plant or materials stored overnight within nine metres of the edge of any trafficked lane shall be delineated in accordance with the QGTTM Part 3, unless located behind a safety barrier.

6.5.7 Preventing end of queue crashes

End of queue risk control measures, in accordance with the QGTTM Part 3 Clause 4.8 and the TMWOR Chapter 1, shall be used in situations where the speed limit is 80 km/h or higher or where sight-distance is restricted, to prevent rear end collisions where vehicles are stopped or slowed by the work under the Contract. While decisions regarding the use of these measures will generally be made by the Contractor, Transport and Main Roads has nominated mandatory control measures in Clause 5.7 of Annexure MRTS02.1.

Guidance about supplementary devices to reduce speed and prevent end of queue crashes is provided in both the MUTCD Part 3 Clause 4.23, QGTTM Part 3 and the TMWOR Chapter 1 Section 1.

6.5.8 Delineation of trafficked corridors

6.5.8.1 General

Where described in Clause 5.8 of Annexure MRTS02.1, direction hazard markers, temporary raised reflective pavement markers, line marking, reflective mesh fencing and / or other such delineation devices shall be used in addition to the requirements of the MUTCD Part 3 and QGTTM to delineate trafficked corridors.

6.5.8.2 Materials

Materials used for temporary pavement markings shall be subject to the approval of the Administrator. Only materials which can be removed without damaging the pavement surface shall be used for temporary marking of the final pavement surface.

Delineation shall consist of bollards, traffic cones, hollow plastic ballasted barrier elements or mesh fencing using a heavy, highly visible plastic safety mesh.

When used as delineators, plastic water-ballasted TRSB shall comply with the requirements of QGTTM Part 3 Section 5.3.1. Stand-alone non-interconnected lightweight modules, which do not meet the requirements for a TRSB, shall not be used as temporary delineators.

Drums and cylinders which can roll if dislodged by impact or wind shall not be used as temporary delineators.

Star pickets shall not be used within 1 m of the edge of traffic lanes for speeds of 80 km/h or more. Where used, star pickets shall be fitted with end caps.

6.5.8.3 Construction

Under no circumstances shall temporary painted or thermoplastic line marking materials or temporary raised pavement markers be used on the surface of a final pavement layer.

Temporary pavement marking and temporary raised pavement markers shall be installed in accordance with the requirements of MRTS45 *Road Surface Delineation*.

Temporary delineation devices shall not damage the surface of the Works.

6.5.9 Direction and street signs

Where access to streets and side roads has been altered during the construction of the Works, the Contractor shall supply and erect all such temporary signs necessary to assist the travelling public to find their way to such streets and roads.

6.5.10 Work site access

Vehicular access points to and from the work site shall be in accordance with the RPDM. Acceleration and deceleration lanes and tapers shall comply with the traffic volume, speed and sight distance warrants specified in that document. Cross section widths for acceleration and deceleration lanes should be a minimum of 3.2 m.

6.5.11 Temporary road safety barriers

6.5.11.1 General

Temporary Road Safety Barriers (TRSB) shall be used to contain and redirect errant vehicles so as to reduce the likelihood of them entering the work site. They may also be used to separate opposing traffic.

6.5.11.2 Provision

Provision shall be made for TRSB at the following locations:

- at those locations identified in Clause 5.9 of Annexure MRTS02.1
- at locations that meet worker safety requirements of the MUTCD Part 3 and QGTTM Part 3, and
- at locations where a risk assessment determines that TRSB are the most appropriate method of separation between traffic and the work site or other hazards.

Where TRSB are shown on the drawings, the type, location of barriers and dynamic deflection zone shall be as shown on the drawings.

Opposing flows of traffic may be separated with TRSB with sufficient offset provided to reduce the likelihood that TRSB deflect into opposing traffic flow in the event of impact.

When TRSB are used to protect the work site, the requirements to maintain a clearance zone behind the TRSB as specified in the MUTCD Part 3 and QGTTM Part 3 shall apply. The maximum dynamic deflection is specified by the manufacturer.

