

MRWA BASIC WORKSITE TRAFFIC MANAGEMENT & TRAFFIC CONTROL

Student Guide

RIIWH201D – Work Safely and Follow WHS Policies & Procedures

RIICOM201D – Communicate in the Workplace

RIIWH302D – Implement Traffic Management Plan

RIIWH205D – Control Traffic with Stop-Slow Bat



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Introduction

Accreditation requirements

Any person or party intending to undertake an event or conduct works that may impact on traffic (including pedestrian traffic) within any part of the road reserve shall, (as a condition of approval by Main Roads, Local Government or any other authority responsible for the road) ensure that the person performing the tasks hold a relevant and current traffic management certificate of accreditation.

Why manage traffic?

Traffic management, at its most basic level, is about two things:

1. Making sure that the work being carried out on or near a road can go ahead with minimal interference for workers or for people who have to use the road AND;
2. Making sure that no one gets hurt because of the work taking place on or near a road, whether they are a worker, road user, pedestrian or cyclist

Traffic management is about achieving these two basic goals. Traffic control workers are at the forefront of this work, and your work implementing traffic management plans can go a long way to allowing workers and road users to safely and efficiently interact with a work area on roads.

How is traffic managed?





Generally, there are four main ways traffic can be managed around work zones on roads:

1. Traffic can be guided *through* the work area, under closely controlled conditions;
2. Traffic can be guided *alongside* the work area;
3. Traffic can be guided *around* the work area via a detour or;
4. Traffic can be *prevented from travelling near the work area*, via a road closure

Each of these strategies have their advantages and disadvantages, and the most appropriate method of traffic management will be selected after carefully considering the site, the type of work being carried out and the risks to both workers and road users.

Australian Standards

The Australian standard that we must follow when implementing a traffic management plan is *Manual of Uniform Traffic Control Devices (MUTGS) – AS/NZS 1742.3- 2009 Traffic Control for Works on Roads*. The four sections which are most relevant to a BWTM are:

-  **Section 1** – Scope and general
-  **Section 2** – Principles for the development, installation and operation of a traffic guidance scheme
-  **Section 3** – Description and use of signs and devices
-  **Section 4** – Procedures for the installation and operation of traffic control devices

Code of Practice

The Main Roads Western Australia traffic management for works on roads Code of Practice is based around the Australian standard 1742.3, with the purpose of this Code to specify any variations or additional requirements to AS 1742.3 as it is designed specifically for Western Australia. If there is a conflict between the Code of Practice and the Australian standards, the code of Practice takes precedence.

The principles of the MRWA Code of Practice are to:

- ✚ Ensure the safety of all road users and road workers in line with the safe work practices
- ✚ Minimise the disruption and inconvenience to all road user resulting from works on and around roads
- ✚ Establish uniform procedures for traffic management at worksites that can be easily recognised and understood by road users

In addition to complying with both AS 1742.3 and the MRWA Code of Practice, approval must be obtained from the road authority who owns the road before works can commence.

In addition to obtaining approval from the relevant body you will have to notify other agencies of your planned works, such as emergency services, local council and public transport. This is done through a “notification of roadworks” form.

The levels of traffic management accreditation in Western Australia are as follows:

Basic Worksite Traffic Manager (BWTM)

- ✚ Implement a Traffic Management Plan
- ✚ Implement traffic management signage and devices from a Traffic Guidance Scheme
- ✚ Monitor the effectiveness of the TMP/TGS
- ✚ Close down the TMP/TGS
- ✚ Record and reports all incidents and occurrences during works

Traffic Controllers (TC)

- ✚ On-site manual traffic control using a Stop-Slow bat

Worksite Traffic Manager (WTM)

- ✚ Review TMP’s prepared by a person holding an Advanced Worksite Traffic Management accreditation
- ✚ Monitoring the effectiveness of, and on-site adjustments to, Traffic Guidance Schemes in accordance with the scope and objectives of the TMP

Advanced Worksite Traffic Manager (AWTM)

- ✚ Prepare, review, monitor and adjust TMP’s and TGS’s

Roadwork’s Traffic Manager (RTM)

- ✚ Review and endorsement of TMP’s involving ‘complex traffic arrangements

It is important to remember that you can only carry out duties for which you hold the accreditation for, this will be shown on the rear of your MRWA Traffic Management Accreditation card. Do not perform any traffic management duties that you are not authorised to perform.

WHS Policies, Procedures & Documentation

WHS policies and procedures are put in place to ensure the safety of the workers and everyone involved, directly or indirectly, with those works.

A procedure is a step-by-step process of conducting an activity which ensures the activity is carried out effectively and in the same manner every time. Work health and safety procedures ensure the process is carried out in the safest way possible, whilst also complying with all relevant legislative requirements.

Documentation outlining these requirements may include:

1. Australian WHS legislation
2. National regulations
3. Relevant Code of Practice
4. Australian workplace standards
5. Company specific policies and procedures

Companies and organizations will generally develop their own documentation and procedures which meet the obligations of the documents listed above, but are tailored to their individual needs or work requirements.

These documents and procedures may include:

- ✚ Safe Work Method Statement (SWMS)
- ✚ Safe Work Procedures (SWP)
- ✚ Standard Operating Procedures (SOP)
- ✚ Job Safety Analysis (JSA)
- ✚ Emergency and Evacuation procedures
- ✚ Isolation and Tag-out procedures
- ✚ Material Safety data Sheets (MSDS)
- ✚ Hazard identification and reporting procedure
- ✚ Risk Assessments
- ✚ Environmental Protection procedure
- ✚ Site communication procedure

When you initially join a company or organisation, they are required by law, to induct and explain to you the companies WHS policies and procedures.

This induction will ensure that you can not only locate all the different procedures, but that you are able to interpret the information contained and how it applies to you.

Safe Work Method Statement (SWMS)

Under workplace health and safety legislation, it may also be a requirement for works on site to be conducted in accordance with a Safe Work Method Statement (SWMS) or equivalent document.

Safe Work Method Statements:

- ✚ List the types of work being conducted;
- ✚ List the risks and hazards associated with that work;
- ✚ Describes the control measures that must be put in place for those risks and hazards and;
- ✚ Describes and implementation plan for those control measures.



Where a SWMS exists, work must in accordance with it. If an incident occurs in a worksite where a SWMS has been ignored, there may be severe penalties for the supervisor (in this case, you) and the company.

Part of the risk identification and management process must be to:

1. Check whether SWMS are required for your site and if they have been prepared – if they have not, they will need to be prepared prior to work commencing
2. SWMS should be reviewed to ensure they identify and address all of the hazards and risks of the site
3. Workers and supervisors alike must ensure that work conducted on site is compliant with the contents of the SWMS.

Safe Work Method Statement

Example Only

Activity Risk Assessment

		C - CONSEQUENCE					
		Insignificant	Minor	Moderate	Major	Catastrophic	
L - LIKELIHOOD	Almost Certain	A	H	H	E	E	E
	Likely	B	M	H	H	E	E
	Moderate	C	L	M	H	E	E
	Unlikely	D	L	L	M	H	E
	Rare	E	L	L	M	H	H

RISK LEVEL - ANALYSIS		
Code	Descriptor	Definition
E	Extreme	Click here and enter
H	High	Click here and enter
M	Moderate	Click here and enter
L	Low	Click here and enter

Activity (step by step)	Hazard	Risk	L	C	Initial Risk	Control Measures	Residual Risk
Before starting	Forklift Defects – tyres, oil & hydraulic leaks, mechanical damage, fuel leaks, safety belt damaged / defective, etc.	Accident / injury to operator, other workers, damage to plant & equipment	C	4	E	Documented daily pre-start checks.	Low
	Housekeeping – Obstacles / Uneven / Soft / Sloping surfaces	Accident / injury to operator	C	4	E	Operator competency – Forklifts should not be used until conditions are suitable. NEVER work across slope.	Low
Driving	Operator not wearing seatbelt	Accident / injury to operator	C	4	E	Seatbelt to be worn AT ALL TIMES	Low
	Lifting Load – weight exceeds safe load at height / distance from mast	Dropped load – potential injury to others	C	4	E	Check load capacity before lifting. Exclusion zone to exclude all other workers from work zone	Low
	Reversing / turning / entering / exiting premises	Accident / injury to other workers	C	4	E	Operator to remain alert at all times, using reversing alarm / horn to warn other workers	Moderate
	Placing load	Damaged load, injury to operator & others	C	4	E	Extreme care to be taken to ensure the safety of the load and others	Low
	Parking	Accident to operator / others	C	3	H	Tynes to be lowered to ground, handbrake applied, machine switched off & keys removed	Low


Job Safety Analysis (JSA)

Job Safety Analysis Worksheet

Company name: Date: JSA No.
 Site name: Permit to work requirement: Yes No
 Contractor: Approved by:
 Activity:

Activity List the tasks required to perform the activity in the sequence they are carried out.	Hazards Against each task list the hazards that could cause injury when the task is performed.	Risk control measures List the control measures required to eliminate or minimise the risk of injury arising from the identified hazard.	Who is responsible? Write the name of the person responsible (supervisor or above) to implement the control measures listed.

**Remember: Each JSA must be site specific.
Include all workers in the development of this JSA.**

 WorkSafe Victoria is a division of the Victorian WorkCover Authority

Site Hazard Checklist

Step by Step process.

1. **Identifying hazards**—find out what could cause harm.
2. **Assessing risks** (if necessary)—understand the nature of the harm that could be caused by the hazard, how serious the harm could be and the likelihood of it happening.
3. **Controlling risks**—implement the most effective control measure that is reasonably practicable in the circumstances.
4. **Reviewing control measures**—ensure control measures are working as planned.

BWTM & TC
Assessment task 3
Site Hazard Checklist

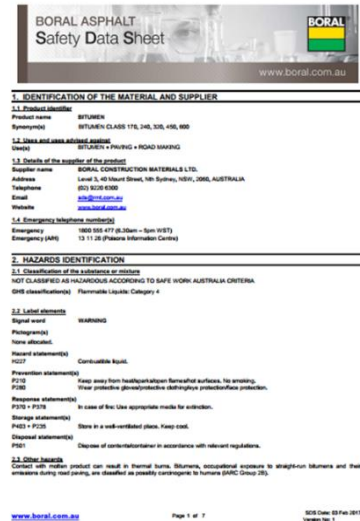


Course Date:	Trainer Name:	Student Name:
Site Address 1:	Site Address 2:	Site Address 3:

Hazard Identified	Risk Rating (see over)						Control Measure
	Site 1 Initial	Site 1 Residual	Site 2 Initial	Site 2 Residual	Site 3 Initial	Site 3 Residual	
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							

Safety Data Sheets (SDS)

Safety Data Sheets are documents that provide critical information about hazardous materials on site.



For example, they include information on:

- the materials identity and ingredients
- health and physical hazards
- safe handling (PPE) and storage procedures
- emergency procedures
- disposal considerations

Traffic Management Plan (TMP)

A TMP outlines all the necessary details to ensure the works on roads are conducted in a safe and timely manner. The aims of a TMP are:

- ✚ Protect the workers, road users, pedestrians and anyone who may be affected by the works
- ✚ Informing and guiding road users in/around the worksite safely
- ✚ Provide adequate and ample warning to road users of the works being conducted
- ✚ Minimise disruptions to all road users, work places, residents and property owners
- ✚ Minimise disruptions to all emergency services and public transport

The main components of a TMP that relates to you as a BWTM holder are:

- ✚ Traffic Guidance Scheme (TGS)
- ✚ Worksite Hazard Assessment/Job Safety Analysis
- ✚ Location, type and duration of works

Traffic Guidance Scheme (TGS)

Traffic Guidance Scheme (TGS) is a drawing which shows the correct placement and arrangement of all traffic control signage and devices required to be implemented for the TMP to be successful. A TGS may also details the correct set up and pack up sequences.

Components of a TGS include:

- ✚ Placement of Traffic Control Signage
- ✚ Placement of Traffic Control Devices (cones & bollards etc.)
- ✚ Distances for signage and devices
- ✚ Location of all road and footpath closures
- ✚ All detours
- ✚ Position of traffic controllers on site
- ✚ Set up and pack up sequences

TRAFFIC VOLUME (BOTH DIRECTIONS) VEHICLES PER HOUR	LENGTH OF SINGLE LANE SECTION m	DESIRABLE MAXIMUM LENGTH OF SINGLE-LANE OPERATION UNDER REVERSIBLE FLOW
800	70	
700	100	
600	150	
500	250	
300	600	

POSTED SPEED 50km/h
SPACE CONES @ 4M

Work Area Taper

15m 30m 15m 30m 15m 30m 15m

REFER TABLE ABOVE

STREET NAME _____

GENERAL NOTES:

- THIS TCD IS ONLY TO BE USED AS PART OF A TRAFFIC MANAGEMENT PLAN AS ENDORSED.
- ALL SIGN LOCATIONS ARE TO BE CHECKED PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS, ROADSIDE FURNITURE AND SUFFICIENT SPACE ON SHOULDERS/EMERGENCY LANES.
- THE SYMBOLIC WORKER SIGNS SHALL BE INSTALLED ONLY DURING HOURS WHEN WORKERS ON-FOOT ARE VISIBLE TO PASSING TRAFFIC.
- ALL VEHICLES USED ON SITE MUST BE FITTED WITH AN AUDIBLE REVERSE ALARM AND DUAL FLASHING BEACONS.
- THE MINIMUM LANE WIDTH TO BE PROVIDED THROUGH OR PAST THE WORKSITE SHALL BE BETWEEN 3.0m – 3.5m AT ALL TIMES.

VARIATIONS:






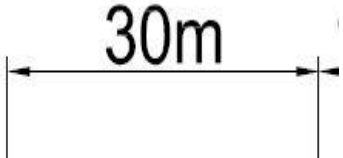
- ALLOWABLE CHANGES TO THE POSITIONING OF SIGNS, LENGTHS OF TAPERS OR MARKINGS SHALL BE:
 - A) MAXIMUM, 10% LESS THAN THE DISTANCES OR LENGTHS GIVEN.
 - B) MAXIMUM, 25% MORE THAN THE DISTANCES OR LENGTHS GIVEN.

AMENDMENTS AS INDICATED ON THE DRAWING MUST SHOW THE CHANGE IN METERS AND JUSTIFICATION FOR THE CHANGE WHICH HAS BEEN MADE.

AMENDED BY: _____

DATE OF WORKS: _____

122 Grandstand Road, Ascot WA 6104 T: 1300 019 304 www.wta.edu.au	Designed G. Gordon	Date 21/04/17	Generic 2-Hwy Stop-Slow	WARP Training Australia	Project Number: 2017	Sheet 3
	Drawn G. Gordon	Date 21/04/17	INSERT NORTH POINT Energy and Safety Traffic Management (refer website for NZS 3999 and Work Manual for more information on Worksite Traffic Control) Signed: Accreditation Number: Project Number: 2017			
	Checked J. Gibson	Date 21/04/17				

	<p>Traffic Controller Location</p>	<p>Any symbol of a person holding a paddle-like sign is a marker for where a traffic controller must be positioned on the site.</p>
	<p>Sign location and specification</p>	<p>This symbol dictates what the type of sign is or the inserts that are to be used in the event of using a Multi Message Sign</p>
	<p>Delineation Device</p>	<p>Dots on the plan denote the placement of delineation devices, such as cones or bollards.</p>
	<p>Single facing regulatory sign</p>	<p>This symbol denotes the placement of a regulatory sign, such as a speed limit sign, that faces only one direction of traffic. This would be appropriate, for instance, to mark the approach speed for traffic entering into a work zone, or the exit speed for traffic leaving a work zone.</p>
	<p>Dual-facing regulatory sign</p>	<p>This symbol is also for the placement of a regulatory sign, but in this instance, the sign should apply for both directions of traffic. This would be used, for instance, in the middle of a work zone, denoting the speed limit for all traffic travelling through the work zone.</p>
	<p>Spacing marker</p>	<p>These arrows indicate the distance that should be maintained between two different signs or devices. The lines at the end of each arrow indicate the beginning and end of the area to which each arrow refers.</p> <p>The arrows will always be accompanied by EITHER a fixed distance, or, more commonly with a letter or set of letters. The lettering is an indication that you need to refer to supporting documentation to determine the appropriate distance. The most common letter that is used is D, which refers to the concept of <i>Distance D</i> or <i>Dimension D</i>. This concept is explained below.</p>

Modality

Modality simply refers to how strong a direction or instruction is and how closely you need to follow the instruction. Some instructions in compliance documentation must be followed at all times, while other instructions are intended only as guidelines or suggestions and don't have to be followed if another instruction is more appropriate. It is important you understand the differences between these types of instructions.

When reading documents it is vital that you understand the difference between words such as 'consider' 'should' and 'must' or 'shall'.

CONSIDER – Consider means that you have a choice of actions and need to select the action that will give the best and safest result for the particular circumstances.

SHOULD – Should indicates a preferred course of action. If you take a different course of action you will need to be able to justify this in the event of an accident or incident.

MUST, REQUIRES, MANDATORY and **SHALL** – Must, Requires, Mandatory and shall all mean that the action is a legal requirement and **MUST** be complied with.

Risk Management

Conducting any works on a road has a large number of potential risks and hazards, therefore safety is **ESSENTIAL**.

Work requirements

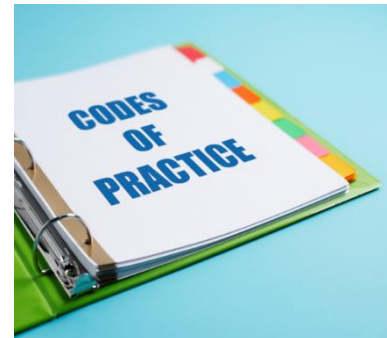
Work requirements will be given to you through either verbal or non-verbal methods of communication, and it is important that you are able to not only obtain this information, but also to interpret and clarify what the work requirements are asking of you.

Site documentation which is used to communicate work instructions are:

- ✚ TMP (Site specific or Generic)
- ✚ Job Safety Analysis (JSA)
- ✚ Safe Work Method Statement (SWMS)
- ✚ Daily Diary

Information contained in your work instructions may include:

- ✚ Site specifications
- ✚ Standard of work to be carried out
- ✚ Work plans (TMP/TGS) and specifications
- ✚ Regulatory and legislative requirements for the works
- ✚ Environmental protection requirements
- ✚ Traffic volumes and characteristics of road
- ✚ Safety policies, procedures and hazard reporting
- ✚ Incident report form
- ✚ Emergency procedure and evacuation plan



If you are unsure of your work instructions or what they are asking of you, seek clarification from your supervisor and confirm your requirements. This ensures that you carry out the tasks required in a safe and compliant manner.

