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RIICWD503E

Prepare Traffic Management Plans and Traffic Guidance Schemes

LEARNER GUIDE

RIICWD503E Prepare Traffic Management Plans and Traffic Guidance Schemes

Learner Name:	
Learner ID:	
Learner Contact Number:	
Learner Email Address:	
Date Training Commenced:	

This Book Contains:

☐ Course Information.
☐ Review Questions.
☐ Practical Assessment overview and Instructions.

Table of Contents

1.1 Introduction

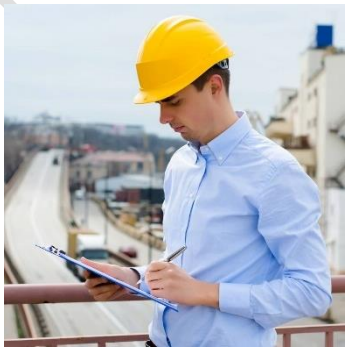
These materials are based on the national unit of competency **RIICWD503E Prepare Traffic Management Plans and Traffic Guidance Schemes.**

You will learn how to:

- Establish context for traffic management plan and traffic guidance scheme.
- Prepare traffic management plan.
- Prepare traffic guidance scheme.
- Support and review traffic management plan implementation.

1.1.1 Traffic Management Plans (TMP)

A Traffic Management Plan provides the details of proposals to safely manage traffic during the conduct of works on roads and normally includes:



- A traffic guidance scheme (diagrams).
- Worksite hazard assessment (such as a Work Method Statement).
- Details of the location, nature and duration of the works.

For long-term work, the plan should also include details of the requirements to manage traffic through the worksite outside normal working hours or when workers are not present at the site (after-care).

The Traffic Management Plan aims to:

Protect workers, road users and pedestrians.

Adequately instruct and guide road users safely through, around or past the worksite.

Provide appropriate warnings of changes in the road surface, driving conditions and of workers and plant engaged in work on or adjacent to the road.

Minimise the impact of the works on traffic and adjacent landowners or residents.

Minimise disruptions to public transport.

Communicate the arrangements for and impacts of, any activities affecting traffic.

These strategies help to reduce traffic impacts, improve safety and promote coordination within and around the work zone.

A Traffic Management Plan is required by legislation whenever works affect traffic on:

- Public and private roads.
- Parking areas.
- Restricted access construction sites.

This includes short-term works such as line marking or median strip mowing, as well as long-term major road construction work.

The Traffic Management Plan needs to allow for:

- Provision for and impact on, public transport (e.g. delay to buses or trams, restrictions on passenger access to bus or tram stops, potential for traffic to queue across an adjacent railway crossing), including where possible, priority for public transport.
- Over-dimensional vehicles.
- Safe passage for pedestrians, cyclists and people with disabilities.
- Access to abutting properties.

There may also be a Vehicle Movement Plan (VMP) included with your TMP. This will outline the appropriate paths of travel for worksite vehicles including access and egress, stockpiling and turn around areas.

1.1.1.1 Road Projects

Road projects can involve road construction or road maintenance. They may be major or minor in the type of works required, and short-term or long-term projects.

Whatever the type of road project, the associated driving conditions are generally different to normal. This can cause road users to become frustrated with delays, unexpected road conditions and inconsistencies caused by the road project.

A good work zone traffic management plan aims to reduce delays for traffic while still providing work teams with a safe environment to conduct their work.

1.1.1.2 Work Zones

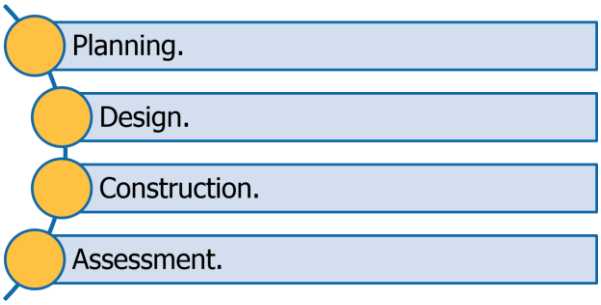
The work zone is the area of a roadway involved with construction, maintenance, or utility work activities.

A work zone is typically marked by signs, channelling devices, barriers, pavement markings, and/or work vehicles. It extends from the first warning sign or traffic control device to the end road work sign or the last traffic control device.

It may involve construction workers, vehicles, plant and equipment, which may be interacting with members of the public, motorists and delivery vehicles. It may also involve the use of access roads to and from public roads.

1.1.2 When Should a TMP be Prepared, Developed and Implemented?

Road projects are typically managed through phases of:



TMP preparation and development usually begins during the planning phase of a road project and progresses through the design phase. TMP revision and implementation occurs from the construction start point.

Road project development processes can provide valuable information to guide TMP preparation and development, such as environmental legislation and requirements for road projects, and may be a key source of inputs or constraints for the TMP.