6.5.11.3 Barrier types

Only those TRSB which are included in the Transport and Main Roads – Road Safety Barrier Systems and Devices (Assessed as accepted for use on State-controlled roads in Queensland) shall be used. Where TRSB are manufactured according to Transport and Main Roads Standard Drawings referenced within this document, they shall be manufactured in accordance with MRTS14 *Road Furniture*.

Steel Beam Guardrail, in accordance with Standard Drawings 1474 and 1475, may be used instead of TRSB in some locations subject to the approval of the Administrator. End treatments shall be in accordance with Standard Drawings 1470, 1474 and 1475, or with an approved proprietary end treatment listed in the Transport and Main Roads – Road Safety Barrier Systems and Devices (Assessed as accepted for use on State-controlled roads in Queensland).

Steel Beam Guardrail shall not be used for temporary erection where posts have to be installed through pavements which remain part of the permanent works.

6.5.11.4 End treatments

Provision shall be made to treat the approach and / or departure ends of both permanent and TRSB that are exposed to on-coming traffic, including barriers that are flared to terminate outside the clear zone.

Only those end treatments listed in the Transport and Main Roads – Road Safety Barrier Systems, and Devices (Assessed as accepted for use on State-controlled roads in Queensland) shall be used.

6.5.11.5 Design of barrier system

The performance of a TRSB system is dependent not only on the design of the barrier segment, but also in the correct design of the entire TRSB system including the minimum length of TRSB and the location and form of end treatments.

Any TRSB placement shall be designed in accordance with the requirements stated in:

- AS 3845 *Road safety barrier systems*

- MRTS14 *Road Furniture*
- MUTCD Part 3
- QGTTM Part 3 Clause 5.3.1, and
- *Road Planning and Design Manual* Volume 3, Part 6.

Care shall be taken at intersections to prevent visibility problems for motorists negotiating the intersection.

When a need for TRSB is identified, the barrier type shall be determined on the basis of:

a) the type, shape, deflection performance and test characteristics of the TRSB

b) the speed of traffic travelling through the work site, and

c) the clearance between the traffic and the work area.

6.5.11.6 Installation

All TRSB and end treatments shall be installed in accordance with the department's Standard Drawings and / or the manufacturer's specifications.

Water filled plastic barriers shall be filled with water to the level specified in the manufacturer's specifications.

TRSB shall have recesses at their base to allow drainage at ground surface level under the barriers.

6.5.11.7 Maintenance

The Contractor shall maintain TRSB on their correct alignment for the period that they are installed on the work site.

6.5.12 Anti-gawking screens

Anti-gawking screens are used to minimise visibility of the construction activities to the travelling public.

When the requirement for anti-gawking screens is identified in Clause 5.10 of Annexure MRTS02.1, they shall be installed where:

- so stated in Clause 5.10 of Annexure MRTS02.1, and
- where activities are being undertaken within 3.5 metres of the lane edge line and such activities are likely to cause traffic delays or may be a visual distraction to drivers.

Anti-gawking screens shall be provided as per QGTTM Part 3 Clause 5.3.3 and TMWOR Chapter 1.

6.5.13 Temporary road lighting

Temporary road lighting shall comply with the requirements of the QGTTM Part 3.

Temporary road lighting shall be provided as stated in Clause 5.11 of Annexure MRTS02.1.

Existing lighting shall not be removed until temporary lighting, as required by the QGTTM or Clause 5.11 of Annexure MRTS02.1, is installed.

Temporary road lighting is typically required at conflict points and potential hazards to highlight the greater level of risk. These conflict points or hazards may include:

a) significant changes in carriageway width

b) changes from single to divided carriageway

c) converging and diverging traffic streams

d) crests and humps

e) curves below 100 m radius, and

f) road sections with high night time crash rates.

Where temporary lighting is used it shall include two spans of lead-in lighting in advance of the conflict point or hazard.

The Contractor shall install, operate and maintain the temporary road lighting installations for the full period during which the relevant road is required and / or until the permanent road lighting is installed and becomes operational.