Duty of Care

To ensure the safety of all road workers, road users and pedestrians, the organisation conducting the works has a 'duty of care' under the Occupational Safety and Health Regulations 1996 to:

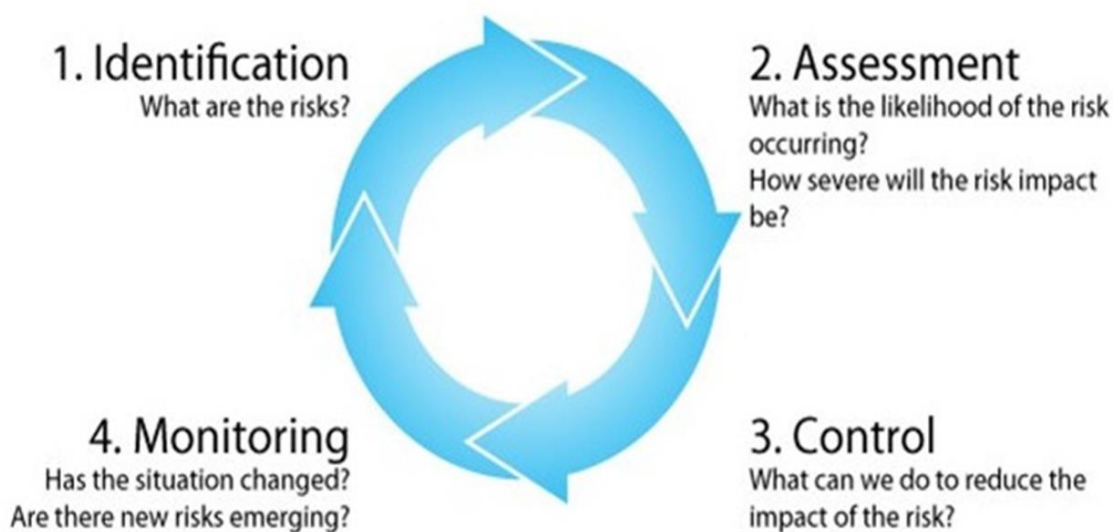
- ✚ Provide a safe place of work for its employees

- ✚ Take measures to ensure persons who have access to that workplace (including road users in case of a roadworks site) are not exposed to hazards

Risk Management Process

To ensure the safety of all personnel in and around the worksite, the risk management process is used. The risk management process:

- ✚ Identifies a hazard
- ✚ Evaluates the risk of that hazard
- ✚ Identifies control measures to either eliminate or reduce the risk
- ✚ Monitors the effectiveness of implemented control measures








Hazard and Risk



Common hazards in Traffic Management

The main hazards you will encounter during traffic management are:

- ✚ Vehicles travelling close to workers
- ✚ Vehicles travelling at speed through a worksite

-  Un-even and/or excavated road surface
-  Night works
-  Works on highways and freeways
-  Emergency situations
-  Manual handling

In order to maintain site safety at all times, you must apply all site safety requirements and follow any site or organisational policies safe operating procedures.

If you find a hazard whilst on any worksite, **REPORT IT IMMEDIATELY**. You can report a hazard by contacting your supervisor directly or by filling out your site/organisations designated hazard report form.

Risk

A RISK is the chance of that hazard occurring.

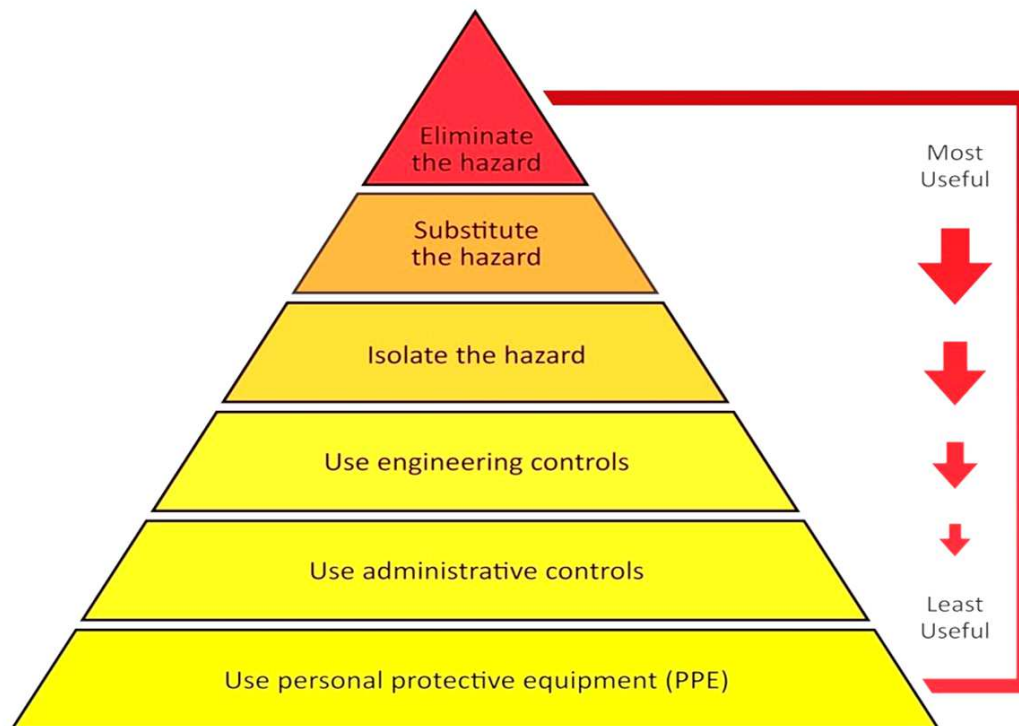
When analysing the risk of a hazard causing harm or loss, you should determine the likelihood of the hazard causing harm or loss and the consequences if the hazard does cause harm or loss.

These two factors combined determine the risk rating of the hazard.

When analysing the risk of a hazard causing harm or loss, you should determine the likelihood of the hazard causing harm or loss and the consequences if the hazard does cause harm or loss.

		Potential Consequences					
		L6	L5	L4	L3	L2	
		Minor injuries or discomfort. No medical treatment or measureable physical effects.	Injuries or illness requiring medical treatment. Temporary impairment.	Injuries or illness requiring hospital admission.	Injury or illness resulting in permanent impairment.	Fatality	
		Not Significant	Minor	Moderate	Major	Severe	
Likelihood	Expected to occur regularly under normal circumstances	Almost Certain	Medium	High	Very High	Very High	Very High
	Expected to occur at some time	Likely	Medium	High	High	Very High	Very High
	May occur at some time	Possible	Low	Medium	High	High	Very High
	Not likely to occur in normal circumstances	Unlikely	Low	Low	Medium	Medium	High
	Could happen, but probably never will	Rare	Low	Low	Low	Low	Medium

Hierarchy of Control



Establish and maintain a clean and tidy safe working area

Ensuring that your work area is clean and tidy will minimise the potential risk of damage to plant, personnel, equipment and all road users.

Once these procedures have been implemented, they **must** be followed to ensure that the work areas are maintained in a neat and tidy manner. Generally, poor housekeeping in the work area can lead to the unnecessary creation of hazards. Rubbish and debris that is left lying around is unsightly, creates a fire risk, and can cause trip or slip hazards.

If the following general procedures are observed, the hazards resulting from the accumulation of rubbish can be minimised:

- each worker is responsible for keeping his/her own work area clean and tidy
- all rubbish is to be placed in the appropriate bin as soon as it is generated
- aisles and walkways must be kept clear
- walkways for pedestrians should be wide enough to accommodate two-way flow
- material should always be neatly stacked on stable and level floors capable of carrying the weight of the stack
- all unnecessary items should be removed from the workplace

- Food scraps should be placed in bins which have plastic liners.
- rubbish bins provided for the disposal of rags, oily materials or similar flammable materials, should be used
- used aerosol cans should be disposed of in the flammable materials bin provided
- Separate bins for the collection of rubbish and scrap metal will be strategically located around the site and should be used.

Site Plans

A site plan is a document which holds all relevant information you'll require when working on that site, from work activity to isolation points and emergency muster points. In regards to traffic control, your sites Traffic Management Plan (TMP) will contain all this information.

The types of site destinations that you will need to be familiar with, and which you can find in your sites TMP are:

- ✚ Muster points
- ✚ Exclusions zones
- ✚ No access zones
- ✚ Isolation points
- ✚ Emergency evacuation path
- ✚ Site facilities
- ✚ Travel paths for traffic and pedestrians
- ✚ Site entry and exit points
- ✚ First aid points
- ✚ Firefighting points

In order to help all personnel on a work site, different signage is used to communicate different destinations and safety requirements.



Mandatory Signs

Specify an instruction that **MUST** be carried out.






Danger Signs

Provide a warning to a hazard or a hazardous condition, which is life threatening



Prohibition Signs

Outlines an action or behavior which is not permitted

	<h2>Warning Signs</h2> <p>Provides a warning of a hazard or hazardous condition, which is not life threatening</p>
	<h2>Emergency Information Signs</h2> <p>Shows the location/direction to emergency facilities (exits, first aid, safety equip. etc)</p>
	<h2>Fire Signs</h2> <p>Shows the location of fire alarms or fire fighting equipment</p>

Select and wear Personal Protective Equipment (PPE)

Personal protective equipment (PPE) is any piece of equipment used or clothing worn to minimise any risk to that person's health and safety. PPE can include, but is not limited to:

- ✚ Eye protection
 - Safety glasses
 - Face shields
 - Safety sunglasses
- ✚ Hand protection
- ✚ Safety boots
- ✚ Hearing protection
 - Ear plugs
 - Ear muffs
- ✚ Hard hats
- ✚ High-visibility clothing & equipment
 - Hi-vis work shirts/pants
 - Hi-vis vest
 - Night wands
- ✚ Site and job specific PPE
 - Information can be found in your worksites policies



Areas in your worksite which require mandatory PPE to be worn will be identified through the use of *mandatory signs*.

All PPE must adhere to the relevant standards and legislation for that clothing and/or equipment. In regards to traffic control, Hi-Visibility clothing must be worn at all worksites affected by traffic and whilst working within the road reserve.



AS4602 is the standard which applies to Hi-vis safety garments – Class N being the safety garments for night time use.

When selecting what Hi-Visibility clothing to wear, you must consider:

- ✚ Does the PPE meet the AS4602 for Hi-Visibility material
- ✚ Is the PPE in good and serviceable condition
- ✚ Is the retro-reflective material in good condition (if not the PPE becomes non-compliant and **MUST NOT** be worn)
- ✚ PPE is worn and fastened properly
- ✚ For night works – does the PPE meet the AS/NZS 4602 Class N garment

Isolation and Tag-out

Isolation is defined as:

- ✚ The process of ensuring that harm or loss cannot be caused by an energy source when conducting work

An energy source or potential energy source is commonly known as a *Hazard*.

In order to eliminate or reduce the risk of any energy source on the worksite, we must follow the correct isolation procedure.

Isolation procedures involve the isolation of all forms of potentially hazardous energy so that the plant does not move or start up accidentally. Isolation of plant also ensures that entry to a restricted area is controlled while the specific task is being carried out.

Isolation of equipment usually involves **Personal Danger Tags** and **Personal Isolation Locks**. Tags inform all personnel who has isolated the equipment and why.

The lock ensures that only the person who has isolated the equipment can unlock it and allow it to be operated.

The following general procedures regarding isolation provide a basis to which you can add site-specific information.

The basic steps of safe isolation are:

1. **Identify** the equipment to be worked on and the isolation requirements.
2. **Isolate** –
3. **Lock & Tag** - Apply your personal isolation lock and personal danger tag to the isolation point/s.
4. **Dissipate** - Check and remove all stored energy
5. **Verify** – Test to ensure that the equipment is correctly isolated and cannot be re-energised



In addition to a Personal Danger Tag other tags often used on site include:

Out of Service Tags – are placed on the isolation point/s of defective equipment which, if operated, could cause injury, equipment damage or adversely affect some part of the operation.

Information Tags – are used to pass on a message or instruction to personnel operating or working on a particular item of equipment or machinery.



Obtain permits and clearances

Before certain works can be conducted or carried out, specific approval and permits are required from certain governing bodies. Permits and clearances are used to prevent incidents in the workplace and outline how the works are to be carried out and what personnel/safety precautions must be followed.

Work permits can be issued by:

Student Guide

Basic Worksite Traffic Management

Traffic Control

- Local Authorities
- Companies/Organisations
- Worksites

Permits and clearances **must** be obtained before these works are to commence. Some examples of permits include:

- Confined space entry
- Working at heights
- Access to restricted areas
- Digging and excavation work
- Hot work (welding/cutting)
- Plant and equipment running and/or isolation

Work permits and clearances that you may require when conducting traffic management work may include:

- Road Occupancy license
- Road Works speed zone sign authorisation form
- Local authority approval
- Police/emergency service approval (events)

High Risk Work licences (HRWL)



Are required to carry out certain types of high risk work such as:

- Forklift driving
- EWP operation
- Dogging and Rigging
- Erecting Scaffolding above 4 metres (not using)

Identify, act on, and report breaches in site safety

Breaches in site safety policies and procedures not only affect the person or persons committing the breach, but everyone working and involved with that worksite. A breach in site safety can cause not only lost time or injury to personnel, but can cause major injury and in extreme cases, death.

Because of this, we must report any breaches in site safety or unsafe behaviour as soon as practically possible.

To be able to identify breaches in site safety, we must understand what a breach means. A breach in site safety can be:

- Failing to follow site safety procedures
- Failing to report hazards or potential hazards

- ✚ Failing to report 'near misses'
- ✚ Unsafe use of plant and equipment
- ✚ Not wearing mandatory PPE
- ✚ Failing to follow the sites Safe Work Method Statement
- ✚ Exposing other workers/pedestrians to unsafe work environments/practices
- ✚ Performing tasks or operating machinery without holding the required license/qualification

Once a breach in site safety or unsafe work behaviour is identified, you **MUST** report it. Failure to report any breach in site safety can lead to organisational disciplinary action, civil legal action, and in extreme cases even imprisonment.

When reporting a breach, your immediate supervisor is your first point of reference. If you feel that your report or concern has not been addressed, there are other channels you can report to, which include:

- ✚ Reporting your concerns to higher level of supervisors and/or management
- ✚ Reporting issues/concerns through your workplaces hazard/safety reporting procedure
- ✚ Reporting the issue to your sites/organisations health and safety representatives

Apply safe manual handling procedures

Manual handling is defined as any activity that involves lifting, lowering, pushing, pulling, carrying or moving a load. When conducting manual handling tasks, there is almost always a risk of injury to the person carrying out the task, from slight back pain or muscle strains, to more serious or life threatening injuries.

Between 60-80% of Australian adults will suffer from lower back pain some time in their lives. About 25% of all work-related injuries involve the back, with lower back pain as one of the major sources of permanent disability. Many of these injuries can be avoided by adopting simple lifting techniques.

You are the only person who can protect yourself against preventable back injuries. Before lifting an item, ask yourself the following questions:

- **Should the load be moved?** If the move can be avoided, there is no need to make the lift and the risk of injury becomes zero.
- **Should the load be lifted?** The alternatives to a lift may be that the load can be slid, pushed, pulled, rolled, poured or pumped
- **Can the load be moved mechanically?** The options to move a load mechanically include cranes, forklifts and pallet jacks.
- **Can the load be reduced?** Splitting the load into multiple smaller loads is sometimes possible.
- **Can assistance be obtained?** If the load must be lifted manually, it may be the case that its bulk and/or weight dictate that it should be a team lift.

- **Is the load too heavy to lift safely** if the answer is 'No', the lift may proceed using the safe lifting techniques. If the answer is 'Yes', then the lift should not proceed and an alternative should be found.

Apply Safe Manual Handling Techniques

The amount of effort required and the weight placed on the spine when lifting a load is determined by three factors:

- The weight of the load
- The distance the centre of gravity of the load is from the body
- The height of the lift relative to your body

When you need to make a lift, keep the following points in mind:

- place feet apart for good balance
- get a firm grip using palms and fingers
- Always carry the load close to the body – the further the object is away from your spine, the greater the forces on your spine.
- LIFT WITH YOUR KNEES, NOT YOUR BACK



Identify, Obtain and Implement Traffic Management Signage and Devices

When implementing the Traffic Management Plan for your worksite, it is essential that you are able to identify, obtain and implement the correct traffic control signage and devices.

If the incorrect traffic control signs or devices such as barriers or cones are selected, the effectiveness of the whole TMP is compromised, and the work area becomes non-compliant. Australian Standard 1742.3 is the legislation used for all works on roads; however the MRWA Traffic Management for works on roads Code of Practice over rides any variations between the two.

Traffic management signage and devices are used:

- To warn, guide and instruct road users
- To draw attention to the work area, personnel or equipment
- To control the speed or the passage of traffic within and adjacent to the work area
- To indicate the direction and width of the trafficable lane
- To restrict access to the whole or part of the work area
- To provide physical protection to the whole or portion of the work area

All traffic control signage and devices, such as cones and bollards, must at least meet the requirement for Class 1 sheeting as specified in AS/NZS 1906.1.

Sequence for implementing traffic control signage is:

1. Advanced Warning Signs



2. Intermediate Signage and Devices



3. Delineation Devices (cones & bollards)
4. Other Warning Signs (pedestrian signage/end of temp. speed zones)



Traffic Control Signage

There are two different size stand-alone traffic control signage, A. Size and B. Size. Use the following specifications when deciding what size sign to use:

- ✚ A. Size (600mm x 900mm)
 - For general purpose use
 - Used on residential roads
 - Used on highways/rural roads
 - Pedestrian signage
- ✚ B. Size (900mm x 1200mm)
 - When positioned more than 8m from the travel path on a road up to 90km/h
 - When positioned more than 4.5 m from the travel path on a road up to 110km/h
 - Used on freeways
 - Used for critical safety messages








All traffic control signage must be mounted on legs which are a minimum 200mm off the ground. For worksites that are to be implemented long term, signs should be mounted on fixed supports to ensure they are always in position and visible.

Select Traffic Guidance Scheme to suit conditions, traffic volumes and work activities







There are two types of Traffic Guidance Scheme that can be implemented, a Generic TGS and a Site Specific TGS.

The various types of work activities that require traffic control will greatly affect whether a generic TGS will be used, or if a site specific TGS will be required.

Work activities may include:

-  Bitumen/road surfacing
-  Works on the road or area within 1.2m of trafficable lane
-  Full road closures for road works
-  Single lane closures for partial road works
-  Plant and heavy vehicle crossings
-  When any sign or device is directing a motorist to break a traffic law (contraflow)
-  Emergency situations (fallen powerline, gas/water leak on road, fire/flood etc.)

When deciding which TGS you will use for your job, you also need to take the following into consideration:

- Does the road have a high or low traffic volume?
- What is the speed of the road?
- Is the road a public transport route?
- Is the job only lasting the day or is it continuous works (short term or Long term works)?
- Is there a crest or blind corner?
- What type of road will the worksite be on?
 -  Straight Road
 -  Roundabout
 -  T Intersection
 -  Dual Carriage Way
 -  Residential street
 -  Freeway/Highway

You will use a generic TGS where appropriate, however if it is a high traffic flow road (freeway/Highway), the worksite will be implemented for more than a day and it isn't a simple road (crest/roundabout/blind corner) then a site specific TGS will be required.

TGS - Site Specific

- The full **Traffic Management Plan** must be available on site during the works
- Traffic managers should have **full knowledge** of plan before proceeding
- If unsure of the plan **contact the supervisor** or the person who prepared it.
- Check times on **traffic flow data** for traffic controllers - start/stop times must be adhered to
- **Authorisation** is required from accredited person (**WTM, AWTM, RTM**) or whoever prepared the plan before changes can be made
- **BWTMs** are not authorised or accredited to draw or design **TMPs** but are required to **implement** them
- Spacing of “D” between signs, may be increased by 25% or decreased by 10% - unless “D” is marked as a maximum or minimum

TGS - Generic

- The full **Traffic Management Plan** must be available on site during the works
- Traffic managers should have **full knowledge** of plan before proceeding
- If unsure of the plan **contact the supervisor** or the person who prepared it.
- Check times on **traffic flow data** for traffic controllers - start/stop times must be adhered to
- **Authorisation** is required from accredited person (**WTM, AWTM, RTM**) or whoever prepared the plan before changes can be made
- **BWTMs** are not authorised or accredited to draw or design **TMPs** but are required to **implement** them
- Spacing of “D” between signs, may be increased by 25% or decreased by 10% - unless “D” is marked as a maximum or minimum



Generic or Site Specific TGS

The amount of details and information to be provided in a TMP can vary depending upon the nature and complexity of the project. For routine/repetitive type works [see AS 1742.3 clause 2.2.1 (a) and (b)] such as minor pavement maintenance, a generic TMP may be appropriate

1. Is the Traffic Control required to be implemented for more than 14 hours within a single shift?
2. Are works on a Freeway affecting a trafficable lane? (does not include on or off ramps)
3. Is the Work being undertaken in a Rural area and if so, does the work area exceed 2km in length?
4. Do the works involve closing a traffic lane, exceeding 1000 vehicles per hour?
5. Do the works involve closing a lane within 200m of an intersection at a time when traffic counts exceed 500 vph per lane?
6. Do works require detouring traffic on a major or multi lane road? (does not include Freeway on or off ramps)
7. Are there any visibility issues which could affect sight distance or vision of the road user on approach to the work area that are not catered for in the generic TMP?
8. Does the site contain side roads or driveways that are not catered for in the generic TMP that may impact on the site?
9. Will works interfere with the operation of permanent traffic signals? (E.g. switching to flashing amber?)
10. Will the works result in the complete closure of turning lanes?
11. Will the works be within 10m of a railway crossing
12. Are the works likely to result in re-alignment of a road section or intersection impacting on a railway crossing?
13. Will the works be within 300m of a rail crossing and significantly affect traffic flow through the rail crossing?
14. Will the works affect path users that cannot be catered for in the generic TMP?

Speed limits of worksites

The designated speed limit of a worksite is determined by how close the workers and/or machinery to live traffic. The worksite speed limit parameters are:

-  **40 kp/h** – if workers on foot are within 1.2m of the live traffic lane
-  **60 kp/h** – if workers on foot or small plant and machinery are between 1.2m and 3m of the live traffic lane

- ✚ **80 k/ph.** – if workers on foot or plant and machinery are between 3m and 6m from the live traffic lane

Determine and ensure adherence to work schedule

When implementing the TMP and TGS it is essential to ensure that all personnel know and adhere to the work schedule, safe work method statements and the work site communication procedures.

Work Schedule

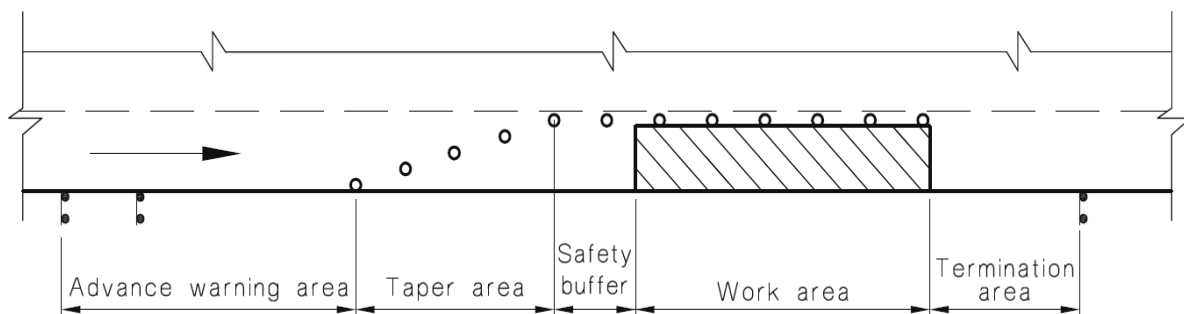
Determining the work schedule should be done on a daily basis, so that certain tasks can be allocated to certain personnel and a time frame for completion can be established. A common method of achieving this on a work site is by a “Tool-Box Meeting” held every morning before work commences. The benefits of determining a work schedule are:

- ✚ Loss of production time is minimised.
- ✚ Plant operations are not disrupted.
- ✚ Signage at all times is adequate for the safety of workers and traffic.
- ✚ The surface of the travelled path is maintained in a satisfactory condition.

It is the role of the site supervisor to ensure adherence to the work schedule by conducting routine inspections of all personnel and work activities and by coordinating the morning Tool-Box meeting.

Example traffic management work zone

The diagram below provides a very simple example of what a workzone could look like, but the basic parts of the workzone are the same on all sites, regardless of the circumstances of the site, such as the number of lanes or the presence of roundabouts or intersections.



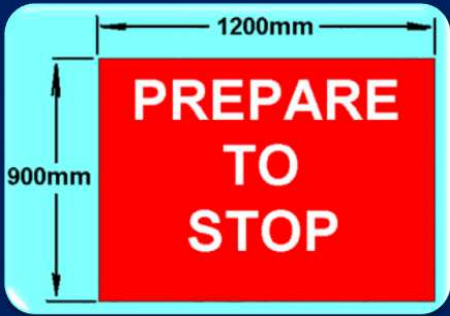
Traffic Management Signage Sizes

Australian Standard – AS1742.3-2009



A Size (600mm x 900mm)

- For general purpose use
- Used on residential roads
- Used on highways/rural roads
- Pedestrian signage



B Size (900mm x 1200mm)

- When positioned more than 8m from the travel path on a road up to 90km/h
- When positioned more than 4.5m from the travel path on a road up to 110km/h
- Used on freeways
- Used for critical safety messages

Multi-Message Signs

Multi-message signs are an alternative to stand-alone signs, but they can be used in conjunction with stand-alone signs.

Multi-message signs must comply with the following requirements:

- ✚ All 3 panels must be filled
- ✚ Only 2 panels should be of a similar background colour
- ✚ When used as a speed sign, signs must be implemented on both sides of the road

Code of Practice:

6.3.3 Frames for Multi-Message Signs




- The frame for the multi-message sign assembly should be capable of holding two 600 x 600mm sign panels along the top and one 1200 x 300mm sign panel along the bottom and or one 1200 x 600mm sign panel along the top and one 1200 x 300mm sign panel along the bottom.
- The frame panel should be capable of holding back-to-back mounting of message plates.

c) For frame specifications refer to the Main Roads WA website www.mainroads.wa.gov.au ('Building Roads' > 'Standards and Technical').

d) The frame should comply with the requirements of Australian Standards AS 1742.3, Clause 3.3.1 – Sign Mounting General.

6.3.4 Substrates for Multi-Message Signs

A variety of different materials can be used for the sign substrates including the following:

-  5 mm core flute
-  Aluminium
-  AV stabilised plastic

The substrates for the signs shall be of sufficient thickness and rigidity to prevent the signs being blown out of the frame. The rear of the sign substrate shall be non-reflective.



Temporary Speed Limit Signs

Where speed limit signs are displayed to change the speed limit from which existed up to that point, signs shall be displayed on both sides of the carriageway. Repeater signs do not have to be displayed on both sides of the carriageway.

MRWA recommends against displaying speed limits on unsealed roads because the road surface condition may not always be appropriate for the displayed speed limit. However, if a temporary speed zone is considered necessary on an unsealed road and frequent monitoring and maintenance of the surface condition can be maintained, the speed limit sign shall be the appropriate 'End speed limit' sign (R4-12).


Temporary Speed Zones – Advanced Warning

Clause 4.9.5 of AS 1742.3 – 2009 specifies advance warning of temporary speed zones (buffer zones) shall be provided by means of;

-  Speed limit Ahead sign in advance of the start of the lower speed zone; or
-  Comprising of a speed zone of intermediate value

It is desirable to reduce speed limits in 20km/h steps. However, where the prevailing site conditions are appropriate, entry speed zone may be reduced in a single step from 110km/h to 80km/h, from 90km/h to 60km/h or from 70km/h to 40km/h.

Speed signs at the commencement of a buffer zone shall be accompanied by or preceded by advance warning 'Ahead' signage such as

-  BRIDGEWORKS AHEAD, DETOUR AHEAD, EVENT AHEAD, GRADER AHEAD, and ROAD CLOSED AHEAD, ROADWORK AHEAD or ROAD PLANT AHEAD signs as appropriate.

6.4.6 Advanced Warning of Temporary Speed Zones (Buffer Zones)

Clause 4.9.5 of AS 1742.3 – 2009 specifies advance warning of temporary speed zones (buffer zones) shall be provided by means of; (a) Speed limit Ahead sign in advance of the start of the lower speed zone; or (b) Comprising of a speed zone of intermediate value. It is desirable to reduce speed limits in 20km/h steps. However, where the prevailing site conditions are appropriate, entry speed zone may be reduced in a single step from 110km/h to 80km/h, from 90km/h to 60km/h or from 70km/h to 40km/h.

Speed signs at the commencement of a buffer zone shall be accompanied by or preceded by advance warning 'Ahead' signage such as BRIDGEWORKS AHEAD, DETOUR AHEAD, EVENT AHEAD, GRADER AHEAD, ROAD CLOSED AHEAD, MAIN ROADS Western Australia Page 35 ROADWORK AHEAD or ROAD PLANT AHEAD signs as appropriate.

Where a buffer zone had been provided in accordance within Clause 4.9.5(b) (AS1742.3), traffic leaving the lower speed limit shall not be subject to a buffer speed zone merely because the limit applies to the opposing direction of traffic

Reduce Speed Signs

Reduce speed signs are used as a warning to motorists that the speed will be reduced lower than the normal posted speed limit for that road.

Reduce speed signs are *not mandatory* when the worksite is in a built up area where the posted speed limit is 60km/h or less.



When reduce speed signs are used, MRWA suggests that they are positioned on both sides of the carriage way.

COP.

6.4.2 Temporary Speed Limit Signs

All temporary speed limits shall be displayed in accordance with Clause 4.9 of AS1742.3 – 2009.

Where speed limit signs are displayed to change the speed limit from that which existed up to that point, signs shall be displayed on both sides of the carriageway. Repeater signs do not have to be displayed on both sides of the carriageway.

MRWA recommends against displaying speed limits on unsealed roads because the road surface condition may not always be appropriate for the displayed speed limit. However, if a temporary speed zone is considered necessary on an unsealed road and frequent monitoring and maintenance of the surface condition can be maintained, the departure speed limit sign shall be the appropriate 'End speed limit' sign (R4-12).






Pedestrian Signage

When implementing a TMP you are responsible for the safety of pedestrian traffic as well as vehicle traffic.

If your worksite blocks a designated pedestrian pathway, your TMP must ensure that the pedestrian traffic can travel safely on an alternative path and does not become a hazard in the worksite.

Failure to manage pedestrians in a traffic managed worksite is a breach of the OSH act, and could lead to disciplinary actions, civil and even criminal charges.







The following signage can be used to manage pedestrian traffic:

-  Pedestrian Watch Your Step
-  Pedestrian →
-  Pedestrian ←
-  Use Other Footpath
-  footpath Closed





Traffic Control Devices

Traffic control devices include other equipment used to assist in the implementation of the traffic guidance scheme. These devices may be required dependant on the type and duration of the works. Traffic control devices include:

-  Cones
-  Temporary Bollards
-  Containment fencing
-  Road safety barriers
-  Arrow boards
-  Variable message boards

Traffic Cones and Bollards

Traffic cones and bollards are used for a variety of different purposes, including in the use of tapers to form delineation, marking out pedestrian walkways and sectioning off a worksite. When selecting the correct cones or bollards for the job, the following requirements must be considered:

-  Traffic Cones: shall comprise of fluorescent red or fluorescent orange material that is resilient to impact. The two different sizes should be used as follows;
 - ❖ Small Cones: 450 – 500mm in height, to be used in most built up areas and open road applications including footpaths, shared paths and bicycle paths where the posted speed limit does not exceed 70 km/h
 - ❖ Standard Cones: 700mm in height or larger and **must** be used on all road applications where the posted speed limit exceeds 70km/h. Can also be used on lower speed roads.
-  Temporary Bollards: Shall comprise of a vertical parallel sided or tapered tube of fluorescent orange or red material that is resilient to impact. They shall be at least 750 mm in height and a minimum of 100 mm in diameter.

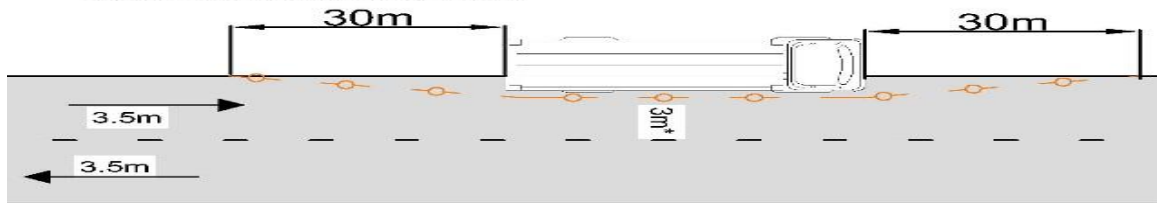
For night-time use, cones and bollards shall be fitted with a white horizontal retroreflective band having a retroreflective performance at least equal to Class 1W material as specified in AS/NZS 1906.1.

Tapers

Traffic control tapers are used to delineate traffic around the work area to ensure the safety of all personnel inside the work site. There are three different types of tapers:

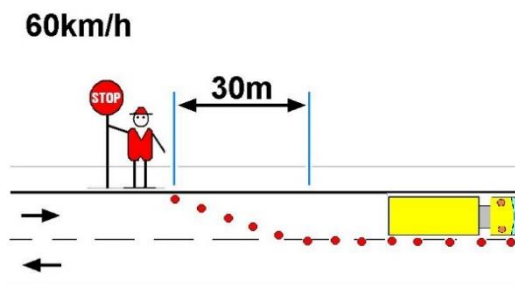
- ✚ Traffic Control Taper
 - Is used in advance of an activity area that occupies part of a two-way roadway in such a way that a portion of the road is used alternately by traffic in each direction and traffic controllers are required to control traffic flow.
- ✚ Lateral Shift taper
 - Is used when merging is not required, but a lateral shift is needed.
- ✚ Merge Taper
 - Is used when merging a lane of traffic with an adjacent lane travelling at the same speed

* The minimum lane widths are dictated by the posted speed limit (and observed speeds of traffic in the 85th percentile) of the road.
Speeds less than 60 km/h = 3m
Speeds between 61-80 km/h = 3.2m
Speeds above 80-km/h = 3.5m

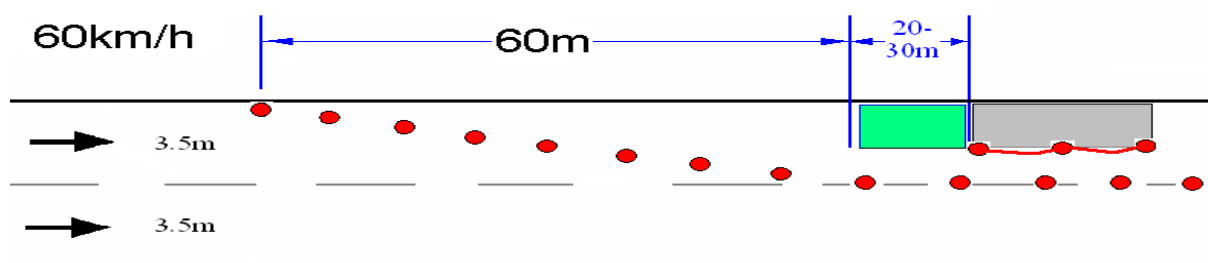


Lateral Shift Taper

Traffic Control Taper



Merge Taper



Recommended Taper Length

Below is a table showing the recommended taper length to be used on approach to a worksite. Note that these lengths can be adjusted to suit site and traffic conditions; however an advanced ticket holder **must** sign off on the changes.




TABLE 4.6
RECOMMENDED TAPER LENGTH

Approximate speed of traffic km/h	Recommended taper length, m		
	Traffic control at beginning of taper	Lateral shift taper	Merge taper
45 or less	15	0	15
46 to 55	15	15	30
56 to 65	30	30	60
66 to 75	N/A	70	115
76 to 85	N/A	80	130
86 to 95	N/A	90	145
96 to 105	N/A	100	160
Greater than 105	N/A	110	180

Lane Widths

The minimum lane widths are dictated by the posted speed limit.