Review Questions

1.	What are three (3) aims of a Traffic Management Plan?	☐

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1.2 Site Policies and Procedures

You need to make sure you and everybody in your team follows the safety rules and instructions when performing their work.

You should answer any questions that personnel have towards health and safety or direct them to the right person to speak to.

Before starting any work, you need to make sure you and your team have access to all operations documentation for the job. This will help everyone to do their work in the safest way and make sure all work is compliant.

Operations documentation includes:

Site Details

The information and safety requirements of the work environment.

Hazard Details

Any hazards in the work area or related to the work. This could also include instructions on how to handle dangerous or hazardous materials.

Task Details

Instructions of what the work is (this can include diagrams or plans). Also instructions on how to safely do each component of the project.

Faulty Equipment Procedures

Isolation procedures to follow or forms to fill out.

Signage

Site signage tells you what equipment you need to have, or areas where hazards exist.

Emergency Procedures

Instructions on what to do in emergency situations, for example if there is a fire, accident or emergency where evacuation or first aid is needed.

Equipment and Work Instructions

Details of how to operate plant and equipment and the sequence of work to be done.

1.2.1 Work Health and Safety

You must ensure that you and all personnel that you supervise follow all safety rules and instructions when performing their work.

Every workplace must follow laws and rules to keep everyone safe. There are 4 main types:

Law	Explanation
Acts	These are laws that you have to follow.
Regulations	These explain what the law means.
Codes of Practice	These are instructions on how to follow the law, based on industry standards.
Australian Standards	These tell you what the minimum requirement is for a job, product or hazard.

Some states use OHS laws, and other states use WHS laws. They both talk about the same thing but use different words or names for people. If you have any questions about safety rules, you should talk to your boss or supervisor.

WHS law says that all companies and workers need to keep themselves and other people safe while they work. This is called a **duty of care**.

To keep everybody safe workers need to:

- Follow their instructions.
- Follow all workplace rules.
- Make sure all equipment is safe to use.
- Carry out their work safely.
- Report any problems.

If a member of your team notifies you of an issue or problem, you will need to take appropriate action in line with site and organisational requirements. This could include:

- Stopping, postponing or re-scheduling tasks.
- Organising for specialists, technical experts or consultants to review.
- Organising additional resources, personnel, equipment or training.
- Completing forms or reports to document the issue.
- Assisting personnel to complete documents and forms.
- Contacting relevant authorities.
- Re-evaluating traffic management plans and making adjustments to manage the issue.

1.2.2 Regulations and Codes

Legislative, organisational and site requirements and procedures may relate to:

- Work zones, e.g. identification, signage, hours of operation, warning lights.
- Engineering practices, e.g. design specifications, construction methods.
- Traffic laws, such as speed limits, speed zones, traffic control methods.
- Employment legislation, including workplace relations, Equal Employment Opportunity.

You can find out what regulations and codes of practice apply in your state from the relevant Road and Traffic Authority office:

State / Territory	Department	Website
ACT	Dept. of Territory and Municipal Services	www.tams.act.gov.au
NT	Dept. of Transport	www.transport.nt.gov.au
NSW	Roads & Maritime	www.rms.nsw.gov.au
QLD	Dept. of Transport & Main Roads	www.tmr.qld.gov.au
SA	Dept. of Planning, Transport and Infrastructure	www.dpti.sa.gov.au
TAS	Dept. of State Growth	www.transport.tas.gov.au
VIC	Dept. of Transport	www.transport.vic.gov.au
WA	Dept. of Transport	www.transport.wa.gov.au

1.2.2.1 Regulations for a Traffic Management Plan

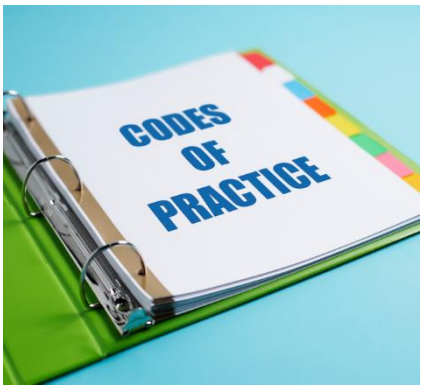
The most important compliance documents that relate to Traffic Management Plans are:

- State and territory traffic management legislation, regulations and codes of practice.
- Australian Standard AS1742.3:2019 – Manual of Uniform Traffic Control Devices (MUTCD) Traffic Control for Works on Roads.

The AS1742.3:2019 provides technical specifications and guidance for the setting out of temporary traffic control signs and devices used at road works.

Each state and territory has established a Code of Practice for traffic management based on and incorporating AS1742.3:2019.

Generally, the Code of Practice aims to:



1. Establish and maintain a standard approach to road works (whether on the roadway or roadside) that protects the safety of road users and workers.
2. Establish a hazard-based assessment of worksite conditions to allow hazards to be identified and managed to create a safe worksite.
3. