



Transport
Roads & Maritime
Services

ROAD & FLEET SERVICES

TMA's: Guidelines for the use of Truck & Trailer Mounted Attenuators (TMA's) in NSW

RS-OCP-12

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Change history

Issue	Date	Description of change	Author
1.0	28/11/06	First issue authorised by Neil Lamb, GM RFS	Kim Mills
2.0	2/5/2008	Changes to Functional specifications (1 & 2 added, 6 changed. Note added to “when not to use a TMA”. TMA Steering Committee Charter added.	Kim Mills
3.0	8/12/08	Changes to S3 Function Specification 10 (LED technology required). S5 changed to criteria; RSM approval required not to use TMA.	TMA Steering Committee.
4.0	9/09/09	Changes	TMA Steering Committee.
5.0	18/05/2010	RTA Logo	TMA Steering Committee.
6.0	3/10/2011	<ul style="list-style-type: none"> Draft – Incorporating applicable Transport & Main Roads Points. – 1.0 Purpose, 2.0 Objective. 3.0 Recommendations – (Updated with recommendations from AS1742 & TC @WS Version 4.1 5.0 Minimum Training & Qualifications. Change from single lane to 2 lane x 2 way carriage ways. Roads & Maritime Services Logo. 8.1 Risk Management in line with NSW OHS Regulations 2001 & TC @ WS Manual V 4.1 Advance Warning Update to Addendums 	Tabled to NSW RTA TMA Steering Committee.
7.0	24/4/2012	<ul style="list-style-type: none"> 4.0 Functional Specifications for TMAs – Point 9 – To ensure optimum impact performance all units fitted with an attenuator must have a minimum GVM of 15 tonnes. Removed RTA and replaced with RMS.	Draft – National TMA Guideline Development.
8	18/3/2013	<ul style="list-style-type: none"> Inclusion of Trailer Mounted Attenuators in Title. Clause 3.2 Additions to Abbreviations List. Clause 4.0 Functional specifications for TMAs – 4.1. Insertion of references to Host Vehicle. Clause 4.1 Points 5: GVM, 6: Mounting of fixtures. 7: Fitting of AIB system. Inclusion of Clause 4.2 Impact attenuator Unit Certification. Clause 4.4 Point 2. Fitting of AIB micro switch to the rear of the Impact Attenuator Unit.. Inclusion of Clause 4.5 Trailer Mounted Impact attenuator Unit. Inclusion of Clause 5.0 Traffic Control Devices Inclusion of Clause 7.0 Operational Procedures Inclusion of Clause 7.0 Point 1 - Re- Seat Belts Clause 9.1 Updating of Risk Management in line with the National WHS Act 2012. 	Draft- Adoption of recommended National TMA inclusions.
8	12/6/2013	Draft accepted – Version 8 released.	John Lyons Kim Mills

I. Purpose

The purpose of these guidelines is to provide a set of operational procedures and minimum training qualifications required by persons responsible for authorising, supervising and operating TMAs at road work sites in NSW.

Roads & Maritime Services, Road & Fleet Services have produced these guidelines in consultation with Transport and Main Roads, Queensland and Vicroads Victoria with the purpose of providing a framework that will provide for a consistent approach towards the safety of road workers and road users in the operation of TMAs across the eastern states of Australia.

2. Objectives

Primary Improve the safety of Road Workers in NSW and the travelling public.

Road safety for workers and means the legal ramifications of protecting workers from vehicle-related injury, disability, and/or death.

Secondary

- 0 Provide RMS staff and Contractors with a reference document for planning work involving TMA Vehicles.
- 0 Provide a guide for traffic management involving TMAs.
- 0 Provide a guide to the training and competency of TMA operators and support staff.
- 0 Provide a principal fleet overseer for fitting and maintenance of all RFS TMA vehicles.
- 0 Provide a consistent approach to the use of TMAs in NSW.
- 0 Liaise with interstate road authorities on the utilisation of TMAs.

3.0 Introduction

This document assists RMS staff to plan work involving TMAs.

It covers:

- 0 risk assessment criteria for when to use a TMA
- 0 standard specifications for TMAs
- 0 guidelines for the use of TMAs at roadworks sites, including guidelines for traffic management on various worksite configurations and the required signs and devices
- 0 Minimum qualifications, inductions and training for operators.

3.1 Background

A working party was formed to oversee and make recommendations on the use of TMAs within NSW. The TMA working party and steering committee members comprise a representative of each region who operates units. There is also a Fleet representative and the RFS OHS Coordinator. The TMA working party is facilitated by RFS Quality Systems Manager.