Temporary road lighting shall be arranged in such a manner as to avoid creating levels of glare arising from shallow angles of incidence towards the drivers of vehicles using the adjacent traffic lanes. At no time shall temporary road lighting be directed towards oncoming traffic.

7 Traffic management inspection

7.1 General

Traffic Management Inspection is an independent review to establish conformance with the approved TMP and TGS, and with the performance requirements of this Technical Specification.

Traffic Management Inspection will occur in the following circumstances:

- for motorways, any TGS that is in place for two weeks or longer
- for all projects over $10 million in construction value, and
- for all other projects as specified in Clause 6.1 of Annexure MRTS02.1.

7.2 Officer undertaking traffic management inspection

The officer undertaking the inspection of the TMP and TGS shall be accountable to the Contractor and is responsible for the independent inspection of the TMP and TGS and other requirements contained within the TMP. This officer may be an employee of the Contractor but shall be independent of the project. They shall also be independent of the process of designing and implementing the TMP and TGS. Where the contractor is the party designing and implementing the TMP and TGS, documentation shall be provided to demonstrate the officer undertaking the inspection is sufficiently independent of the team undertaking the traffic management works.

The officer undertaking the inspection shall have the requisite level of training / experience outlined in Table 7.2.

Table 7.2 – Requirements for officer undertaking traffic management inspection

Level of Complexity	Officer undertaking Traffic management inspection – level of training / experience
TMP and TGS are developed using the principles from the MUTCD Part 3 and QGTTM to develop site specific diagrams.	Successful completion of Transport and Main Roads approved Traffic Management Design training course delivered by a registered training organisation.
TMP and TGS entail complex traffic management schemes which have significant impacts on delays or traffic rerouting.	Successful completion of Transport and Main Roads approved Traffic Management Design training course delivered by a registered training organisation, and Additional qualifications and / or experience as nominated in Clause 6.2 of Annexure MRTS02.1
TMP and TGS entails innovations, alternatives and departures from standards resulting in treatments other than specified in the MUTCD Part 3 and QGTTM.	An appropriately experienced RPEQ with successful completion of Transport and Main Roads approved Traffic Management Design Training course delivered by a registered training organisation.

7.3 Scope of the traffic management inspection

The inspection of the TMP and TGS shall determine at a minimum the following:

- The conformance of the TMP and the TGS to the requirements of:
  - this MRTS02 *Provision for Traffic* and Annexures
  - MUTCD Part 3
  - QGTTM, and
  - Technical Notes.
- The conformance of the installed TGS with the documented TMP and TGS
- The performance of the TMP and TGS against the traffic operational performance criteria outlined in the approved TMP and any requirements in Clause 3.2 and 3.3 of Annexure MRTS02.1, and
- The performance of the measures taken to ensure that compliance to posted speed limits is achieved.

7.4 Traffic management inspection schedule

A Traffic Management Inspection schedule shall be outlined in the TMP and shall provide the dates or milestones at which each inspection shall be undertaken. The inspection of the site covered by a TMP and TGS(s) shall at a minimum be in accordance with the following requirements:

1. prior to submission of the TMP for approval
2. within two weeks of the first implementation of a TGS at the site
3. within two weeks of every subsequent TGS that results in a substantial change in the traffic patterns / location of lanes / change in risk profile etc.
4. at three monthly intervals where the requirements of condition (3) have not occurred, and
5. at other times as per the requirements outlined in Clause 6.3 of Annexure MRTS02.1.

7.5 Traffic management inspection reporting

The officer undertaking the Traffic Management Inspection shall provide a report to the Contractor for its action. The Contractor shall forward to the Administrator, within one week of the receipt of the report, the reports and findings, together with documentation of any actions taken in regard to the findings. **Milestone**

8 Administration of traffic management

8.1 Traffic management audit and inspection

The Administrator will undertake regular performance / compliance audits of the Contractor's traffic control measures and provide feedback monthly in line with the Principal's Contract Performance Report in the *Transport Infrastructure Project Delivery System* (TIPDS) (available at https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/TIPDS).