(And the observed speeds of traffic in the 85th percentile. Eg: 85%

-  Speed less than 60 km/hr = 3m
-  Speed between 61 – 80 km/hr = 3.2m
-  Speeds above 80 km/hr = 3.5m

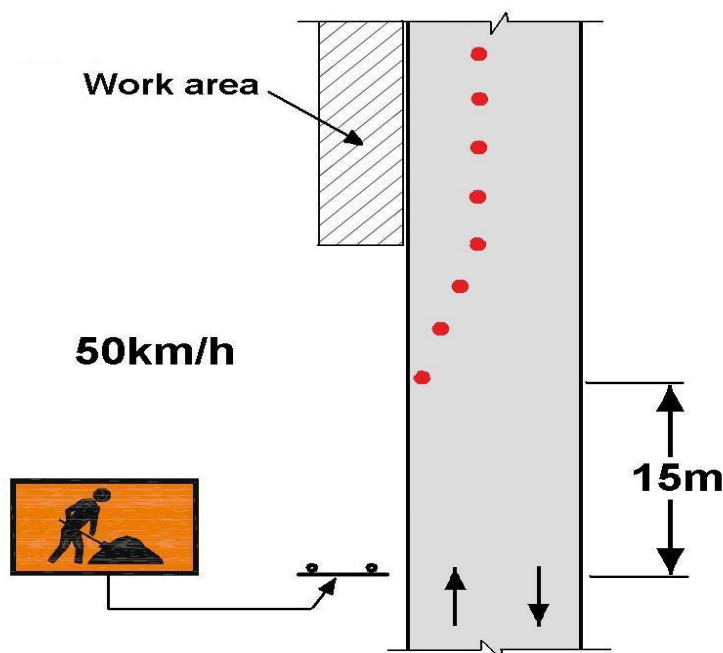
Signs – Distance (Dimension “D”)

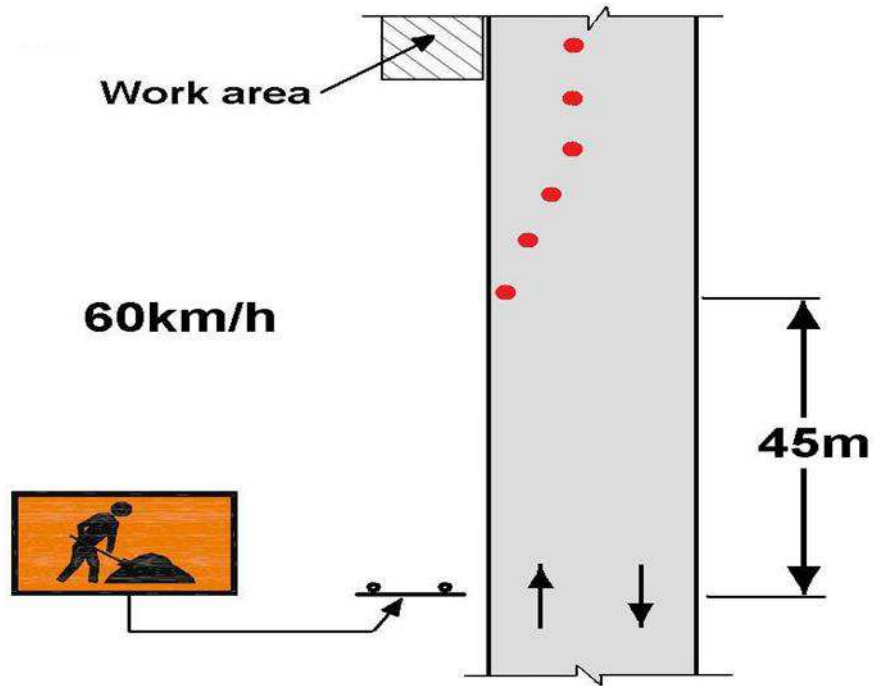
The spacing between signs is referred to as “dimension” or “D”. The posted speed limit of the road prior to your worksite is on will determine the spacing requirements for your signage. The length of “D” compared to the speed of the road is laid out in the table below:

DISTANCE BETWEEN SIGNS	
<u>Posted Speed Limit</u>	<u>1 x Dimension (D)</u>
40 Km/h	15 metres
50 Km/h	15 metres
60 Km/h	45 metres
70 Km/h	70 metres (equal to posted speed limit)

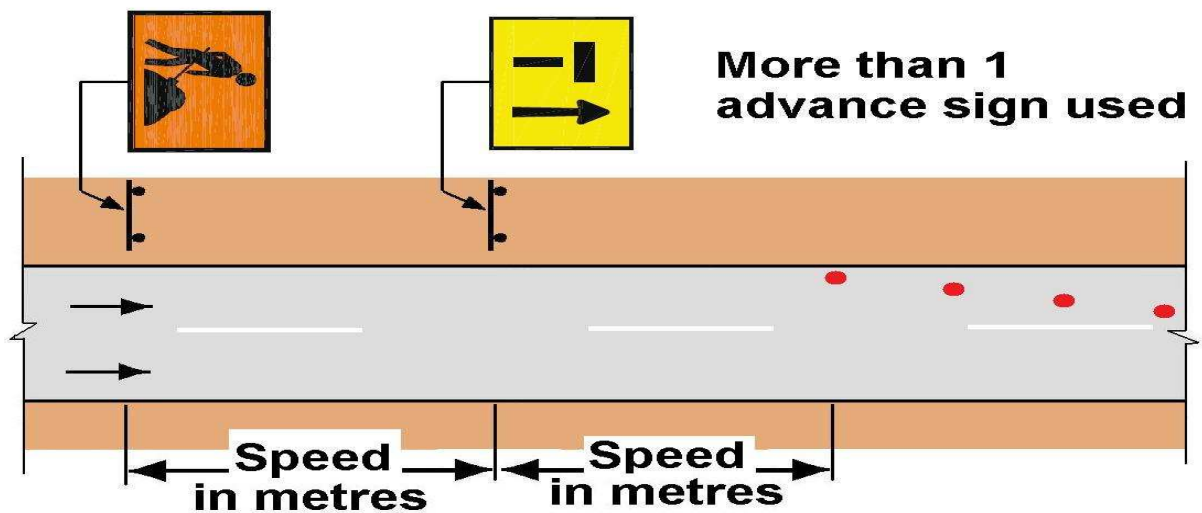
For speeds of 70Km/h and higher, “D” equals the posted speed limit of the road measured in metres

As a BWTM, you are allowed to make slight variances to the TGS/TMP. The spacing of “D” between signs may be increased by 25% or decreased by 10%.





70km/h and above



Signs - Placement

This information will be contained in your TMP and/or well as your TGS.

Erecting your signage and devices in this way will ensure the signs:

- are properly displayed and securely mounted.
- are within the line of sight of the intended road user.
- cannot be obscured from view, either by vegetation or parked cars.
- do not obscure other devices from the line of sight of the road user.
- do not become a possible hazard to workers, pedestrians or vehicles.
- do not deflect traffic into an undesirable path.

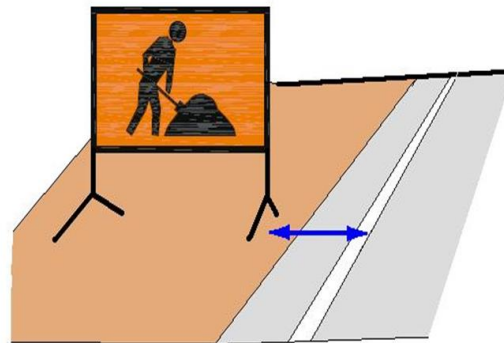
With Portable Supports

Kerbed Roads



As close to the kerb as possible

Shoulders



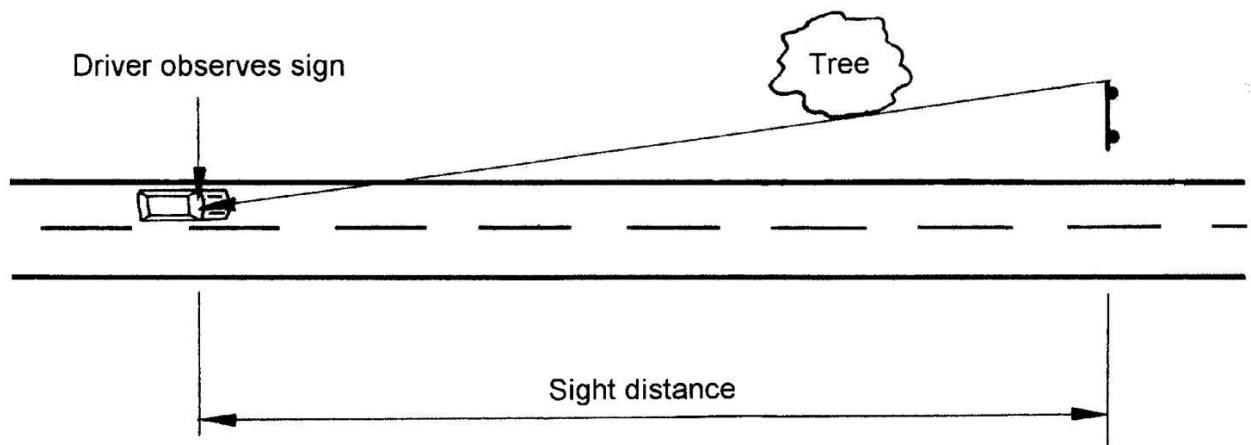
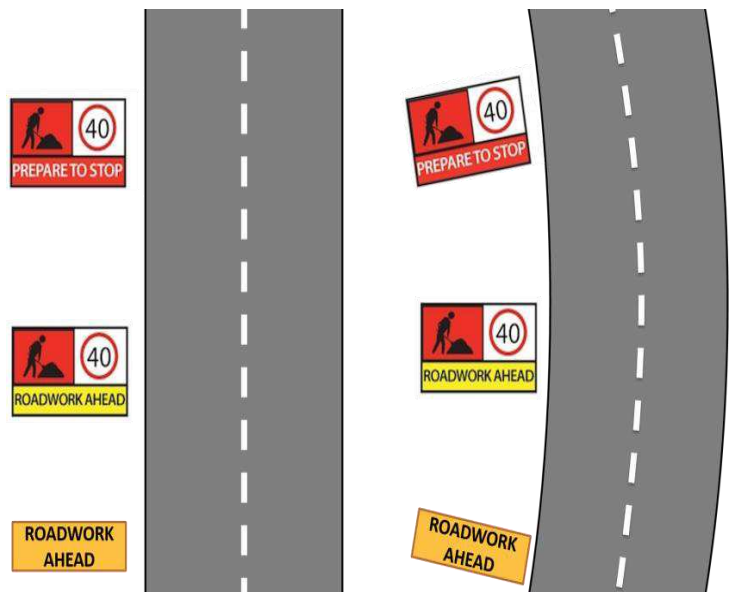
1m from travelled path

Ensure signs and devices are positioned and displayed laterally

Main Roads Western Australia dictates that all traffic control signage should face towards the approaching traffic at approximately 90 Degrees (right angle) to the line of sight from the driver to the sign.

When placing signage on a relatively straight road it is quite easy to have the signs at a right angle, however it becomes more difficult when placing signage on a curved alignment.

When placing signage on a curved alignment, a drive-through of the work site will be required to ensure the signage can be seen clearly by the approaching motorists.



Ensure traffic is controlled effectively to protect the work crew

In addition to the work site which you have now erected, in accordance with the requirements laid out in your TMP, containment fencing and road safety barriers may be used to protect the work crew from traffic.

Containment Fencing is a visual or physical barrier which prevents access to a worksite or hazardous area.



The three types of containment fencing used are:

- ✚ Construction Tape
 - Visual barrier to warn or separate workers from a hazard, **must not** be used to direct pedestrians
- ✚ Plastic Mesh Fencing
 - To warn, guide or separate pedestrians from a work area or hazard
- ✚ Barricades
 - A physical barrier used to prevent access to an excavation area for workers and pedestrians, not to be used for vehicles

Road Safety Barriers are designed to provide a physical barrier between the travelled path of vehicles and the work site.

Road safety barriers have vehicle re-directing properties, which mean they cannot be penetrated by an out of control vehicle rather they direct that vehicle away from the worksite and back onto the road.

The three different types of road safety barriers are:

- ✚ Concrete barriers
- ✚ Steel barriers
- ✚ Plastic water filled barriers



Sequence for packing up



Close Down

Once all works have been completed you must pack up the worksite in a safe but also timely manner as to not disrupt the natural traffic flow longer than required.

The preferred method of protecting the crew who are removing traffic control devices is by using a work vehicle as a “buffer”.

This is done by having the work vehicle fitted with either a vehicle mounted arrow board/warning device, or by towing an arrow board, and driving behind the worker who is removing the signage and devices.

This means that the traffic flowing past the worker will hit the work vehicle first, therefore saving the worker from a potentially catastrophic injury

Ensure work area is appropriately cleared





The work area should be cleared in accordance with the project environmental management plan.

Good housekeeping to keep the work area clear is necessary to control hazards and risks on the worksite. It is also about presenting the best possible image to the public of both your organisation and the road authority in your jurisdiction – a messy site at the end of a project or shift is both an eyesore and potential hazard.

After the completion of your work activities, place any waste materials in the bins provided, and recycle where possible in line with the site Environmental Management Plans or Waste Disposal Plans.

If there are no bins or designated sites for any waste materials, these should be taken away from the site with you and disposed of responsibly.

Some of the materials that may need to be disposed of or recycled could include:

-  Materials such as clays, mud, topsoil, organic materials, stones, rocks, gravel and bituminous mixes.
-  Broken tools and equipment
-  Paper and plastic wastes.
-  Site rubbish

It is always a good idea to complete an inspection of the site before you leave. You should aim to be systematic with this inspection, starting at one of the site and finishing at the other, ensuring that all parts of the site have been checked.

If you observe any environmental damage or other areas of concern that you cannot rectify yourself, you should notify the appropriate person within your organisation or with the road authority so that the issue can be addressed.

All tools and equipment should be cleaned, checked, maintained and stored in accordance with the same standards that you used to evaluate a tool, sign or device at the beginning of the shift. This practice of double checking will ensure that no sign or device is defective when it is set out and will help you to ensure that you always have the right signs and devices on hand when you need them.

This means:




- Making sure tools and equipment are clean
- Making sure that tools and equipment are in working, mechanical order
- Making sure that tools and equipment are not bent or otherwise damaged
- Ensuring that signs and devices have maintained their retroreflective qualities

If any tools or equipment are defective, damaged or faulty, especially any signs and devices, they should be reported and tagged for repair or replacement.

Select, and check for faults, tools and equipment to carry out tasks

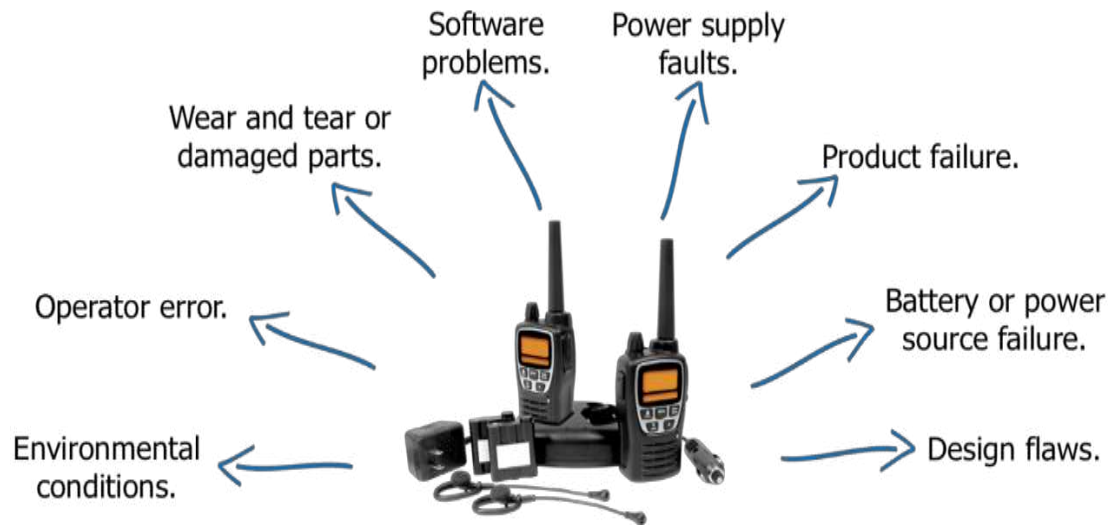
When selecting the right signage, devices and equipment for the job, your TMP will lay out all the signage/equipment requirements.

When conducting serviceability checks on your equipment, the following checks are required:

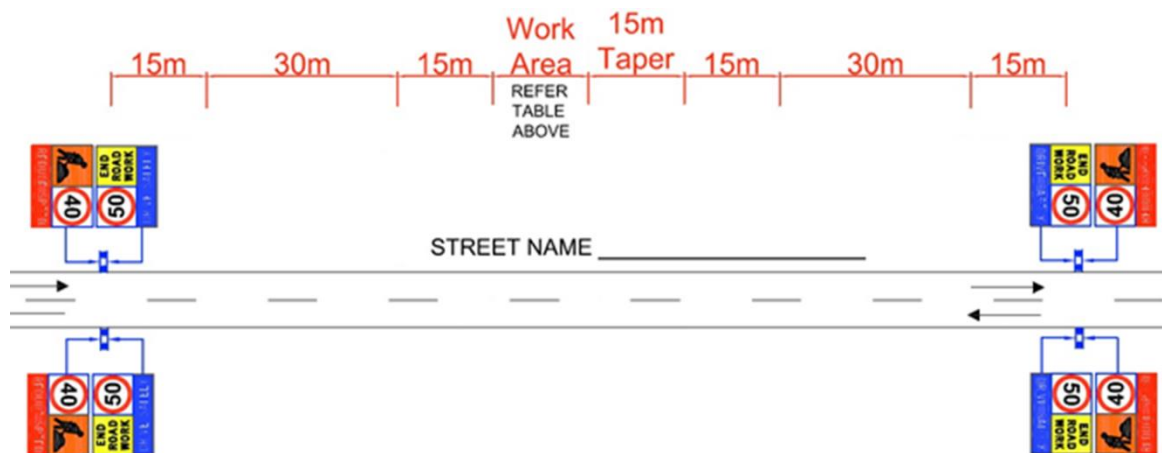
-  Condition
 - ❖ Equipment is not bent, broken or has an excessive amount of damage
-  Cleanliness
 - ❖ Equipment and devices should be clean of any dirt or road base build up, or any other contamination
-  Retro-reflective material
 - ❖ Ensure retro reflective material isn't faded, damaged or non-existent

If in the course of selecting equipment you find an item which is not serviceable, you must follow your work sites/workplaces procedure for reporting of unserviceable tools and equipment.

Common faults in Communization Equipment



Sequence for implementing traffic control signage



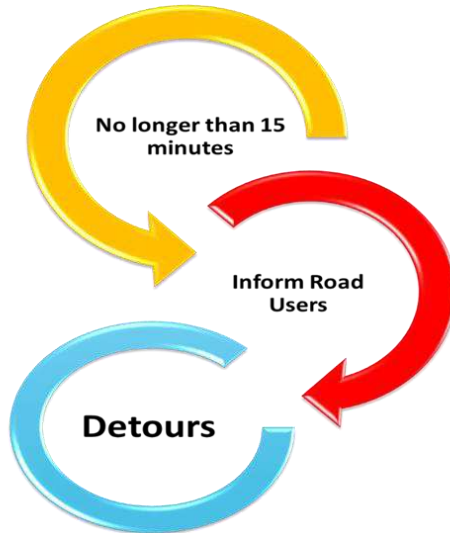
Maximum Traffic Delays

Delays to traffic should not go beyond 15 minutes.

To avoid extended traffic delays full road closures may need to be implemented and detours put in place, however this will be evaluated when first designing the work sites TMP.

If the delay is longer than 15 minutes because of an unexpected event, e.g. plant breakdown, the supervisor should inform the traffic controllers of the delay and should give an estimated time to be relayed to the public.