Currently the TMA Working Party members include:

- Kim Mills – Northern Region
- Colin Goodger – Hunter Region
- Ian Robinson – Southern Region
- Tony Cheli – Fleet Workshop Area Manager, Northern Region.
- Andrew Nesbitt – RFS OHS Manager
- John Lyons – RFS Quality Systems Manager.
- Terry McKay – Manager of Driver Aid Services.

RMS will continue to review its operations with Truck Mounted Attenuators and these guidelines are part of the process of coordinating and standardising the use of TMAs throughout NSW.

3.2 Abbreviations

Term	Meaning
ADR	Australia Design Rule
AIB	Automatic Impact Braking
AS	Australian Standard
GVM	Gross Vehicle Mass
NCHRP	National Cooperative Highway Research Program
TCGP	Traffic Control Guidance Plan
TCP	Traffic Control Plans
TC @ WS	Traffic Control at Worksites Manual Version 4.1
TL	Test Level
TMA	Truck or Trailer Mounted Attenuator
SWMS	Safe Work Method Statements

3.3 References

AS 1742.3 Clause 3.12.5 : *Truck Mounted Crash Attenuator – A slow moving or stationary works vehicles which are exposed to potential collisions by approaching traffic may be fitted with truck mounted crash attenuators. They should be selected to have a collision speed rating appropriate to the traffic speed environment in which they are to be used. Suggested performance characteristics for these devices are given in NCHRP 350.*

TC @ WS Manual Version 4: Clause 3.3.10 Truck Mounted Attenuators (TMAs)

Consideration should be given to installing Truck mounted Attenuators on vehicles, such as those used to effect lane closure on multi lane roads or used as shadow vehicles on mobile works.

TC @ WS Manual Version 4: Clause 3.5.4 Special Safety Guidelines

The following special safety guidelines shall be considered at work sites – “The use of truck mounted attenuators on work vehicle protecting workers in exposed situations”.

TC @ WS Manual Version 4: Clause 9.17.1: Shadow Vehicle – *A shadow vehicle follows closely behind the work area as the area progresses. Its main purpose is to shield from traffic those workers that are not in vehicles but are working on foot behind the work vehicle. This vehicle shall travel at a clear distance of 20 to 40 metres behind the work vehicle and **consideration** should be given to fitting the vehicle with a **truck mounted crash attenuator** when it is protecting workers in the traffic lane.*

Traffic Control at Worksites Manual available from the RMS website:

www.rms.nsw.gov.au → Partners and suppliers → Traffic control training

4.0 Functional specifications for TMAs

4.1 Host Vehicle

This clause provides standard specifications for the host vehicle. This includes areas such as mast arm and flashing arrows, visibility of the host vehicle and standard control panel arrangements.

1. All Host TMA vehicles used in NSW must comply with the Road Transport (Vehicle Registration) Regulations 1998.
2. All Host TMA vehicles assembled and maintained to RFS TMA standards.
3. All Host TMA vehicles used in NSW must have prior Special Purpose Vehicle approval from RMS Vehicle Safety Section. A copy of this approval must be carried with the vehicle at all times. This approval must be available to be presented to any Authorised Officer on request.
4. Be a single cab truck with an automatic transmission.
5. To ensure optimum impact performance all host vehicle units must have a minimum GVM of 15 tonnes.
6. The mounting of any fixtures are to be engineered to 20 times the weight of the fixture.
7. Be fitted with an Automatic Impact Brake (AIB) system that, in the event of an impact with the rear of the Impact Attenuator Unit, will apply the brakes of the TMA host vehicle automatically. In the event of such incidents it is critical to have an isolation switch or system which will allow the AIB system to be deactivated, this will allow for the impacted TMA vehicle to be removed from positions or locations that could cause an unnecessary obstruction or blockage to the roadway.

As a minimum, the AIB System must apply the brakes on all wheels of the rear axle/s of the host vehicle. The AIB system must only be activated when the Impact Attenuator unit is fully deployed and the host vehicle speed is no greater than 40 km/h.

It is recommended, that the AIB system be fitted, so activation of the system is automatic when the Impact Attenuator unit is fully deployed, and the host vehicle is travelling at a speed no greater than 40 km/h.

Note: *Modification of the braking system may affect ADR compliance and require approval through the Heavy Vehicle Modification Scheme or State/Territory/Federal approval.*

8. Be fitted with an AS/NZS 4192 "illuminated flashing arrow signs' approved size "C" arrow-board. The arrow board assembly shall be positioned on the truck in accordance with the requirements of AS1742.3. It is highly recommended that LED technology to be used on all TMA arrow boards.

The arrow board and its mountings shall be engineered to a standard:

- i) That will allow for them to withstand the forces applied during forward travel motion based on maximum speed environment for heavy vehicles when travelling to site i.e. 100km/h; and
 - ii) To withstand a force of 20 times the total mass of the arrow board and its mountings, and
 - iii) If the arrow board assembly is designed to lift and lower it must lift or lower within 15 seconds.
9. Have an 'in-cabin' control panel placed in close proximity to the operator and illuminated at night. The panel shall include methods of control for, but not limited to, the following:
 - Activation of communication equipment
 - Activation of Warning lights
 - Activation of Arrow Board
 - Raising and lowering of Arrow board if applicable
 - Activation of rear view camera
 - Raising and lowering of the Impact Attenuator Unit.
10. Be fitted with high strength headboards to prevent debris from crashing through the cabin in the event of an impact. The backs of these headboards are to be blacked out so as to contrast/highlight the arrow board and other detailing of the vehicle when viewed from the rear.
11. Be fitted with a minimum of two flashing yellow lamps positioned on the vehicle in accordance with the requirements of AS1742.3.
12. All attenuator units must be fitted with alarms and LED lights to give warning that the unit is being raised or lowered.
13. At no time are items to be carried in the back of a vehicle while it is performing the duties of a TMA.
14. Have mounting facilities for signs to be mounted to the tailgate or headboard as required by relevant State/Territory road authority technical publications.

- 15.** (As a minimum) be fitted with communication equipment that will enable simultaneous and independent communication to all relevant personnel e.g. - 2 (two) 5 watt 41 channel UHF radios, operating on separate channels.
- 16.** Be equipped with a warning device of sufficient intensity and volume to be easily heard by workers carrying out their normal duties a least 30 metres from the TMA.
- 17.** Have an independent power back up system installed that will adequately cater for all auxiliary equipment associated with use of the host vehicle as a TMA. For example this may include the installation of auxiliary batteries or power packs.
- 18.** Be fitted with a camera to allow the TMA operator to observe traffic approaching from the rear.

Note: Consideration should be given to the use of cameras suitable for both day and night operations, and installation of an associated data recording device to record vehicles approaching from potential impact areas.

- 17.** Rear marker plates must be fitted to the rear of the Vehicle.

4.2. Impact attenuator Unit Certification

Impact Attenuators Units shall meet all mandatory and optional testing requirements of the following:

- NCHRP 350 Recommended Procedures for the Safety Performance Evaluation of Highway Features (1993) for Impact Attenuator Units built before the introduction of the following standard.
- AASHTO Manual for Assessing Safety Hardware for all other Impact Attenuator Units.

Typical form of evidence for compliance would be, or may include, test specification report of that particular make and model.

Impact Attenuator Unit Test Level Ratings:

The following table indicates Impact Attenuator Unit ratings.

Rating	Speed
TL2	70 km/h
TL3	100 km/h

Impact Attenuators Units shall have their test level rating clearly displayed on both side panels of the unit. The display shall be made up of a panel with black lettering (e.g. TL3) on a white 210mm x 300mm background.

4.3. Truck Mounted Impact attenuator Unit.

Host vehicle shall be as detailed in 4.1.

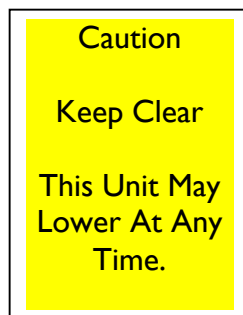
1. Impact Attenuator Units shall be assembled and fitted to the host vehicle in accordance with the manufacturer's specifications.

2. Flashing yellow light/s shall be fitted to the rear of the Impact Attenuator Unit.
3. The rear surface of the Impact Attenuator Unit when deployed shall consist of Class 1W retro reflective red diagonal striping at least 100 mm wide, on a white **non**-retro reflective background.
 - In line with ADR 13/00 rear marker plates must be displayed at the rear most part of the body of a “special purpose vehicle”.
 - A pattern covering an area of at least 0.16 square metres and consisting of diagonal stripes at least 150mm wide and alternately coloured.

4.4. Truck Mounted Impact attenuator Unit Configuration.

In addition to the requirements above the following shall apply:

1. Dedicated yellow flashing light to automatically provide notice of the Impact Attenuator Unit being raised or lowered.
2. Automatic Impact Brake micro-switch is to be fitted to the rear of the Impact Attenuator Unit to activate the host vehicle brakes in the event of an impact.
3. In cabin and external audible alarms to automatically provide notice of the Impact Attenuator Unit being raised or lowered.
4. Travel lock system installed that prevents inadvertent deployment of the Impact Attenuator Unit.
5. When not deployed an adhesive type (black on yellow) warning sign (size 800mm x 1500mm) stating: 'Caution keep clear this unit may lower at anytime' must be visible from the rear of the Impact Attenuator Unit.