The Principal may undertake additional surveillance and inspections at any time. Non-conformances identified will be communicated to contractors through the Administrator. Contractors shall be required to undertake the necessary modifications to the TGS to address the identified issues.

8.2 Safety performance of the TGS

If, despite a TGS being in conformance with the MUTCD Part 3, the QGTTM and this Technical Specification and the implemented scheme being in conformance with the TGS, the scheme is unsafe in some way, the Contractor shall undertake the necessary Traffic Management Designer approved modifications to the TGS to address the identified issues and submit the amended TGS to the Administrator.

8.3 Traffic non-conformances

The Principal requires that traffic is managed strictly in accordance with the submitted TMP and approved TGS. Costs for re-inspection will apply for non-conformances relating to inappropriate use of speed limits and other TGS non-conformances. Additional non-conformances may also be identified through audits against MRTS50 *Specific Quality System Requirements*.

The reinspection costs that shall apply are outlined in Clause 7 of Annexure MRTS02.1.

In the case of non-conformance, the Administrator will request the Contractor raise a non-conformance report. Examples of typical non-conformances are shown in Table 8.3.

Table 8.3 – Examples of non-conformances that attract re-inspection costs

Speed	Traffic Guidance Scheme (TGS)	Quality – MRTS50
Failure to install and maintain speed limit signs as detailed in a TGS.	Failure to maintain any other traffic control device detailed in a TGS.	Failure to maintain and update the TMP.
Reduced speed limits introduced more than one hour prior to the commencement of the works. Speed limit signs may be installed but should be covered until immediately prior to the need for their use applies.	Failure to maintain minimum travelled path dimensions.	Failure of the TGS to comply with the principles outlined in Clause 1.3.

Speed	Traffic Guidance Scheme (TGS)	Quality – MRTS50
Failure to cover / remove signs and traffic control devices associated with reduced speed limits within one hour of completion of the shift or the work requiring the reduced limit.	Failure to cover / remove unused signs and traffic control devices within two hours of completion of any revised traffic arrangement.	Traffic delay periods exceeding any maximum period nominated in the Contract.
Speed limits and associated control measures not implemented in accordance with the Speed Management Plan.	Failure to use other than designated construction workplace entries or exits for the works.	Failure to provide the required information / notification to the community or local businesses of changes to traffic movement.
	Failure to maintain an obstruction free travelled path.	Failure to assist with mitigating the impacts of traffic incidents as much as is reasonably practicable.
	Undertaking traffic rearrangements without an approved TGS except where required for incident management purposes (refer to Clause 5.8).	Any other issue raised by the Administrator deemed to be a non-conformance.

All non-conformances shall be remedied by the Contractor within two hours of receipt of notice of the non-conformance. Failure to remedy any non-conformance within the two-hour period shall entitle the Principal to carry out any remedial work deemed necessary pursuant to the Contract. All costs related to this work shall be charged to the Contractor, in addition to the costs for re-inspection as set out in Clause 7 of Annexure MRTS02.1.

9 Supplementary requirements

The requirements of MRTS02 *Provision for Traffic* are varied by the supplementary requirements given in Clause 8 of Annexure MRTS02.1.

Appendix A – Speed management plan

A1 Objective

The objective of the Speed Management Plan is to achieve compliance by road users with the roadwork speed limits. It documents all measures to be taken by the Contractor to achieve this outcome. Monitoring the effectiveness of temporary traffic control measures is a core principle of the *Manual of Uniform Traffic Control Devices* (MUTCD) Part 3 and the QGTTM and is required on all sites.

Where a posted temporary speed limit is in place for worker safety, and it is found that substantial non-compliance occurs, the contractors' obligations under workplace health and safety regulations will not be met.

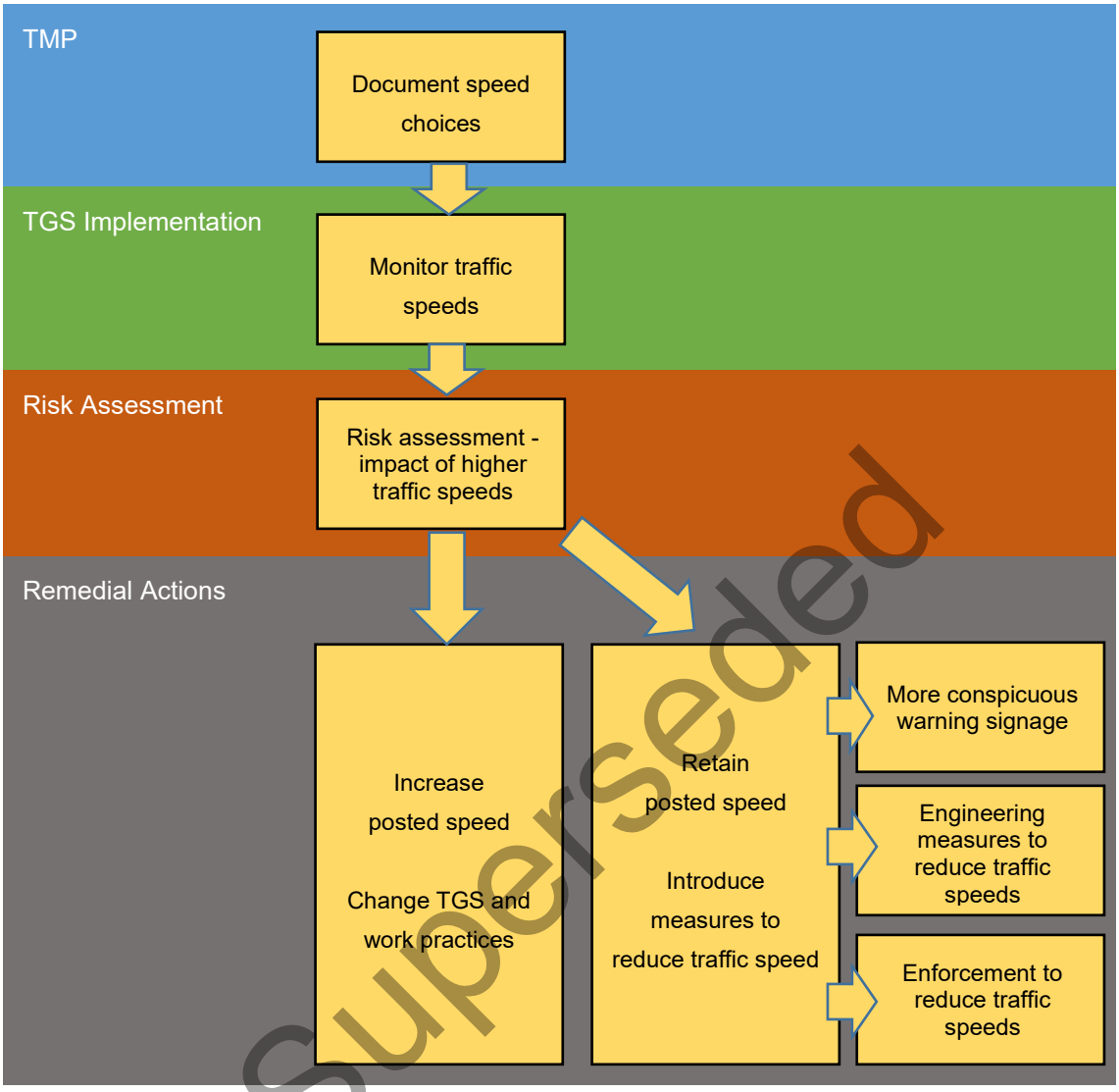
The requirements following are intended for application to worksites ≥ 2 weeks duration. It is recognised that at these sites the heightened level of exposure of work personnel to traffic warrants a higher level of speed monitoring to help meet workplace health and safety requirements.