If traffic queues become too long, consideration should be given to either finding a suitable detour or otherwise re-routing traffic.



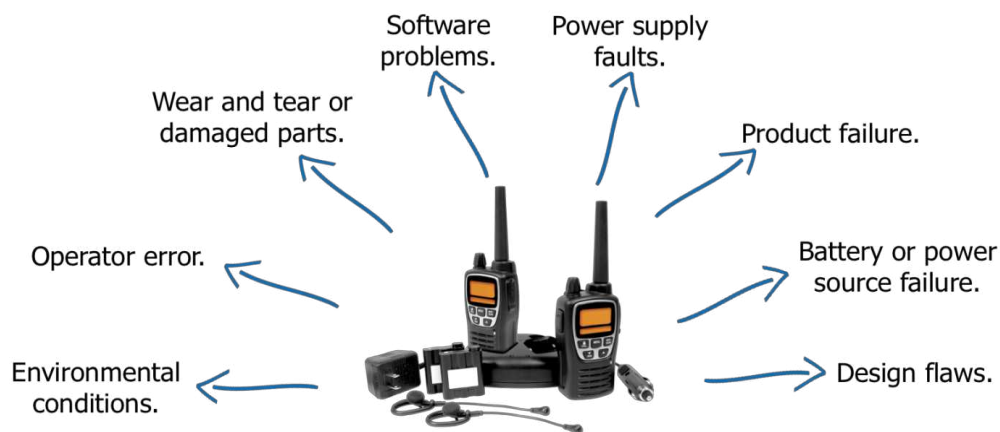
Signalling and Site Communication

It is essential while using hand-held radios to **speak clearly** and **listen carefully**.

Before using hand-held radios you should:

- Establish the channel you will use
- Establish the emergency procedure
- Perform a radio check
- Check battery power/spare battery
- Establish the voice procedure / communication protocol
- Adjust the volume to a level you can hear the radio over the worksite noise

DO NOT use channels 5 & 35 as these channels are for emergency use only



Working with Traffic Controllers

It is a state and federal requirement that any person working as a traffic controller **MUST** hold the relevant qualification. As a basic worksite traffic manager it is your responsibility to ensure all traffic controllers on site hold:

- ✚ valid MRWA Control Traffic Accreditation
- ✚ hold a current Construction Safety Awareness Card (white/blue card)

When checking the traffic controller's qualifications, you must ensure that the completion date of their MRWA accreditation is within 3 years, as you are required to sit a 'refresher' course every 3 years. The accreditation expiry date is displayed on the card.

As a traffic controller you **MUST** have your MRWA accreditation available at all times. Failure to do so can result in being immediately kicked off site, and potential Code of Practice and OSH violations for that work site.



Communication

The different types of communication equipment used on a worksite may include:

- ✚ Radio
- ✚ Telephone
- ✚ Audible Signals
- ✚ Hand Signals
- ✚ Computer
- ✚ Written Documents

Before operating communication equipment make sure:

- ✚ You are using the right method
- ✚ The communication equipment isn't faulty
- ✚ You know how to operate the communication equipment

The main methods of communication used on a worksite by traffic managers and traffic controllers are radio communication and hand signalling.

Each worksite will have their own signalling and communication procedures which you **MUST** follow. Before commencing work you must ensure you are familiar with these procedures and the equipment involved.



When passing on the information it is important that the information is passed on promptly and in a clear and concise manner.

When Communicating Verbally

Speak clearly using the right language and procedures for your workplace. Make sure that your message has been received and understood.

When Using Radios

Avoid excess noise or unclear language. If you are using radio equipment make sure the reception is clear and free of interference.

When Using Written Communication

Follow your workplace's procedures and use appropriate terminology. Complete all details in full and provide as much information as possible. Small details might be very important so make sure you pass on everything.

Recognise and respond to alarms

An alarm is a type of warning to all personnel on a work-site that a certain emergency incident is occurring. On any long term worksite there will be fixed alarm systems fitted, such as a fixed fire-fighting system. Traffic control worksites vary, as if they are short term they will not have a fixed alarm system, however they will still have a temporary alarm system outlined in the sites emergency procedure.

Worksites use alarms to convey a simple message to all personnel on that worksite, for example, flashing red beacons may indicate a fire-emergency situation. All alarm systems used on your worksite will be outlined in your sites emergency action plan. The emergency action plan also outlines the actions and procedures you must follow and the responsibilities for each person during an emergency situation.

The emergency alarm shall be capable of being perceived above ambient noise or light levels by all employees in the affected portions of the workplace, because of this there are two different types of alarms generally used.

Visual Alarms

Visual alarms use steady flashing, or strobe lights to alert workers to an emergency situation in areas where noise levels are high, especially where ear protection must be worn and audible signals may not be heard or may be misunderstood. Visual signals also provide an effective way to alert workers with hearing loss about an emergency. Strobe lights are recognized as the most effective means.

Flashing/Steady Lights

These lights are well suited for areas where ambient noise makes audible signals difficult to hear. These types of lights come with different coloured covers for increased attention and can be ordered with rotating or flashing lights.

Strobe Lights

Strobe lights use high intensity flash tubes that are ideally suited for areas where high ambient light levels make traditional rotating or flashing lights difficult to distinguish or where ambient noise makes audible signals difficult to hear.

Audible Alarms

Audible alarms include bells, horns, sirens, voice announcement systems, and other devices that can be distinguished above and apart from the normal sound level within the workplace.

Bells - Vibrating bells are also common signal device. Bells are commonly used in workplaces for fire alarms.

Horns - Horns produce a very loud distinctive sound that immediately attracts attention. Horns can be useful to call attention to critical situations. Signals other than those used for evacuation purposes do not have to produce the temporal coded signal.

Sirens - Sirens produce a loud piercing wail that makes them ideally suitable for initiating a site-wide evacuation.

Workplace Announcement System - Speakers can be used to play a live or recorded voice message. They are often ideally suited for large workplaces where phased or guided evacuations are needed.



Example of different colour visual alarms used



Audible Alarm

Alarm Type	Use/Application	Limitation
Audible alarm	Large areas, vehicles	Not heard if noisy, ear protection worn
Visual Alarm	Smaller areas, enclosed areas	Need line of site

Identify and clarify responsibilities in responding to emergency situations

In any emergency situation on a work site, every personnel will have designated roles and responsibilities outlined in that sites emergency plan. Your work sites emergency plan will be held in the site office, with site supervisors and outlined in your TMP.

The emergency plan will contain all relevant information you will require during an emergency. It is essential that you are aware and understand what is required of you and which procedures you must follow.

The different type of emergencies which an emergency plan is required are:

- ✚ Fire
- ✚ Explosion
- ✚ Medical emergency
- ✚ Incidents involving hazardous chemicals
- ✚ Bomb threats
- ✚ Natural disasters
- ✚ Armed confrontations
- ✚ Emergency evacuations

The emergency plan must provide the following:

- ✚ Emergency procedures, including;
 - an effective response to an emergency
 - evacuation procedures
 - notifying emergency service organisations at the earliest opportunity
 - medical treatment and assistance
 - effective communication between the person authorised to coordinate the emergency response and all people at the workplace
- ✚ Testing of the emergency procedures—including the frequency of testing
- ✚ Information, training and instruction to relevant workers in relation to implementing the emergency procedures.

In regards to traffic control and traffic management, workers may be responsible for moving traffic through and around safely during an emergency. This may include:

- ✚ Traffic may need to be stopped completely
- ✚ Diverted or restricted access from the area for lengths of time
- ✚ The worksite may need to be shut down completely

If ever you are un-sure of your responsibilities during an emergency, or are un-sure of your sites emergency procedures, contact your direct supervisor to obtain that sites emergency plan for further clarification. Emergency plans, or a summary of key elements of emergency plans will be readily available to all employees and usually displayed around the worksite.

Calling 000

An operator will answer your call and ask whether you need police, fire and rescue or ambulance.

The operator will ask you:

- **the address of the emergency**
- **what the problem is**
- **how many people are injured**

The emergency service provider (ambulance) may also need to know

- the person's age
- the person's gender
- if the person is conscious
- if the person is breathing

The operator may give you first-aid advice while the ambulance is on its way.

Do not hang up until the operator tells you to.

You may need to hold the line until an ambulance arrives



Apply basic firefighting techniques

On any worksite, the potential for a fire emergency to occur is quite high, due to the use of plant and machinery, hazard chemicals and substances and combustible waste/materials. Because of this all personnel on site must understand the different type of fires, how they start, how they can be controlled and what their responsibility is during a fire emergency.

Fire extinguishers

Every portable fire extinguisher will be marked to represent which fire it can be used to fight against. These markings are visually shown by using colour codes for extinguishers. Colour codes will usually be represented by a band that runs around the extinguisher.

In addition to fire extinguishers, you can also use and may find fire blankets and fire hose reels on your worksite.

Fire Blanket

A fire blanket is a safety device designed to extinguish small fires. It consists of a sheet of fire retardant material which is placed over a fire in order to smother it

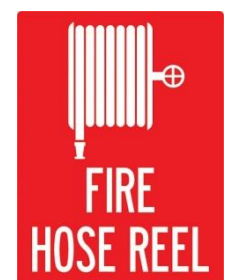
Small fire blankets, such as for use in kitchens and around the home, are usually made of fiberglass and sometimes Kevlar, and are folded into a quick-release contraption for ease of storage.

Fire hose reels

Fire hose reels are provided for use by occupants as a 'first attack' firefighting measure and may also be used, in some instances, by firefighters.

General fire-fighting procedure

Now that we understand the different classes of fire, and what extinguishers and equipment to use, we must understand the basic firefighting procedure.

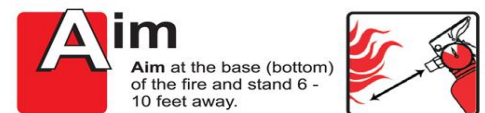
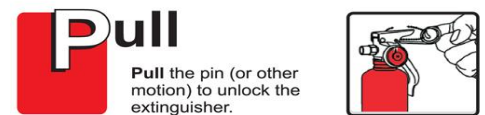


The basic procedure to follow if you are to discover a fire is:

1. Remain calm
2. Sound the fire alarm and/or alert all the occupants to evacuate
3. Alert the fire brigade by dialling 000 (or your supervisor – depending on worksite procedures)
4. Make one attempt to fight the fire or leave the area
5. Assemble with other personnel/staff at the designated evacuation assembly point
6. Upon arrival, inform firefighters of the situation

If, upon discovery of a fire, you decide to attempt to fight the fire, you should follow these steps and principles:

Remember the **PASS** Word



Identify emergency escape route(s) and procedures

As mentioned earlier, every worksite **must** have an emergency plan in place. Included in this plan will be emergency escape procedures and escape routes.

Escape routes are designated pathways which are clearly marked by signage and lighting directing all personnel on the worksite to the designated muster point.

When working in a traffic control situation, your escape route will be outlined in your sites TMP. For long-term sites the escape route will also be displayed in your site office and/or common areas (breakroom).

Maintain Personal Wellbeing

Identify risks to personal wellbeing and recognise preventive strategies

A **risk** is defined as the likelihood of a hazard occurring. In regards to traffic control, the major risks to your personal wellbeing identified include:

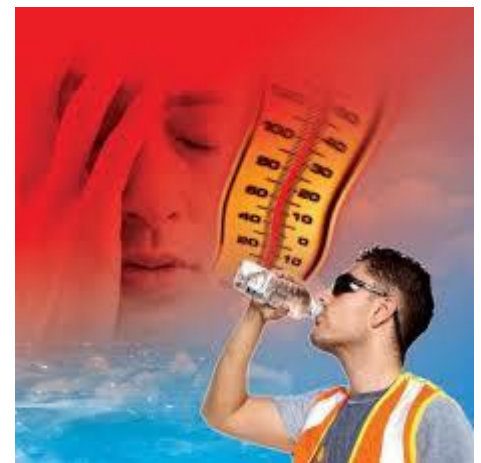
- ✚ Fatigue
- ✚ Heat (heat exhaustion)
- ✚ Cold (hypothermia)

Fatigue

Fatigue is more than feeling tired and drowsy. In a work context, fatigue is a state of mental and/or physical exhaustion that reduces a person's ability to perform work safely and effectively.

Signs of fatigue include:

- ✚ tiredness, even after sleep



- ✚ reduced hand-eye coordination
- ✚ short term memory loss and/or inability to concentrate
- ✚ blurred vision or impaired visual perception
- ✚ a need for extended sleep during days off work

On a construction site, you may be out in the elements for long periods, in differing conditions and you will be required to be on your feet standing for long periods.

Due to the conditions stated above, fatigue is a risk that will apply to all traffic controllers and the appropriate preventive strategies must be implemented.

Some personal preventive strategies include:

- ✚ Ensure ample water is available to you at all times
- ✚ Always take routine breaks
- ✚ If conducting labour intensive tasks, rotate jobs with other workers

Heat

Work load and environmental conditions such as ambient temperatures, working in locations where heat cannot dissipate easily, and where the need for personal protection can restrict the body's ability to dissipate heat, are all factors which need to be considered.

Heat Exhaustion occurs as a consequence of a decrease in the volume of blood being circulated, mostly due to dehydration. It may also be caused by improper distribution of the circulation during heat stress. It is more likely to occur in people who are heat intolerant, not acclimatised to heat, or who are in poor physical condition.

The symptoms of heat exhaustion include:

- ✚ weakness, dizziness, disturbed eyesight, headache
- ✚ intense thirst
- ✚ nausea, vomiting, diarrhoea, cramps
- ✚ breathlessness and palpitations, weak pulse and low blood pressure when standing
- ✚ Tingling and numbness of extremities

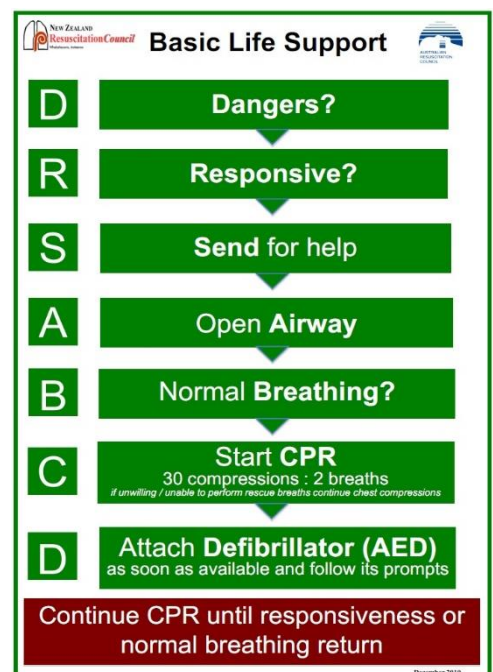
The treatment for heat exhaustion include:

- ✚ transfer to a cool area
- ✚ administer water to drink
- ✚ if unconscious, Call 000

Medical examination of the effected personnel is required before they are able to resume work activities.

Hypothermia

On the other end of the heat spectrum, we must also consider the cold when working in an outside environment.



Hypothermia occurs when the body's temperature falls below 35 °C. Severe hypothermia can be fatal without prompt medical treatment.





Access and explain verbally or in writing the requirements for fitness of duty

Fitness for duty is defined as:

 **The capacity of an individual to perform their job safely and competently.**



In general terms, you need to present yourself fit for duty in the terms of:

-  Alcohol
-  Drugs
-  Fatigue
-  Physical or psychological impairment

To ensure that you comply with your organisations and/or worksites fitness for duty requirements, you should consult your direct supervisor or site safety officer to understand your requirements.

If you feel that you are not fit for duty for any reason at the start of or during your shift, you must talk to your supervisor about it immediately.

This is a shared responsibility between workers and management.

Comply with all work health and safety policies including smoking, alcohol and drug use

In addition to your companies/work sites policies and procedures that we have covered previously, you must ensure that you adhere to and comply with the smoking, alcohol and drug use policy. As previously mentioned, these three categories make up your 'fitness for work' requirements.

Smoking

There are now work sites which follow a complete no smoking policy, however most work sites will still have designated smoking areas.

For your specific worksite policies on smoking and designated smoking areas see your supervisor.



Alcohol

Every worksite will have their own policy regarding alcohol, however most sites in Australia have now adopted the policy that every worker must maintain a Blood-Alcohol Content (BAC) of 0.00% at all times.

Even though you may legally be allowed to drive with a BAC of less than 0.05% the sites who have dictated a level of 0.00% will require that you do not enter their site.

You must ensure that you know your site's policy.

It is important to also remember that alcohol can stay in your blood for hours after you have stopped drinking. If your BAC is higher than 0.00%, it means alcohol is still affecting your system and you are not fit for work.

Drugs

In regards to drug use on a worksite, there is a zero-tolerance policy to illicit drug use, as it is illegal in the eyes of the law.

As part of managing drugs in the workplace, drug testing may be implemented.

When taking prescription medication, you should always consult with your physician or chemist on what restrictions may be required when taking medication and what work you should avoid.

Medication containers and packets may advise that it is unsafe to operate heavy machinery, drive vehicles or may cause drowsiness. The package should also advise what action to take in the event of medical emergency or poisoning.

Monitor TMP/TGS

Ensure traffic flow is monitored and effectiveness of TMP/TGS Determined

Once the Traffic Guidance Scheme has been implemented a functional inspection needs to be carried out before and after opening the road to traffic.

The inspection should be conducted in a work vehicle travelling at the speed of normal traffic, along the designated travel path and past all traffic control signage and devices.

Whilst conducting the functional inspection you will be able to notice any signage that is not clearly visible to the driver's line of sight and whether your traffic control delineation devices are working effectively.

While some traffic management plans may provide information about traffic flow, often you will need to exercise your own judgement in deciding when delays are unacceptable. Some criteria that you might consider could include:

- ✚ Whether the end of a traffic queue can still see any advance warning signs or devices – if routinely the end of the queue cannot see these signs, there may be an increased risk of end-of-queue collisions
- ✚ Whether traffic queues are not being reduced sufficiently through traffic control
- ✚ Whether traffic in any one direction is waiting an unreasonable length of time compared to other traffic approaches
- ✚ Whether there have been any incidents or near misses involving traffic, workers and/or signs and devices. Where there have been incidents or near misses, the layout of signs and devices may need alteration



You could also collect and record some simple data about traffic flow over time (on longer-term works). If you observe trends toward longer delays or increased congestion over time, this could be an indication that something about the work zone should be altered.

Where traffic flow is found to be unacceptable, action may be required to assist traffic in moving more smoothly. This may be resolved simply through alternate instructions being given to traffic controllers (e.g. allowing a particular approach to proceed through a site for longer), through a small alteration to the placement of signs or devices or may require alterations to be made to the traffic management plan.