10. No modification including signage is to be made to TMA vehicles unless prior consultation has been made through the TMA steering committee.
11. The TMA should be left in the raised position whenever it is not being used as an impact attenuator.
12. The TMA can only absorb the energy of an impacting vehicle in the lowered position.
13. When the TMA is in operational mode the vehicle must only travel in its lane or carry out lane-change manoeuvres. The TMA must be raised when carrying out any other directional manoeuvre.

4.5. Trailer Mounted Impact attenuator Unit.

The following additional requirements must be followed for the use of Trailer Mounted Impact Attenuator Units.

1. Trailer Mounted Impact Attenuator Units must be equipped with anti-rotational damper systems (designed to restrict gating of the unit into adjacent traffic lanes). Break away cables shall also be used to ensure that the electronic braking system is activated should the anti rotational damper system fail.
2. The minimum recommended weight for the tow or host vehicle is 4,536 kgs. There is no specified **maximum** GVM for the tow or host vehicle. (*NCHRP report 350 conducted on Trailer Mounted Impact Attenuator Units with a TL3 rating*).

*It is important to note, that **as the weight of the support or host vehicle is increased the “roll ahead distance” upon impact is reduced.***

4.6. TMA Inspections, Repairs and Modifications and Inspections.

1. All units must have regular inspections as per Total Fleet Management requirements.
2. Units must be inspected, by a qualified inspector, after any impact or incident.
3. All repairs and/or modifications to TMAs and attachments shall be carried out by a competent person.
4. Following repair or modification TMAs and attachments must be inspected and have certification documentation prepared by a competent person.
5. TMAs and attachments must be inspected at least once each year and have certification documentation prepared by a competent person.

Note: The TMA Steering Committee will review these functional specifications at least every six months or more frequently if required.

5.0 Traffic Control Devices

All traffic control devices are to conform to the requirements of the Australian Standard AS1742.3 'Traffic control for works on roads' and installed in accordance with relevant State/Territory Road Authority technical publications.

5.1 Vehicle Mounted Signs and Devices

All vehicle mounted warning devices shall be in accordance with the requirements contained in the Australian Standard AS1742.3 'Traffic control for works on roads'. This includes all signs, illuminated flashing arrow sign and flashing yellow lamps.

5.2 Illuminated Flashing Arrow Sign

Flashing yellow lamps may be used in conjunction with this sign provided that the lamps are either appropriately shielded or laterally or vertically displaced from the edge of the sign to avoid visually corrupting the arrow shape or its directional effect.

5.3 Variable Message Sign

All Portable Variable Message Signs must meet relevant Australia Standards, comply with applicable regulatory requirements such as ADR, meet registration requirements and applicable State/Territory legislation and be approved for on road use by State/Territory Authority where vehicle is operating.

5.4 Advance Warning & Advance Warning Vehicles

Advance Warning Vehicles warn and inform of changes to traffic conditions ahead, and give motorists time to adjust their driving patterns.

When the TMA is being utilised for Static Work pre-warning signage in advance of the work site is mandatory as a warning for approaching motorists, consideration should be given to using an Advance Warning Vehicle.

When the TMA is being utilised for Mobile Works, an advance warning vehicle is required as in accordance with TC @ WS Manual Version 4.1 Clause 9.17.1.

Advance warning vehicle's shall have 'B' size arrow board or variable message boards. All signs shall be securely fixed to the advance warning vehicle.

6.0 Minimum Training and Qualifications

This section sets out minimum training and qualification requirements for operators of TMAs.

Operators must have a minimum of the following training and qualifications before being eligible to drive a TMA:

1. Hold a current and valid Heavy Vehicle licence of a suitable class to operate the TMA.
2. A NSW Work Cover Construction OHS General Induction Card or recognised Equivalent.
3. Completed Traffic Control Training to the following levels – Traffic Controller – Stop/Slow (Blue Card) & Apply Traffic Control Plans (Yellow Card).
4. Completed instruction in the use of TMA equipment and functions, including passing a practical assessment.
5. Successful completion of an RMS-approved competency based TMA training course.
6. Management and staff planning and or working with TMA vehicles must undertake an awareness session into the guidelines and operation of the unit, including communication protocols.
7. Field staff working with TMAs must be inducted into the SWMS for usage of TMAs at work sites.
8. A toolbox meeting with field operational staff must be held and documented outlining the approved Traffic Control Plan and Vehicle Movement Plans related to the work site.

Notes

A TMA training course has been developed. The course includes a performance assessment checklist which is signed by a qualified workplace trainer on course completion.