Where used at worksites of shorter duration (< 2 weeks) alternative methods of undertaking speed surveys are available to acknowledge the reduced exposure to risk.

For sites with very low traffic volumes, it may not be appropriate to meet the requirements of Table A3 following. Where low traffic volumes are present it is important that those preparing and implementing SMPs balance the exposure to overspeed vehicles against the time required to obtain a sufficient sample group. Any variation to the minimum sample sizes in Table A1 shall be subject to a risk assessment.

A2 Planning process

The following flow chart documents the key elements to the speed management planning process.



A3 Documentation

The Speed Management Plan should include information detailed in the following Clauses.

A3.1. Speed choices

- Permanent speed limits at the site and on the sections of road adjoining the site.
- Constraints and considerations impacting on the choice of speed limits to be applied throughout the works.
- The speed limits adopted for the project.
- Conditions under which temporary speed limits are required for worker and traffic safety, and
- Measures included within the TMP and TGS to restrict traffic speeds to the posted speed limits.

A3.2. Speed monitoring

Speed surveys for sites in place ≥ 2 weeks shall be undertaken in accordance with one of the following:

1. *Austroads Guide to Traffic Management*, Part 3 *Traffic Studies and Analysis*
2. MUTCD Part 4 – *Speed Controls*, or
3. Speed indicator devices as per TMWOR Chapter 1.

Speed surveys for sites in place < 2 weeks may be undertaken in accordance with one of the following:

1. speed indicator devices as per TMWOR Chapter 1
2. manual travel time surveys, see Clause A3.2.1 of this Appendix, or
3. other industry accepted method, subject to a risk assessment by the traffic management designer and acceptance by the administrator.

Documentation should address the following:

- Speed monitoring arrangements:
  - contractual requirements, and
  - risk assessed additional requirements.
- Collection frequency, and
- Reporting arrangements.

A3.2.1 Manual time travel surveys

Manual travel time surveys involve recording the time it takes a vehicle to go from one datum to another and may be undertaken by a traffic management implementer, a site worker under the direct supervision of a traffic management implementor, or a traffic controller. Time travel surveys should comply with the following steps:

1. A start and end datum are to be established within the site by placing an additional delineating device at each point.

   The added delineating device is to be different to the general devices used in the vicinity for identification i.e. where 450 mm cones are the typical device, an additional 700 mm cone may be placed to identify the datums.

   These points are to be sufficiently distanced from the traffic control point, is not to be within the safety buffer, and is not to be in a location where changes in speed due to manoeuvring are likely to occur.

2. The distance between these points is to be measured in metres.
3. A competent site worker is to be suitably positioned to allow observation of both points. This location is to be offset from the travelled path and must have a suitable escape path.
4. Site worker is to record the time required for each vehicle to travel between the datums using a stopwatch or device with similar capability. The following also apply:

   a) Stopwatch, or similar, must be capable of recording times to 1/10th of a second.

b) Ideally there is to be at least four seconds headway between each vehicle to ensure free flow speeds are observed. Where platooning is frequently observed, which often occurs under PTCD or STOP / SLOW control, this requirement may be reduced to two seconds.

c) Minimum sample sizes, as per the Table A3.2.1 following, are to be observed as far as reasonably practicable.

Table A3.2.1 – Minimum sample sizes (MUTCD Part 4 Appendix A)

Permanent posted speed (km/h)	40	50	60	70	80	90	100	110
Minimum sample size	55	65	85	95	110	130	155	200

5. Samples including their respective times are to be tabulated and the 85th percentile speed calculated. Example manual calculation below:

   a) Count number of samples (N).

   $N = 25\ (assumed\ for\ example)$

   b) Multiply N by 0.85 to get the 85th percentile sample (n), round down to nearest whole number:

   $n = 0.85 * N = 0.85 * 25 = 21.25 \approx 21$

   c) Arrange samples from largest to smallest based on travel time and select nth sample from step (b).