Monitor work activities and provide guidance to adjust TMP/TGS

As the works progress and the requirements of the Traffic Guidance Scheme change, further monitoring should be undertaken to ensure that the plan is operating as effectively as possible.

An operational inspection may be undertaken at the following stages of the works:

- ✚ At each major change to the traffic management plan.
- ✚ During both day and night operation for long term works.
- ✚ Whenever the operation of a traffic management plan results in unexpected significant disruptions to traffic.

Operational inspections should also occur at planned stages of the works. This will be determined by your work sites policies and procedures and also your work sites TMP.

When conducting an operational inspection you should consider the following:

- ✚ Safety of workers, road users and pedestrians.
- ✚ Signs, road markings, temporary safety barriers, lighting and facilities for pedestrians, cyclists and people with disabilities.
- ✚ Traffic compliance with the implemented Traffic Management Plan.
- ✚ Access to abutting properties.
- ✚ Public transport operation through the worksite.
- ✚ Traffic volumes (e.g. peak periods)

- ✚ Effect of the works on surrounding land use (e.g. residential, commercial, industrial, car parking).

All findings of operational inspections should be recorded and reported in accordance with your work sites policies and procedures.

As the person responsible for implementing the Traffic Management Plan, you should encourage workers to voice their concerns about any aspects of the Traffic Guidance Scheme or to make suggestions for improving its implementation.

Requirements and procedures for making any changes will be outlined in the Traffic Management Plan and these should be followed at all times.

As a BWTM, you **CANNOT** make any major changes to a TMP without the written approval from an AWTM/WTM ticket holder. However, BWTM can change the dimension of sign spacing (D) by +25% and -10%. These changes can be made on both site specific and generic TMP. All changes should be recorded in accordance with your work sites recording policies and procedures.

Apply process for dealing with traffic controllers who fail to adhere to approved procedures

Traffic controllers who fail to follow approved procedures not only put themselves at risk but also compromise the safety of all personnel on site. In addition, if a traffic controller is not following approved procedures they put the whole work site at risk of becoming non-compliant and therefore having the whole worksite shut down.

The following actions are NOT acceptable by traffic controllers:

- ✚ Using a mobile phone while directing traffic.
- ✚ Not adhering to approved procedures for controlling traffic.
- ✚ Unprofessional behaviour towards the public.
- ✚ Inappropriate dress or equipment.
- ✚ Working while affected by drugs or alcohol.
- ✚ Sexual, racial or inappropriate language over radio

When approaching the traffic controller about a breach of approved procedures, you should avoid making the issue personal – focus on the issue and not the person. You should try to remain calm and reasonable and avoid being drawn into an argument with the traffic controller. In any instance where disciplinary action is taken against a traffic controller, you should always make sure that you are working within the policies and procedures of your company in relation to human resources. If you are unsure about how to deal with an offending traffic controller, you should consult the person/team responsible for HR in your organisation first.

Procedures for dealing with failure to adhere to organisational requirements may include:

- ✚ An initial warning.
- ✚ Performance management.
- ✚ Relief from duties.
- ✚ In serious cases, dismissal.

Apply procedures to deal with offending motorists

There will be occasions when working as a traffic controller that a driver will disobey your commands and drive through a “Stop” bat. You must remember that as a traffic controller you hold *no power at law*, the legal authority rests with the stop bat.

The process for dealing with an offending motorist is as follows:

- ✚ Think of your own safety
 - Do not jump in front of a car to try and stop it, move away and stay safe
- ✚ Use your escape route if necessary
- ✚ Warn all workers and traffic controllers ahead
 - Follow your sites specific emergency communication procedures
- ✚ Get as many details as possible
 - Registration number
 - Make/model/year of the car
 - Colour of the vehicle
 - Time of the incident
 - Special features (roof rack, bulbar etc.)
 - Description of driver
 - Number of passengers

- ✚ Report the offence to your site supervisor who can report the incident to police if the non-compliance results in injury or is considered serious enough

The process of dealing with an offending motorist is laid out in the traffic controller's handbook page 17.

As the BWTM on the work site it will be your responsibility to fill out an incident report and inform the local police if necessary.

Identify and Report Incidents

Recognise and communicate incident and injury statistics

An incident or an injury is any work activity which caused injury/illness to a worker, or had the potential to cause illness/injury. If on your worksite you witness an incident or a 'near-miss you are required to report it to your immediate supervisor, and depending on your worksites WHS policies and procedures, fill out an incident report form.

Work related deaths and certain types of injuries and diseases must be reported to WorkSafe WA. Failure to report could lead to prosecution.

Reporting is required if a worker dies, or suffers an injury or disease.

The types of injuries that must be reported are:

- a fracture of the skull, spine or pelvis;
- a fracture of any bone in the arm or in the leg
- an amputation of an arm, a hand, finger, finger joint, leg, foot, toe or toe joint;
- the loss of sight of an eye; and
- any injury other than the above which, in the opinion of a medical practitioner, is likely to prevent the employee from being able to work within 10 days of the day on which the injury occurred.
- Minor injuries that are attended by a doctor.

Dangerous incidents on a workplace may include:

- ✚ Breaches of safety and security
- ✚ Road users breaking the road rules
- ✚ Misuse of plant and equipment
- ✚ Fire and emergency issues
- ✚ Damage and destruction of plan and equipment
- ✚ Collapse of buildings
- ✚ Explosions
- ✚ Chemical spills

Reporting on incident and injuries will give the organisation/workplace an understanding on the causes of incidents and injuries and therefore allows the workplace to take corrective action and implement control measures to eliminate or reduce the risk.

The reporting of these statistics also allows workplaces and industry to notice trends and incidents occurring of a similar nature.

Ensure incidents are recorded and reported as required and prepare written reports of incidents and injuries

If an incident or injury occurs on a worksite you must report it **immediately** to your supervisor.

In regards to traffic control, an incident that needs to be reported is any incident in which the safety of any personnel or the general public is put at risk.

Written reports shall be completed and submitted to their site supervisor at the conclusion of their shift or at the resumption of duty on the following day.

Generally speaking, each worksite/organisation will have a unique incident report form which you will be required to complete following any type of incident/accident.

In the case of road accidents, either witnessed or reported, involving the public or from which legal proceedings might arise, the following details should be recorded:

- ✚ The actual type, size and location of signs and devices in use at the time of the accident
- ✚ The sign arrangement should also be photographed for subsequent reporting
- ✚ The exact width and condition of the travelled path and weather conditions



All of these details should be recorded in your daily diary and reported to your supervisor for escalated action/reporting.

Contribute to and participate in incident investigations

If a notifiable incident is to occur on your worksite, an incident investigation may need to be carried out. If an incident investigation is to be carried out, it will be conducted by your worksites safety and health representative.

The main objective of an incident investigation is prevention.

A good investigation aims to establish a series of events that should have taken place and compares it to what actually happened to identify areas that need changing.

Investigation Procedures

Investigation procedures need to be systematic. For any investigation the team should:

- ✚ Act as soon as possible after the incident;

- ✚ Visit the scene before physical evidence is disturbed;
- ✚ Do not prejudge the situation;
- ✚ Do not remove anything from the scene;
- ✚ Enquire if anyone else has moved anything; and
- ✚ Take photographs and/or sketches to assist in reconstructing the incident.

After the initial investigation is complete the team should:

- ✚ Identify, label and keep all evidence. For example, tools, defective equipment, fragments, chemical samples etc.;
- ✚ Interview witnesses separately;
- ✚ Check to see if there have been any 'near misses' in similar circumstances;
- ✚ Note down all sources of information;
- ✚ Keep records to show that the investigation was conducted in a fair and impartial manner;
- ✚ Review all potentially useful information, including design specifications, operating logs, purchasing records, previous reports, procedures, equipment manuals, job safety analysis reports, records of training and instruction of the people involved and experiences of people in similar workplaces/industries; and
- ✚ Reconstruct the incident (while ensuring that another incident does not occur) to assist in verifying facts, identifying what went wrong and what can be done to prevent it happening again.

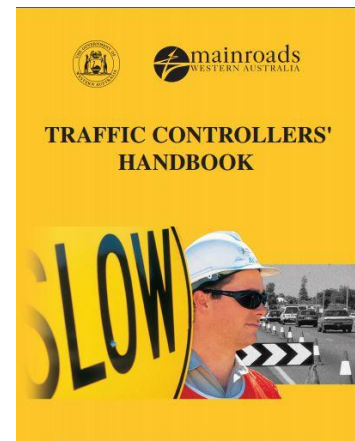
TRAFFIC CONTROL

Plan and Prepare

MRWA Traffic Controllers Handbook

As a traffic controller in Western Australia the Main Roads Western Australia Traffic Controllers Handbook is your bible. This handbook outlines your authority as a traffic controller, all traffic control procedures and how to control traffic. The contents of the Traffic Controllers handbook are as follows:

- ✚ Introduction
- ✚ Part 1. Seven requirements
 - Be properly dressed and prepared
 - Understand your authority and responsibility
 - Know correct procedures
 - Be properly located
 - Communicate effectively
 - Assess changes in traffic patterns
 - Know emergency procedures
- ✚ Part 2. Night Works
- ✚ Part 3. Good ideas
- ✚ Sample incident report
- ✚ Contacts



Ensuring that you have a copy of the Traffic Controllers handbook on you at all times on the work site is essential. In addition, as a traffic controller you must always keep on your person your traffic controllers authority card. Upon request you must present your accreditation to any Police officer, WorkSafe officer, MRWA officer or the person in charge of your worksite or his/her delegate.

Traffic Controllers authority

The Road Traffic Code 2000 Regulation 83 provides traffic controllers with the authority to stop traffic within Western Australia.

In accordance with Regulation 83 of the Road Traffic Code 2000, an offence is committed if a motorist fails to comply with a hand-held “STOP” sign displayed by a traffic controller.

Accredited traffic controllers have the authority to:

- ✚ Legally stop/slow traffic where the approach speed of traffic is brought down to 60 km/h or below;
- ✚ Use a “STOP/SLOW” bat
- ✚ Use hand signals to control traffic; and
- ✚ Report motorists who fail to follow reasonable directions to the supervisor or the police

Traffic Controllers Responsibility

As an accredited Traffic Controller you have the following responsibilities:

- ✚ Controlling traffic to enable them to negotiate through, past or around the worksite safely;
- ✚ Dealing with motorists and other road users professionally;
- ✚ Enabling works at the site to be conducted safely by minimising the risk associated with traffic movement;
- ✚ Maintaining traffic control in emergencies and other difficult situations;
- ✚ Minimising delays to traffic;
- ✚ Safety of fellow workers;
- ✚ Safety of motorists and other road users;
- ✚ To remain at your station at all time unless directed by the supervisor to leave or relieved by another traffic control. You will be relieved after 2 hours;
- ✚ Your own safety.

Be courteous at all times when dealing with the public. If requested, tell the driver the reason for the delay but be brief.

Situations that may require traffic control;

- ✚ Road surfacing
- ✚ Single – lane operation
- ✚ Low – speed operation
- ✚ Temporary road closures
- ✚ Plant crossing
- ✚ Limited sight distance in worksite
- ✚ Emergency situations

Traffic Control at Intersections with Traffic Signals

From the Handbook.

3.8 At traffic signals

- You must never direct traffic contrary to that indicated by traffic signals.
- If the works are expected to interfere in any way with the operation of the traffic signals (i.e. turning them off, to flashing amber, masking displays, moving traffic lanes so that detectors are no longer functional, generating traffic queues through the intersection etc.), details must be provided to the MRWA Traffic Operations Centre on Phone (08) 9323 4848, at least 24 hours prior to the work commencing.
- If traffic is required to move contrary to a traffic signal display, then the signals must be switched off or covered and traffic controlled manually by Traffic Controllers stationed at each intersection approach, releasing traffic one approach at a time.
- Switching of traffic signals to flashing amber or modification to traffic signal operation settings is only to be undertaken by the MRWA Traffic Operations Centre.

- The MRWA Traffic Operations Centre must also be notified of the commencement and completion of works when they occur and also of any changes in site conditions.
- If such traffic control will result in traffic congestion that is considered unacceptable by both the Road Authority and the WA Police and it is not possible to safely detour traffic or conduct the works at another time when the congestion can be avoided, a Traffic Police pointsman must be arranged from the relevant Police District.
- Traffic Police pointsmen can be arranged by contacting the WA Police State Traffic Co-ordination Section on Phone (08) 6274 8654. No less than three (3) weeks' notice is required by the WA Police to arrange Traffic Police pointsmen.
- If there is a risk of motorists departing the traffic controlled section and ignoring nearby traffic signals after reading the hand-held "SLOW" sign, an additional Traffic Controller should be stationed at the approach of the signals (from the works), to display a hand-held "STOP" sign when the traffic signals display red.
- In emergency situations, such as where a vehicle may have collided with traffic signals and traffic control is urgently required, Police emergency assistance can be arranged by contacting the Senior Sergeant at Police Communications on Phone 131 444. For life threatening or emergency only situations call the WA Police '000' number.
- If you are using a double-sided "STOP/SLOW" hand-held sign to control traffic at an intersection, you must have the "SLOW" sign covered or removed to ensure that vehicles on other approaches do not proceed into the intersection.

Work Instructions for Traffic Control

There are a number of key documents that contain the work instructions for the control of traffic on a work site. While it is not the responsibility of a traffic controller to implement the instructions contained in these documents, it is important that you understand:

- Where the instructions for your specific role have come from and;
- How to read and understand these instructions for yourself

The main documentation that contains work instructions for traffic control work is outlined in the table below:

Traffic Management Plan (TMP)	<p>Traffic Management Plans (TMPs) contain a wide range of information about how traffic will be impacted by the work that is being carried out, and what measures have been put in place to protect workers and road users, to maintain traffic flow and to allow the work to be carried out. Generally, this information will include traffic demand, traffic routing solutions, traffic control measures, considerations for other road users (pedestrians, cyclists, school children, emergency vehicles, etc.) and considerations for special vehicles (buses, trams, oversize or restricted vehicles, etc.)</p> <p>As a traffic controller, it is unlikely that you will need to refer to the TMP.</p>
Traffic Guidance Scheme (TGS's)	<p>Traffic Guidance Scheme (TGSs) are drawings of the site that show how temporary signs and devices (including traffic controllers) should be arranged to warn traffic and guide it through or past a work area or temporary hazard. The drawing will</p>

	<p>specify which signs and devices should be used, the exact locations where they should be placed, how far apart they should be, and importantly, where traffic controllers should be placed on the site.</p> <p>While it is likely that your supervisor will explain to you at the start of a shift where you need to stand, you should be able to access the TGS for your site and check this information for yourself if you need to.</p>
<p>Safe Work Method Statements (SWMS) and Safe Operating Procedures (SOPs)</p>	<p>These documents are usually prepared as a procedure for carrying out specific tasks safely. Where a SWMS or SOP has been prepared for a task that you carry out at work, you must carry out the task in accordance with these instructions.</p>

Copies of the TMP should be available by speaking with your supervisor.

TGSs should be available on site for traffic controllers to access and you should make sure you find out where these diagrams are kept – remember, they contain the directions for where you will be working on site.

Copies of the relevant standards for traffic control should also be available on site or through your supervisor. In most cases, you can also access them electronically from your jurisdiction’s road authority website.

Copies of any SWMS that apply to your site should also be available on site for reference. You should also have received some training or instruction about how to follow the SWMS.

Traffic Guidance Scheme (TGS)

Traffic Guidance Schemes (TGSs) are drawings that specify what signs and devices for traffic control should be used, where they should be placed and generally, how the site should be set up for traffic control.

Please see over the page for an example TGS with an explanation of the different symbols and elements.

Student Guide

Basic Worksite Traffic Management

Traffic Control

TRAFFIC VOLUME (BOTH DIRECTIONS) VEHICLES PER HOUR	DESIRABLE MAXIMUM LENGTH OF SINGLE-LANE OPERATION UNDER REVERSIBLE FLOW	LENGTH OF SINGLE LANE SECTION m	STREET NAME _____	Work Area Taper	REFER TABLE ABOVE
800		70		15m	
700		100		15m	
600		150		15m	
500		250		15m	
300		600		15m	

STREET NAME _____

GENERAL NOTES:

- THIS TCD IS ONLY TO BE USED AS PART OF A TRAFFIC MANAGEMENT PLAN AS ENDORSED.
- ALL SIGN LOCATIONS ARE TO BE CHECKED PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS, ROADSIDE FURNITURE AND SUFFICIENT SPACE ON SHOULDERS/EMERGENCY LANES.
- THE SYMBOLIC WORKER SIGNS SHALL BE INSTALLED ONLY DURING HOURS WHEN WORKERS ON-FOOT ARE VISIBLE TO PASSING TRAFFIC. REVERSE ALARM AND DUAL FLASHING BEACONS.
- ALL VEHICLES USED ON SITE MUST BE FITTED WITH AN AUDIBLE WORKSITE SHALL BE BETWEEN 3.0m – 3.5m AT ALL TIMES.

VARIATIONS:

- ALLOWABLE CHANGES TO THE POSITIONING OF SIGNS, LENGTHS OF TAPERS OR MARKINGS SHALL BE:
 - A) MAXIMUM, 10% LESS THAN THE DISTANCES OR LENGTHS GIVEN.
 - B) MAXIMUM, 25% MORE THAN THE DISTANCES OR LENGTHS GIVEN.

AMENDMENTS AS INDICATED ON THE DRAWING MUST SHOW THE CHANGE IN METERS AND JUSTIFICATION FOR THE CHANGE WHICH HAS BEEN MADE.

AMENDED BY: _____

DATE OF WORKS: _____







Row #	Action Taken	Date	By	Checked	Date
0	Issued for Review and Approval	21/04/17	G.G.	J. Giddon	21/04/17

122 Grandstand Road,
Ascot WA 6104
T: 1300 019 304
www.wta.edu.au

WARP TRAINING AUSTRALIA

Generic 2-Way Stop/Slow
WARP Training Australia
For Student Assessment Only

WARP TRAINING AUSTRALIA
1142/2 North Coast Highway, North Point, QLD 4270
WARP Training Australia
WARP-GANV-14-0287-04
Project Number: 2017
Sheet: 3

Symbol	Name	Description
	Traffic Controller Location	Any symbol of a person holding a paddle-like sign is a marker for where a traffic controller must be positioned on the site.
	Sign location and specification	This symbol dictates what the type of sign is or the inserts that are to be used in the event of using a Multi Message Sign
	Delineation Device	Dots on the plan denote the placement of delineation devices, such as cones or bollards. The number of cones displayed does not represent the actual number of cones that will be required for the job.
	Single facing sign	This symbol denotes the placement of a sign, such as a speed limit sign, that faces only one direction of traffic. This would be appropriate, for instance, to mark the approach speed for traffic entering into a work zone, or the exit speed for traffic leaving a work zone.
	Dual-facing sign	This symbol is also for the placement of a sign, but in this instance, the sign should apply for both directions of traffic. This would be used, for instance, in the middle of a work zone, denoting the speed limit for all traffic travelling through the work zone.
	Spacing marker	<p>These arrows indicate the distance that should be maintained between two different signs or devices. The lines at the end of each arrow indicate the beginning and end of the area to which each arrow refers.</p> <p>The arrows will always be accompanied by EITHER a fixed distance, or, more commonly with a letter or set of letters. The lettering is an indication that you need to refer to supporting documentation to determine the appropriate distance. The most common letter that is used is D, which refers to the concept of <i>Distance D</i> or <i>Dimension D</i>. This concept is explained below.</p>

Covering Existing Signs

In accordance with Clause 2.4.4 of AS 1742.3 “Existing signs and traffic control devices which are inappropriate to, or conflict with, the temporary worksite situation shall be covered, obliterated or removed”.