It is recommended if a trained TMA operator has not had recent exposure (> six months) to operating a TMA then practical refresher training be undertaken with an experienced operator.

7.0 Operational Procedures.

This section provides guidance in the Operation of TMAs.

The following shall be observed when operating a TMA:

1. At all times the host vehicle's standard seat belts shall be used.

and

If fitted with a four (4) point harness seat belt and performing the duties of a TMA the four (4) point harness seat belt shall be used in conjunction with the standard seat belt.

2. After an impact or crash that may affect the integrity of the host vehicle and/or impact attenuator unit, TMA's and attachments must be inspected (see Clause 4.6).
3. No items to be carried in the back of a host vehicle while it is performing the duties of a TMA.
4. The mounting of any fixtures or equipment to the TMA shall be engineered to 20 times the weight of the fixture.
5. Only the operator to be in vehicle when performing the duties of a TMA, except in the following circumstances;
If the operator is undergoing training or assessment, the trainer or assessor must occupy a seating position that has the same level of occupant protection as the driver's seat
6. On request operators shall produce evidence of successful completion of a TMA training course.
7. When the Impact Attenuator Unit is in the deployed/lowered position, the vehicle may only travel within its own lane or carry out lane-changing manoeuvres in the same direction. The Impact Attenuator Unit must be raised when carrying out all other manoeuvres.
8. The Impact Attenuator Unit may only be in the deployed/lowered position when the TMA is engaged at an approved road work site. This may include the preparation and disassembly of an approved Traffic Control Guidance Plan (TCGP).

7.1 When to use a TMA -

When any work is undertaken in a location that satisfies the criteria below

- Work is on a multi – lane carriageway **and**
- The signposted speed limit is 100 kph or greater **and**
- Traffic volumes are ≥ 1000 vehicles/hour/carriage.

When the above criteria is met the decision **not** to use a TMA must be supported by a documented risk assessment approved by the Regional Road Services Manager, This is applicable to the District Offices where a TMA has been provided.

The TMA **may** be used in other circumstances as required, including the provision of support for sub contractors who under take works on behalf of RFS.

The intention of the deployment of TMAs is to use a “buffer” for additional protection for workers on multi-lane divided carriageways.

7.2 When **not** to use a TMA -

CRITERIA : Work is on Two Way x Two Lane Carriageway - $\uparrow\downarrow$

The above criterion presents reduced vision and increases the potential of a head – on collision from trailing vehicles attempting to or overtaking the TMA.

If a TMA is to be used on two lane x 2 way carriageways then an **approved** Traffic Control Plan has to be developed for this “specific activity”.

It is mandatory that a documented risk assessment be undertaken before considering the use of the TMA for two lane x 2 way carriageways.

8.0 Traffic Management

It is recommended that each operating environment undertake a risk assessment prior to the commencement of works to ensure that the most appropriate traffic control measures are implemented when using a TMA in accordance with the TC @ WS Manual.

Note: Reference to 5.0 Traffic Control Devices

8.1 Traffic Control Plans (As developed)

Traffic Control Plans as developed will indicate the appropriate Advance Warning Vehicle/s, TMAs, signs and devices required to guide traffic past the worksite. The business unit's approved traffic control plans illustrating various work site situations and circumstances will form an addendum to the guidelines for the use of truck mounted attenuators.