Sample	**Time (s)**	**Sample**	**Time (s)**	**Sample**	**Time (s)**	**Sample**	**Time (s)**	**Sample**	**Time (s)**
1	5.4	6	5	11	4.6	16	4.5	21	4.3
2	5.3	7	4.8	12	4.6	17	4.4	22	4.3
3	5.2	8	4.8	13	4.5	18	4.4	23	4.1
4	5.1	9	4.7	14	4.5	19	4.4	24	4
5	5.1	10	4.6	15	4.5	20	4.4	25	4

   d) Convert time to speed (v) in km/h:

   $$v = \frac{3.6 \times distance}{time} = \frac{3.6 * 80m\ (assumed\ distance\ for\ example)}{4.3\ sec} = 66.9km/h$$

   e) Check 85th percentile speed against the posted roadwork speed limit as per Clause A3.3 following.

Speeds surveys are typically appropriate for any area on site where a speed reduction occurs, as such surveys on approach to the sites and within the site are usually considered appropriate.

A3.3 Risk assessment

Where speed monitoring demonstrates that speed compliance is not achieved (the 85th percentile speed is greater than 10 km/h above the posted roadwork speed limit), a decision is required to either:

- introduce additional measures to achieve compliance with the speed limit, or
- raise the speed limit.

In the event that a decision is made to raise the speed limit, a risk assessment shall be undertaken to determine measures to mitigate the subsequent increase in risk. This risk assessment must be substantially completed prior to implementation of the TGS and the selected speed choices to ensure a timely response in the case that traffic speeds are found to exceed the posted limits.

A3.4 Engineering remedial actions

An engineering remedial action plan should be prepared as part of the TMP to ensure that appropriate measures can be implemented at short notice should monitoring reveal non-compliance with posted speed limits. These remedial actions should be implemented before Police enforcement is considered.

The engineering remedial actions that should form part of the package of available options include:

- Alter work practices and increase speed limits:
  - modifications to all or part of the construction and worksite design should be considered to allow posted speeds to be maintained at a speed limit aligning with the observed speed of traffic
  - these modifications may restrict the use of the lowest speed limit reductions to only specified high risk activities which are more obvious to drivers as to the reason for the limit, and
  - where speed limit reductions are only required for specific short-term events, consider the use of temporary warning signs with advisory limits or other measures to better communicate the risk to drivers.
- Make warning signage more conspicuous, more prominent.
- Implement additional engineering measures to reduce traffic speeds:
  - QGTTM Part 3 and TMWOR Chapter 1 outline a number of additional measures that can be implemented to assist in reducing the speed of traffic at roadworks, and
  - alternative innovative treatments that encourage drivers to reduce speeds to comply with the posted speed limits are also encouraged.

A3.5 Enforcement remedial actions

In the event that the preceding engineering remedial actions are ineffective, Police enforcement can be requested in accordance with the procedure in Appendix B.

Appendix B – Enforcement request procedure

B1 Objective

This Appendix documents the information that is required by police to determine whether enforcement can be undertaken and to make a decision about the appropriate enforcement strategy. The strategy will seek to improve compliance to speed limits and other regulatory signage or signals within the roadwork area.

The safety of road users and road workers within roadworks relies predominately upon driver speed compliance.

As in most situations where regulatory controls are introduced, the effectiveness of the regulation requires a combination of self-regulation and the perceived risk of a penalty associated with contravention of the regulation.

Consistent deterrence strategies, which typically comprise of a visible police or camera presence, can bring about lasting changes in road user behaviour and, as a consequence, changes in road user's attitudes which reinforce the behavioural change.

Non-compliance with temporary speed limits or signage can result from a range of factors, including:

- poor signage and roadwork management
- speed limits that do not appear intuitive to drivers and are not supported by the surrounding road environment (surface conditions, proximity of workers and so on)
- speed limits that are introduced to protect workers that are not removed after workers finish the works or move away from the road edge, and
- drivers infrequently encountering enforcement activity, despite signage indicating that roadworks speed limits are enforced.