Where it is necessary to cover a sign face temporarily, caution must be exercised as some coverings will cause permanent damage to the sign face following exposure to moisture and sunlight e.g. plastic materials, especially black, is forbidden as it is known that these materials are responsible for severe and permanent damage within 24 hours.

Specifications for covering existing signage can be found in Main Roads WA

Specification 601 – Signs, located on the MRWA website at www.mainroads.wa.gov.au

Traffic Control Signage and Devices

As a traffic controller you are only responsible for two signs, the “PREPARE TO STOP” sign and the “TRAFFIC CONTROLLER (symbolic) sign. The PREPARE TO STOP, also known as the “PTS” sign shall be used in conjunction with the TRAFFIC CONTROLLER (symbolic) sign and where possible the signs should be positioned side by side with the PREPARE TO STOP sign closest to the travel way.

The PTS and Traffic Controller symbolic sign must only be used when a traffic controller is in attendance directing traffic on the work site, as soon as a traffic controller **is not** in attendance the signs must be lowered or removed.

It is the responsibility of the traffic controller to check these signs before they commence work.

When checking the PREPARE TO STOP and Traffic Controller symbolic before you commence work you must ensure that the retro-reflective material on the signs meets the requirements of Class 1 sheeting as specified in AS/NZS 1906.1.

From the Code of Practice.

6.3 GUIDELINES FOR MULTI-MESSAGE SIGNS

6.3.1 Introduction

This section describes the permitted uses of multi-message (3-panel) signs at Roadworks and Events sites on roads.

Multi-message signs are an alternative to stand-alone signs. They are usually more conspicuous than stand-alone signs because of the striking colour combination, and they make the task of signings easier and cheaper due to the lightweight compact sign material.

Multi-message signs may be used in conjunction with stand-alone signs as required.

6.3.2 Guidelines for Use

1) The use of multi-message signs shall comply with the following requirements.



a) Only Main Roads WA approved message plates or signs shall be used and shall only be placed in the panel as shown in Appendix 5 - Multi-message sign inventory and application schedule.

For sign specification refer to the Main Roads WA website www.mainroads.wa.gov.

b) Regulatory control message plates, where used shall always be positioned closest to traffic and reflect conditions.

c) Regulatory signs shall not be used in-conjunction with the NEXT 'x' km or 'x' km AHEAD message plates.

d) Lane status 600 x 600 message plate shall only contain two lane instruction (arrow) messages. Lane status 1200 x 600 message plates may contain up to 4 lane instruction messages.

e) Multi-message sign assembly should, where practical, be duplicated on both sides of the road or carriageway, of the road to which the signs apply or as recommended by Australian Standards.

f) Signs shall be positioned in accordance with the requirements of Australian Standards - Manual of uniform traffic control devices AS1742.3.

g) All sections of the frame assembly shall be filled with an approved sign. Messages should be logically linked and conflicting messages should not be used.

i. Except as noted in the schedule, where used, at least one of the 600 x 600 panels must be symbolic. *

ii. Only 2 panels shall consist of a similar background colour. *

iii. Colour combination for sign legend and background to match existing practices included colour and reflectivity;

v. Have high contrast between panels when used as a multi-message sign (i.e. if possible close colouring should be avoided on adjacent panels) *.

v. Duplication of the same messages on the same multi-message sign shall be avoided. Otherwise stand-alone signs, as recommended by Australian Standards shall be used.

* Items i, ii and iv do not apply to signage used exclusively for control of pedestrian traffic. Item ii and iv do not apply to the following signs:

- Lane Status Series Signs;
- Road Condition Series Signs;

h) Excluding 6.1.6 (above), no company names, advertising or any other words, symbols or markings shall be displayed on the front or rear of the multi-message frame or panels.

i) Rear of the message plate shall be non-reflective.

Hand-Held STOP/SLOW bats

The primary piece of equipment used by all traffic controllers is the stop-slow bat. This is a legal sign that driver's must obey, and provides authority to the directions issued by traffic controllers. Like many other aspects of traffic control, there are compliance specifications that all traffic control bats must meet before they can be used to control traffic. These specifications are:

- ✚ 450mm and 600mm diameter can be used in accordance with AS/NZS 1742.3
- ✚ 600mm is recommended for use in W.A by MRWA
- ✚ Must comply with AS/NZS 1906.1 for retro reflective material
- ✚ Should be 1.8 metres in height
- ✚ The SLOW sign is advisory



Stop White reflectorised legend and border, red reflectorised background

Slow Black legend and border, yellow reflectorised background.

Hand-held "STOP" and "SLOW" signs can be mounted back to back on a timber or aluminium pole. The bottom of the sign should be 1.8m from the bottom of the pole. The diameter of the disc is normally 600mm.

A support holder for the pole can be utilised.

- Always use the "STOP/SLOW" sign in conjunction with hand signals while watching the approaching vehicles.
- Hold the sign steady.
- Gain the driver's attention by using hand signals and making eye contact.
- Never wave the sign. This prevents the driver from clearly seeing it and causes confusion.

- Hold the sign in the left hand allowing the right hand to be free to give clear directions. (This is also best in case of emergency.)
- Take care not to inadvertently display "STOP" or "SLOW" sign to traffic.

Torches and Luminous Wands for Night Use

When you are controlling traffic at night the risk to your personal well being increases dramatically. This is mainly due to the visibility of yourself as the traffic controller to the approaching traffic. To help combat this luminous torches and wands are to be used.

When controlling traffic at night all cones, bollards and luminous wands must be fitted with retro reflective tape that comply with the AS/NZS 1906.1 standard.

At all times when controlling traffic at night, traffic controllers must be well illuminated by portable floodlights, street lighting, car headlights etc. the light source must be angled or shielded to minimise glare to approaching traffic.



Communication Equipment

Another key piece of equipment for a traffic controller is a communication device, which is almost always a two-way radio. Traffic controllers often work in pairs, and communication between the traffic controllers is a key component of ensuring the safety of everyone working on or passing through the site, as well as balancing the need for the work to be carried out and the need for traffic to flow efficiently.

Two-Way Radios

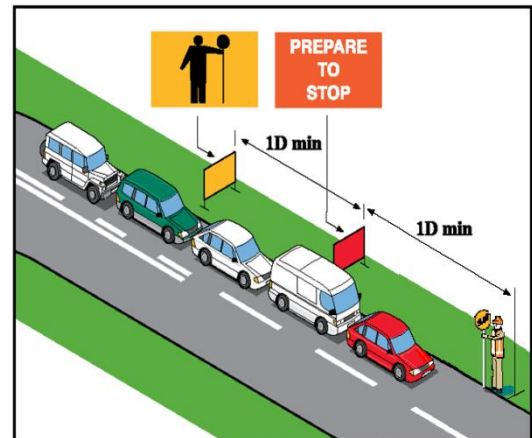
When Two-Way Radios are required at a work site traffic controllers should become familiar with the radio equipment prior to the commencement of duties.



It is particularly important that make sure that the radio unit is working correctly prior to your shift, that you ensure that it is fully charged and that, you have access to a secondary source of power for the device (e.g. new batteries). You must also ensure that you and any personnel you need to communicate with throughout your shift are on the same radio channel or frequency.

Position Temporary Traffic Signs

When giving advanced warning of Traffic Controllers the PREPARE TO STOP sign shall be used in conjunction with the Traffic Controller (Symbolic) sign and where possible the signs should be positioned side by side with the PREPARE TO STOP sign closest to the travel way.

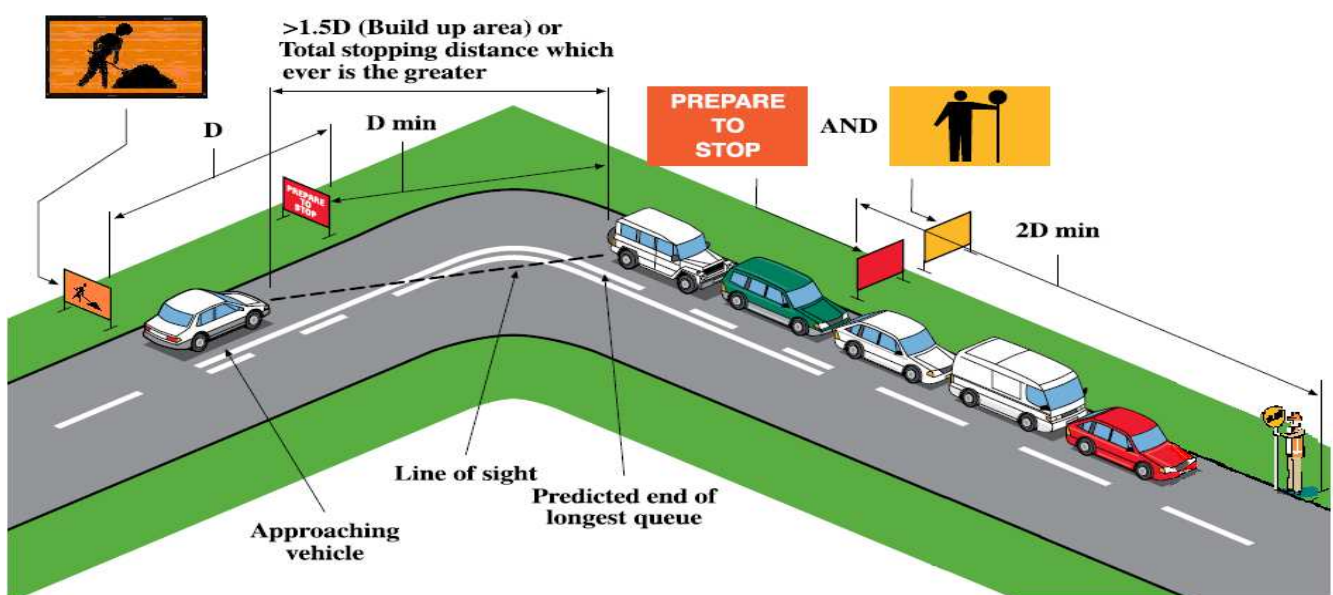


The position of the PREPARE TO STOP sign and Traffic Controller (symbolic) sign shall be according to the local prevailing conditions, it is recommended they be placed a minimum of D metres, or 30 metres, whichever is greater, in advance of the Traffic Controller.

In situations where it is not possible for the signs to be placed side by side the distance of the PREPARE TO STOP sign for speeds less than 55 km/h may be reduced to 15 metres (D) in advance of the Traffic Controller provided the Traffic Controller (Symbolic) sign is positioned 15 metres (D) in advance of the PREPARE TO STOP sign. For approach speeds greater than 55 km/h the distance between signs shall remain at D metres.

End of queue Protection

End of queue collisions are a possibility if the line of sight of the approaching vehicle cannot see the



PTS or the Traffic Controller Symbolic signage before approaching the end of the queue. To ensure that the approaching traffic receive enough warning of traffic controllers on site and to avoid a potential collision additional advance warning may be required. Please see below for an example;

Direct Traffic Correctly

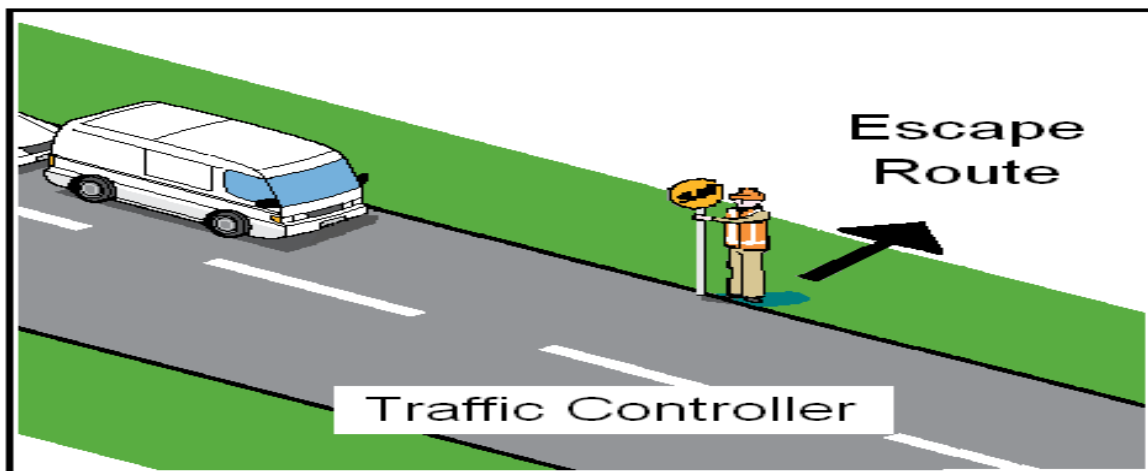
Approach Speed to Traffic Controller

Maximum Approach Speed is 60 km/h

Positioning Yourself

It might sound obvious, but it is important that, wherever you position yourself, that you can be seen. You should be standing facing the direction of approaching traffic, but just outside the path of vehicles. You should never turn your back on approaching traffic.

You should also sure that you are not standing behind any signs or devices that have been set up and



make sure that you are not blocking road users' view of any signs or devices. Road users should be able to see all of the signs, devices and controls in the work zone, including you.

Ensuring that you have an "escape route" whilst controlling traffic is essential. An escape route is a clear unobstructed path behind you which you can move safely to in an emergency incident.

From the handbook:

4.1 Where to stand

- Try to stand where you can see both ends of the work area (your end and the end where the other Traffic Controller is located).

- You must be clearly seen. Do not stand in the shade, dusty areas or where the sun may obstruct you or the on-coming driver's vision. In particular you should take care that you can be seen at dawn or dusk, against low morning or evening sun and when in shadow on a sunny day.
- You must be aware of stopping distance in locating yourself and stopping the first vehicle.
- Always have an escape route in case a vehicle appears not to be stopping.
- You must be able to see approaching vehicles at least one and a half times the approach speed limit in metres (For example, if the speed limit is 60 km/h, you should be able to see at least 90m) and they must be able to see you at the same distance. (See diagram on next page). The end of the queue must not be closer than 1.5D or total stopping distance whichever is greater to the curve or crest.

If 1.5D cannot be achieved, consideration should be given to temporarily lowering the speed limit or using an additional Traffic Controller at the end of the queue.

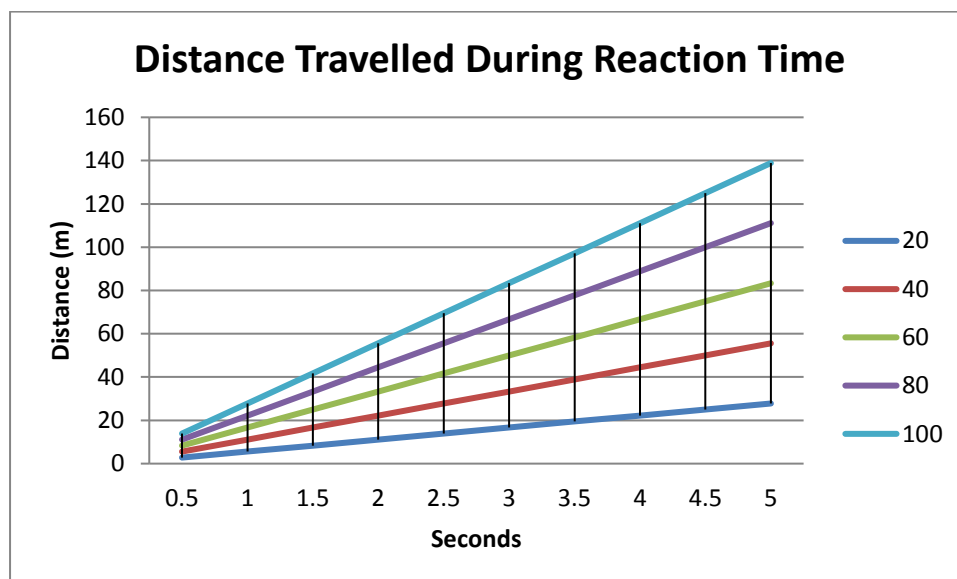
- Do not obstruct a driver's view of other signs and devices and, make sure you are not yourself partially hidden by one of these.
- Stand facing the traffic but just outside the path of vehicles.
- Once traffic has stopped, ensure that you are clearly visible to further traffic as it arrives; stay at the head of the traffic queue and stand by yourself. (do not permit people to congregate at the traffic control station.)
- Always be aware of your surroundings and remember vehicles and plant from the work area pose a risk as well as public road users.

Sight Distance and Reaction Times

Traffic control work is hazardous because it puts traffic controllers in positions where, if control measures fail, they could be exposed to an approaching vehicle. An important part of the ability to control these hazards and to protect your own safety while working as a traffic controller is having a basic understanding of typical driver behaviour, vehicle behaviour and traffic behaviour. Knowing how long a vehicle takes to stop, for example, could mean the difference between a safe traffic queue at a work zone and an accident.

Driver reaction times

It is generally accepted that it takes an average driver about 1.5 seconds to recognise and respond to a hazard on a roadway. Various other factors however can mean that, in reality, a driver may not see traffic control measures, including you as a traffic controller, for a few seconds. The following graph shows how far a vehicle can travel during a period of 5 seconds.



	0.5s	1s	1.5s	2s	2.5s	3s	3.5s	4s	4.5s	5s
20kmh	2.8m	5.6m	8.3m	11.1m	13.9m	16.7m	19.4m	22.2m	25.0m	27.8m
40kmh	5.6m	11.1m	16.7m	22.2m	27.8m	33.3m	38.9m	44.4m	50.0m	55.6m
60kmh	8.3m	16.7m	25.0m	33.3m	41.7m	50.0m	58.3m	66.7m	75.0m	83.3m
80kmh	11.1m	22.2m	33.3m	44.4m	55.6m	66.7m	77.8m	88.9m	100.0m	111.1m
100kmh	13.9m	27.8m	41.7m	55.6m	69.4m	83.3m	97.2m	111.1m	125.0m	138.9m

As you can see, if a vehicle is travelling at 60km/h – the maximum approach speed where traffic controllers can be used – and it takes the driver 1.5 seconds to realise that there is a traffic controller present, the vehicle will have travelled 25 metres before the driver takes *any* action.