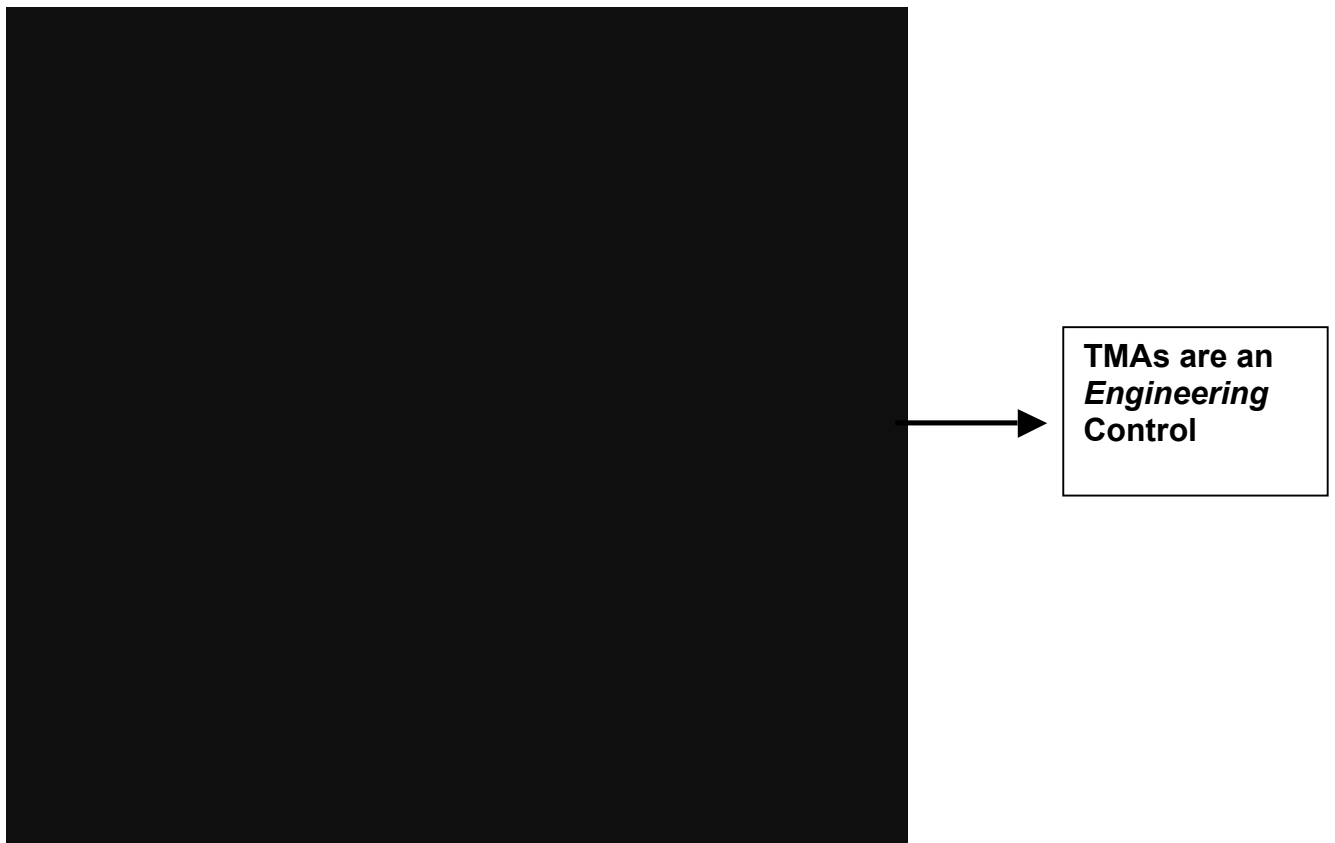
9.0 TMA Risk Assessments

1. Refer to section 7 of this document: *When to use a TMA*.
2. Assess the location of works incorporating traffic control and the work activity to be undertaken.
3. Hold a toolbox or EnSite meeting before start of work incorporating safe and adequate sight and stopping distances for approaching motorists.
4. Consider the placement and positioning of advance warning signage and or devices.
5. Refer to Safe Work Method Statements.

9.1 Risk Management

The National Work Health and Safety Act 2012 classifies work on or adjacent to roads used by traffic as **high risk work** and prescribes the need to identify hazards and control risks.

The ways of controlling risks are ranked from the highest level of protection and reliability to the lowest. This ranking is known as the hierarchy of risk control. The WHS Regulations require duty holders to work through this hierarchy when managing risk under the WHS Regulations.



The Australian Standard AS1742.3 'Traffic control for works on roads' provides guidance in relation to hazard identification and risk control as it relates to all applications of road works. These guidelines embrace these requirements together with the principles as contained in AS/NZS ISO 31000 Risk Management.

The Following extract is from the AS1742.3 Clause 2.2.3:

2.2.3 Risk Management:

Risk management entails the identification and analysis of all hazards likely to arise during works on road including the setting up, operating, changing and ultimate dismantling of a traffic guidance scheme, followed by the determination of appropriate measures to mitigate those risks. The process is appropriate at all levels of planning and operation including the following:

- (a) When preparing standardized plans and work method statements for the conduct of minor routine and mobile works.*
- (b) When preparing traffic guidance schemes for more extensive or complex works where site specific risks will assume importance.*

In each case the process should be carried out by first identifying all the hazards likely to arise, evaluating them in terms of likelihood of occurrence and adverse consequences using historical data, experience of other means. The proposed procedural statement or traffic guidance scheme should then be checked in detail to ensure that adequate means of controlling or reducing those risks found to be significant, are in place.

This Standard sets out guidance and minimum requirements. Variations below these minimum shall only be made on the basis of a documented risk assessment prepared by a competent person in consultation with affected parties as appropriate. Where superior hazard controls are identified through this process they should be adopted in preference to minimum requirements.