B2 Enforcement request and determination procedure

B2.1 Request for enforcement (by Contractor through Principal)

1. Complete the Enforcement Request Form.
2. Submit completed Enforcement Request Form to the Principal for approval, and
3. Contractor submits the approved Enforcement Request Form to the relevant Police Road Policing Unit (RPU) for decision.

B2.2 Enforcement decision (by Road Policing Unit, RPU)

Enforcement strategies include:

- Non-Camera Enforcement (police presence, patrols and use of hand-held enforcement devices such as LIDAR), and
- Camera Enforcement (mobile speed camera, temporary unattended speed camera placements, fixed speed camera, point to point speed camera or combined red light with speed camera).

Decision process:

1. Upon receipt of the approved Enforcement Request Form from the Contractor, the relevant RPU will review the proposal which may require a site inspection to determine whether enforcement can be undertaken safely and to develop an enforcement plan. In cases where enforcement requires a camera-based enforcement strategy, these matters will be referred to the Operations Manager, Traffic Camera Office. It is important to note that while police may agree a site is suitable for enforcement, attendance at the site will be influenced by other policing priorities, and
2. The RPU informs the Contractor of the enforcement decision.

B2.3 Implementation (by Road Policing Unit)

The RPU will liaise with the Contractor regarding site access and proposed dates and times of enforcement.

B2.4 Implementation (by Contractor)

1. The Contractor shall arrange to install the signs in the layout TC2320_2 (SIGN LAYOUT PRIOR TO DEPLOYMENT OF SPEED CAMERAS AT ROADWORK SITES) in advance of the site and advise the RPU that the sign(s) have been installed prior to enforcement commencing.
2. The Contractor shall ensure signage is maintained in accordance with the approved Traffic Guidance Scheme and appropriate records kept, in accordance with this Technical Specification. Copies of records shall be sent to the Principal on a daily basis for the duration of the period that the site is being enforced, and
3. The Contractor must ensure that the RPU is kept up to date with all traffic staging within the site, and the project completion date.

B2.5 Monitoring and evaluation (by Contractor)

1. The Contractor shall, for the duration of the works, monitor the site where enforcement activity has been implemented to ensure it is operating safely and effectively, and
2. This monitoring may be incorporated into the daily routine checks of roadwork signs required under the QGTTM Part 6, Part 10 and through speed surveys. Accurate records of the monitoring undertaken, analysis of results and any changes made to the TMP and / or TGS must be kept. These records should be documented, secured and kept for a duration that meets evidentiary requirements (should they be required to support or defend any future court action).

B3 Enforcement request form

The information provided in this form will be used by police to establish whether enforcement can be undertaken safely and to assist with the development of an enforcement plan. As a result, Transport and Main Roads specific project descriptions (such as road number and chainage) should be avoided.			
PROJECT NAME / DESCRIPTION		**PROJECT LOCATION:**	
DISTRICT:		**REGION:**	
WORK COMMENCED:		**DURATION:**	
GPS COORDINATES:			
Longitude			
Latitude			
CONTACT OFFICER:			
Name:	**Role:**		**Date:**
Issues of concern in support of this request for enforcement (please attach supporting risk assessment, if one has been completed):			
PRINCIPAL REVIEW:			
Roadwork Speed limit appropriate: Y/N		**Enforcement supported: Y/N**	
Name:	**Signature:**	**Date:**	

Site Characteristics	Comments
Speed Limit Permanent speed limit (on approach to worksite) Roadwork speed limit (zone to be enforced)	
'Stability' of work site (number of and proposed timing of significant movements, switches or realignment of works)	
Daily Traffic Volume and Composition	
Copy of Traffic Management Plan (TMP) and Traffic Guidance Scheme (TGS) (the TGS shall include details of approved roadwork speed limit locations and will be used by Queensland Police Service to identify suitable sites for enforcement activity, and determine the enforcement strategy)	
Lateral Clearances (to workers operating without temporary barrier protection)	
Crash history (prior to and / or during roadworks, if relevant)	
Speed survey data and identification of the day(s) of the week and times of night or day when speed compliance issues are occurring	