This is also assuming that the driver is reasonably experienced, not fatigued and not under the influence of drugs or alcohol.

The graph also shows you what could happen if the vehicle is travelling faster, or if the driver takes longer to react. This is why it is important for you to be able to see approaching vehicles from a safe distance and for drivers to be able to see you from a safe distance.

Vehicle stopping distances

Cars are heavy objects. Trucks are even heavier. There are some simple facts that relate to making heavy objects, like cars and trucks, move and stop:

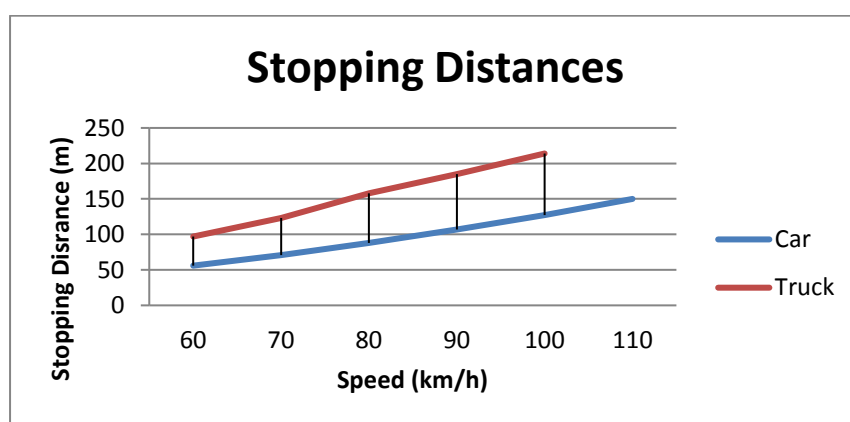
- The heavier the vehicle is and the more friction there is between the vehicle and road, the more force (engine power) that will be require to make the vehicle start to move. This is a concept known as **inertia**. Once the vehicle starts to move, it has **kinetic energy**;
- If you had two identical vehicles moving at different speeds, the faster moving vehicle will have more kinetic energy. If you had a car and a truck travelling at an identical speed, the

truck would have greater kinetic energy, because more energy was required to bring it up to that speed (i.e. it has more inertia) and;

- The more kinetic energy the vehicle has, the more friction force (from the air, the interaction between vehicle and road and the force of the brakes) will be required to bring the vehicle to a complete stop.

Generally speaking, when the speed (or velocity) of a vehicle doubles, the distance required to come to a complete stop quadruples. This means that stopping distance increases exponentially with increases in speed. This is the main reason why speed is such a dominant factor in traffic incidents, accidents and fatalities.

The graph illustrates the stopping distances of both average cars and of trucks.



	60km/h	70km/h	80km/h	90km/h	100km/h	110km/h
Car	56m	71m	88m	107m	127m	150m
Truck	97m	123m	158m	185m	214m	-

In understanding the dynamics of stopping different types of vehicles at different speeds, you should also be better equipped to recognise when an approaching vehicle is looking unlikely to stop, or looking as though it is unable to stop in time. If you are at risk of being struck by an approaching vehicle that is not coming to a stop, you should use your escape route and get out of the way.

Expected Attitude and Behaviour of Traffic Controllers

Work zones on roads can be a source of frustration for road users, especially where the work is long-term or where the work means delays or disruptions to routine for road users.

As a traffic controller, you will be one of the points of interaction between a road user, the work zone, your company and your jurisdiction's road authority. Because of this, there are expectations around how you will act, behave and interact with both the public and your colleagues while operating as a traffic controller.

Because you are the face that the public will see, you are a front-line representative of both your organisation, and indirectly of your road authority. You have a responsibility to present the best possible image to the public. As such, the way you speak, dress and act are important. You should:

- Be polite and brief if asked a question or when giving spoken instructions (such as to pedestrians)
- Be accurate in the information that you provide
- Avoid the use of jargon, or technical language, when speaking to the public
- Do not allow yourself to be provoked or to enter into an argument with a member of the public
- Do not swear or use otherwise offensive or abusive language

In addition, there is an expectation that you will remain at your traffic control position until you are directed by your supervisor that you can leave. You should always control traffic from a standing position. Finally, you should always ensure that, to the best of your ability, your appearance is neat and professional.

Assisting Pedestrians Whilst Controlling Traffic

The TMP and TGS need to make provisions for pedestrians and cyclists who will be affected by the altered conditions of the roadway. Pedestrians need to be provided with a clear and safe path through or around the work zone and may require direction as to where and when they should proceed. Part of the solution is the placement of signs and devices for pedestrians and cyclists. Traffic controllers however may be required to ensure the safety and convenience of pedestrians and cyclists, while also ensuring the safety and convenience of other road users.

You should be aware of where pedestrians and cyclists will interact with the work zone and where their path through or around the Work zone is located. You should ensure that cyclists and pedestrians move along this path and do not expose themselves, workers or other road users to the hazards of the work zone. If a pedestrian requires assistance while you are controlling traffic with a stop/slow bat you should:

- ✚ Not leave your position
- ✚ Maintain safe control of the traffic
- ✚ Encourage other pedestrians to help where abled
- ✚ Call the site supervisor/work site for assistance if there is no other option

Using STOP/SLOW Bats

Stopping Traffic

To stop traffic, turn the **STOP/SLOW** bat to **STOP** and raise the free arm into the stop signal position with the palm of the hand towards the traffic. If you are using an illuminated wand, hold the wand so that it is pointed at the ground.

To Stop



To Stop



Where possible, you should wait for a gap in approaching traffic to change your signal to STOP. You should look to give the lead vehicle as much time to react to the changed traffic signal, to avoid a situation where that vehicle has to brake heavily to stop. You should also look to avoid stopping a heavy vehicle at the head of a traffic queue, since this will limit the visibility of other vehicles in the queue.

You should also communicate information about the last vehicle that you allowed through the work zone – this will give other traffic controllers the information they need to safely direct their traffic queue to proceed, without the need for them to turn their back on their queue. Remember, traffic controllers should never turn their back on approaching vehicles, even if they are stopped.

Once you have stopped traffic, you should change your position from the side of the road so that vehicles further back in the queue have a clear view of you and of the directions you are issuing to traffic. Make sure you stay at the head of the queue – if you move down the line of traffic, you cannot give proper instructions to the lead vehicle.

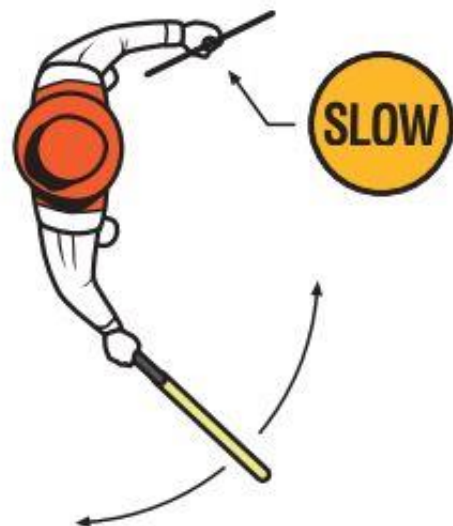
Allowing traffic to proceed

To allow traffic to proceed, turn your body to the left, with your head facing the traffic, then move the **STOP/SLOW** bat to **SLOW** and with the other hand give the **GO** signal, by facing your right palm away from traffic and moving your right arm in a sweeping motion. If you are using an illuminated wand, you should move it in a sweeping motion, similar to the arm motion you would use without a wand.

To Go



To Go



Before you take any action to allow stopped traffic to proceed, you must get confirmation from other traffic controllers on the site that traffic on their approach to the work zone has been stopped – especially in work zones where traffic has been reduced to one lane – and that all of the vehicles passing through the work zone are clear.

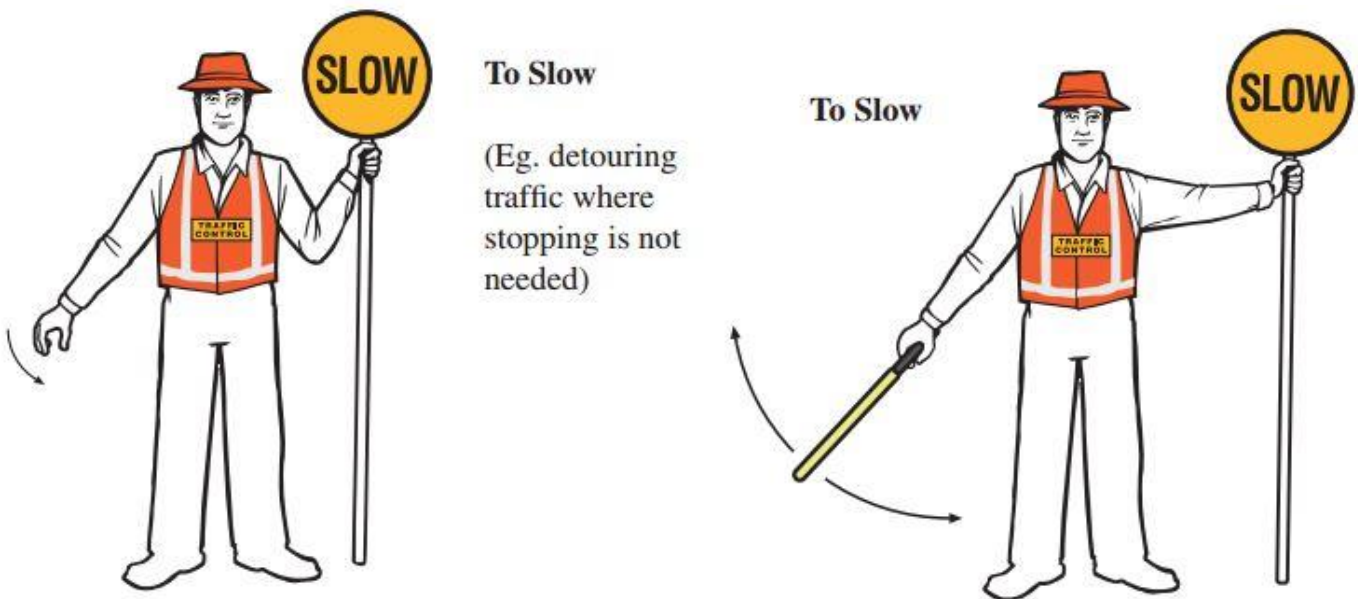
Do not give any direction for traffic to proceed without gaining this confirmation or while there are any vehicles moving in the path of your traffic queue.

If traffic has been stopped to allow for workers, plant or equipment to be on the roadway, you must ensure that all activity and personnel are clear before allowing traffic to proceed. You should maintain communication with site personnel and monitor their progress.

Before changing the position of your bat or the signal issued by your hand/wand, make sure that you move out of the path of the traffic queue. Don't place yourself in the position of being exposed to moving traffic.

Slowing Traffic

In circumstances where you are tasked with slowing traffic, show the **SLOW** side of the **STOP/SLOW** bat, extend the free arm and wave arm up and down, with your palm pointed at the ground. If you are using an illuminated wand, the wand should be used as an extension of your hand and arm, moving it up and down.



Mandatory Breaks from Traffic Control

In accordance with AS/NZS 1742.3 traffic controllers are required to take a 15 minute break for every 2 hours of controlling traffic. Your work site supervisor will relieve and all breaks must be noted in the daily diary for that day.

While conducting traffic control you must only hand your stop/slow bat over to a competent person who holds a MRWA Traffic Controller Accreditation.

Never hand over a stop slow bat to a member of the public

Using a hand-held radio whilst controlling traffic

Traffic controllers may be required to use hand-held radios when working over long distances or when the traffic controllers cannot see each other clearly. Hand held radios are also used for coordination when there are more than two traffic controllers operating on site.

It is essential while using hand-held radios to **speak clearly** and **listen carefully**.

Before Commencing Work

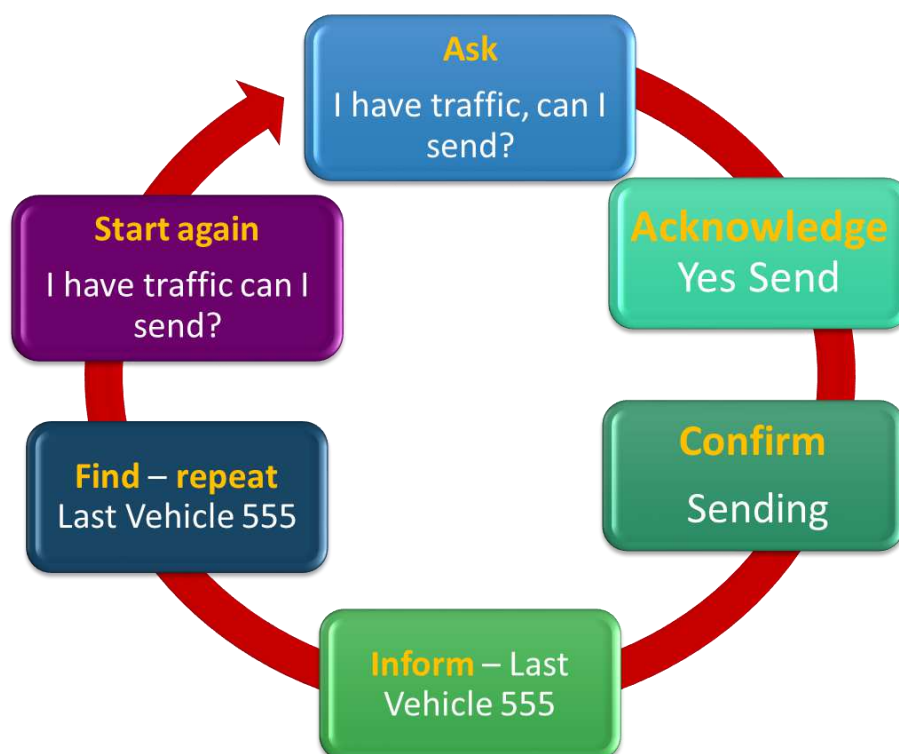
Before commencing traffic control using hand-held radios you should:

- ✚ Establish the channel you will use
- ✚ Establish the emergency procedure
- ✚ Perform a radio check
- ✚ Check battery power/spare battery
- ✚ Establish the voice procedure for controlling traffic
- ✚ Adjust the volume to a level you can hear the radio over the worksite noise

When selecting the UHF CB Channel to use before you shift, you must ensure you **DO NOT** use channels 5 & 35 as these channels are for **emergency use only**.

Hand-Held Radio Voice Procedure

The voice procedure for controlling traffic may vary depending on your work site, however most will adopt a procedure very similar to the one you will learn today. This voice procedure is as follows:



Before you allow any traffic to travel through your stop-slow but you **must** ensure it is first safe to do so. This is why we ask the other traffic controller “I have traffic can I send” and await confirmation before sending. It is also why we state the last 3 digits of the last cars number plate, so that the other traffic controller can identify the last car, and then continue the voice procedure again.

Avoid using the word “clear” as it is ambiguous to what you are trying say to the other traffic controller.

Non – Contact Period

While conducting stop-slow with hand-held radios there may be a time where you have minimal traffic flow and the contact between the traffic controllers is limited. In situations like this you **must** make contact with the other traffic controllers every 5 minutes. This is known as the non-contact period.

What if your radio stops working?

If you are controlling traffic using hand-held radios and your radio stops working for whatever reason you should follow this procedure:

- ✚ Adopt the Stop position
- ✚ Check all controls
- ✚ Check you are on the correct channel
- ✚ Try calling the supervisor/workers
- ✚ If unable to make contact – remain in the stop position
- ✚ Other Controller will make contact & send assistance within a maximum of 5 minutes

Assess Changes in Traffic Patterns

As a traffic controller you always need to be alert to the changing traffic conditions.

- ✚ Remember to watch for the angle of the sun which may shade the traffic control station and make you hard to see, make signs difficult to read or blind or dazzle drivers
- ✚ You should look for signs which may be set up in poor positions, blown over, vandalised, or too old or dirty
- ✚ Be alert to peak hour traffic which may mean longer queues, or changes in road use mix i.e., heavy vehicles, pedestrians etc.
- ✚ Be alert to any near misses. These may indicate a problem
- ✚ If you suspect any problems let your immediate supervisor know as soon as possible.

Traffic Control Emergency Procedures

If a crash occurs while you are controlling the stop-slow but you shall:

- ✚ Never leave your post (unless your own safety is threatened). Get someone else to attend or get another accredited Traffic Controller to relieve you
- ✚ Warn other Traffic Controllers, co-workers and your immediate supervisor as soon as possible
- ✚ Secure the traffic behind the incident to prevent additional collisions
- ✚ Radio for assistance, giving accurate location, number and details of any injuries and assistance required. (Police, ambulance, tow trucks etc.)

- ✚ If the crash is likely to be a serious injury or fatality; ensure traffic management devices and the scene is not contaminated until Police have inspected the site or given direction. Refer to TMP for further details
- ✚ Only check and adjust traffic control, if directed to by Police or Worksafe.

You can find this procedure in your MRWA Traffic Controllers' handbook Section 7.1 Page 24.

Once initial action has been taken and the work area deemed safe, you will be required to fill out an incident report. The incident report should be completed and submitted to the supervisor by the end of the shift. It should include:

- ✚ Date and time of incident of incident/crash;
- ✚ Exact location;
- ✚ Description/diagram of the incident;
- ✚ Make, model, registration of vehicle(s) involved;
- ✚ Name, address, licence number of driver(s) involved;
- ✚ Direction of travel;
- ✚ Description of any injuries;
- ✚ Signs displayed and their location;
- ✚ Details of any property damage; and
- ✚ Weather conditions

A sample incident report is provided at the rear of your traffic controller's handbook.

If a Driver Disobeys your Instructions while Using a Stop-Slow Bat

If a driver disobeys your directions, you should follow this procedure:

- ✚ Think of your own safety.
- ✚ Use your escape route if necessary.
- ✚ Warn the other members of the crew as early as possible (A warning system should be agreed beforehand such as shouting, whistles etc. Use the two-way radio to communicate with the other Traffic Controller).
- ✚ Get as many details as possible.
 - - Registration number
 - - Make/model/year of vehicle
 - - Colour of vehicle
 - - Time of incident
 - - Special features (roof rack, bullbar etc.)
 - - Description of driver
 - - Number of passengers
- ✚ Report the offence to the supervisor who will in turn report it to the Police.

Packing up as a Traffic Controller

As a traffic controller you are responsible for the "PREPARE TO STOP" and Traffic Controller Symbolic sign. If you are on site but are not conducting stop-slow at that time, your PTS/Symbolic must be removed or covered. This is to avoid driver complacency if they see a PREPARE TO STOP and there are no traffic controllers, they are less likely to follow the direction of the sign the next time round.

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