NOTE: *Road authorities should consider providing more detailed guidelines on the circumstances under which variations are permitted, the format of risk assessment documentation, who may carry out risk assessment and who should be consulted.*

9.2 TMA Assessment Tools:

- TMA Pavement Footprint Assessment Tool – **see addendum A**
- TMA Location Priorities Checklist – **see addendum B**
- TMA Truck & Plant Hazard Risk Assessment - **see addendum C.**
- Example TMA Traffic Control Guidance Plan - **see addendum D.**

9.3 TMA Pavement Footprint Assessment Tool

The TMA Pavement Footprint Assessment Tool was developed for crews using a TMA in work zones it enables and guides operators in assessing the most effective sight distance for approaching motorists. The emphasis is placed on the sight distance being measured from the work area to the distance visibly unobstructed from an approaching vehicle. In some situations with high speed traffic volumes and where visibility may be obscured by vegetation or bends a distance of 450 metres may be required to allow motorists a safe distance to register and react to a changed traffic condition i.e. fast lane closed prepare to merge into slow lane.

9.4 TMA Location Priorities Checklist

The TMA location priority checklist ranks the preferred option of using the TMA considering the following factors –

1. The location of work i.e. lane affected,
2. The posted speed limit.
3. Length of time i.e. exposure.
4. Type of traffic control i.e. mobile, short term.
5. Median width.

10. Ongoing development.

The TMA Steering Committee is to meet at least every six (6) months to review the use of TMAs within NSW, or more frequently if required. People with specific content knowledge will be called on to supply information as required. The *RFS TMA Steering Committee Charter* is attached to these guidelines as addendum C.

ADDENDUM A

TMA Pavement Footprint Assessment Tool.

Segment	Signed Travel Speed	Vertical Sight Stopping Distance	Curved Sight Stopping Distance	Slow Lane Shoulder Width	Fast Lane Shoulder Width	Guardrail Furnishing	Median Vegetation

TMA Requirements – Circle which is applicable and indicate which direction – *North or Southbound*

- A. Slow Lane Closure
- B. Fast Lane Closure
- C. Other State
- D. Mobile Work Site
- E. Fixed Location

Comments:

Note: *Sight distance is the distance measured from the work area to the distance visibly unobstructed from an approach vehicle.*

Signed & Dated

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ADDENDUM B.

TMA Priority Guide.

In determining the preferred option in using the TMA you need to consider the following

- The location of work i.e. lane affected,
- The posted speed limit.
- Length of time i.e. exposure.
- Type of traffic control i.e. mobile, short term and
- Median width.

Ranked in order of preferred option of using the TMA on Multi-lane Carriage Ways.

1. Mobile closure of fast lane, narrow median, speed limit $\geq 100\text{kph}$.
2. Mobile closure of fast lane, wide median, speed limit $\geq 100\text{kph}$.
3. Mobile closure of slow lane, speed limit $\geq 100\text{kph}$.
4. Short term closure of fast lane, narrow median, speed limit $\geq 100\text{kph}$.
5. Short term closure of fast lane, wide median, speed limit $\geq 100\text{kph}$.
6. Short term closure of slow lane speed limit $\geq 100\text{kph}$.
7. Mobile closure of fast lane, narrow median, speed limit $< 100\text{kph}$.
8. Mobile closure of fast lane, wide median, speed limit $< 100\text{kph}$.
9. Mobile closure of slow lane speed limit $< 100\text{kph}$.
10. Short term closure of fast lane, narrow median, speed limit $< 100\text{kph}$.
11. Short term closure of fast lane, wide median, speed limit $< 100\text{kph}$.
12. Short term closure of slow lane $< 100\text{kph}$.
13. Mobile closure of shoulder (including frequently changing work area).
14. Short term closure of shoulder.

ADDENDUM C

Road Fleet & Services



Note: This Risk Assessment is to be used in conjunction with the Operators Manual.

- Do not operate or work on this machine unless you have read and understand the instructions and warnings in the Operation & Maintenance Manual.
- Failure to follow the instructions or heed the warnings could result in injury or death.
- Ensure appropriate Licenses are held for the size of truck
- Ensure Operator has been trained in TMA Operational Procedures and inducted into RFS TMA Guidelines.
- Contact supplier/dealer for replacement manuals.
- NSW Traffic Regulations are obeyed at all times.

TRUCK & PLANT HAZARD RISK ASSESSMENT

TYPE:	TL-3 – (100kph rated) Truck and Trailer Mounted Attenuators.
Make & Model:	Safe Roads TL-3 & Scorpion 10,000 TL-3 models & Trailer Mounted Attenuators.
Assessment conducted by:	
Position:	Fleet Inspector Procurement
Date of Assessment:	

Level	Description of Consequence or Impact	Consequence	Likelihood / Probability		
			L Likely	M Moderate	U Unlikely
H (1) (High level of harm)	Potential death, permanent disability or major structural failure/damage. Off-site environmental discharge/release not contained and significant long-term environmental harm.	H (1) (High level of harm)	1	1	2
M (2) (Medium level of harm)	Potential temporary disability or minor structural failure/damage. On-site environmental discharge/release contained, minor remediation required, short-term environmental harm.	M (2) (Medium level of harm)	1	2	3
L (3) (Low level of harm)	Incident that has the potential to cause persons to require first aid. On-site environmental discharge/release immediately contained, minor level clean up with no short-term environmental harm.	L (3) (Low level of harm)	2	3	3

Level	Likelihood / Probability
Likely	Could happen frequently
Moderate	Could happen occasionally
Unlikely	May occur only in exceptional circumstances

Hazard Identified	Risk Assessed	Risk Priority	Possible Risk Control
Crushing	Falling Material	1	<ul style="list-style-type: none"> Ensure an adequate area to lower Attenuator (truck mounted)
	Uncontrolled Movement	1	<ul style="list-style-type: none"> Ensure park brake is adequate. Ensure Attenuator Trailer is secure before disconnection Always park Truck on level ground. Familiarise with all controls and operation. Ensure all original equipment. Manufactures mechanical locks are fitted to truck as per operators manual. Ensure the attenuator unit is properly supported prior to maintenance work on the structure or hydraulic system. Ensure all original equipment manufactures guards. and safety devices are fitted before operating. Ensure reverse alarm is operational. Ensure reverse camera is operational. Ensure flashing light and arrowboard is operational. Ensure all Safety Devices are used in work zones. E.g. Arrowboard, warning lights. Ensure adequate area between work area and attenuator Keep bystanders clear at all times. Ensure a 30 to 50 metre exclusion zone is in place when operating truck as a TMA. Keep clear of crush zone areas e.g. Moving Traffic and traffic controlled area Never short across starter terminals, Truck could move unexpectedly. Follow Traffic Control Plan and Vehicle Movement Plan Never work on machine supported only by jacks – safety stands must be used. High visibility / safety clothing to be worn.
	Stopping / Immobilisation	3	<ul style="list-style-type: none"> Stop and immobilise Truck as per owners manual. Chock wheels.
	Rollover	3	<ul style="list-style-type: none"> Refer to owners manual. Seat belt must be worn. Never operate across extreme slopes. Extreme caution is required when working near edges. Ensure loads are distributed evenly across load area e.g. equipment fitted back into designated areas.
Electrical / Gas	Damage to services	2	<ul style="list-style-type: none"> Survey worksite for risk to above ground services, e.g. electrical wires, maintain safe working distance

	Electrocution	2	<ul style="list-style-type: none"> Survey worksite for risk to above ground services Maintain appropriate safe work distances Use a spotter If contact is made with live power cables remain in the Truck unless it is unsafe to do so, use appropriate evacuation procedure if required.
	Slips/Trips/Falls	1	<ul style="list-style-type: none"> Body Contact
Manual Handling	Tyre Changing	2	<ul style="list-style-type: none"> Mechanical aids must be used when removing and relacing tyres Proper manual handling techniques is required when working with objects of weight e.g. wheels and tyres
Safety Equipment / Registration	Non Functional	3	<ul style="list-style-type: none"> Daily checks must be carried out & Daily Inspection Reports filled out on Safety Equipment listed: Test Trailer Brake operation prior to towing attenuator Amber Beacon, Reversing Alarm, Reverse Camera, Arrowboard, Lights, Horn, Mirrors, Wipers / Washers, Reflectors Defects be reported immediately
Pressure	Uncontrolled Discharge	2	<ul style="list-style-type: none"> Hot fluids and high pressure may exist is hoses fitted to Truck. Caution must be observed Ensure all Hydraulic, coolant / air hoses fittings are in good working condition. Relieve pressure and Attenuator is lowered to ground, prior to any repair. Tyres must be properly maintained with the correct pressures. Wheel must be caged when filling with air after tyre replacement. Wheel nuts to be checked regularly
Noise	Noise Levels	2/3	<ul style="list-style-type: none"> Ensure exhaust system is properly maintained Ensure proper operation of drive belts.
Explosion	Fuel	1	<ul style="list-style-type: none"> Batteries: Caution must be taken to avoid arcing when checking batteries or jump starting truck to reduce the risk of fire & explosion Fuel: Caution keep fuel away from ignition sources. Failure to follow this may result in a fire/explosion. Stop engine prior to refuelling.

ADDENDUM D

Business Unit developed Traffic Control Plans.

Example: Traffic Control Guidance Plan

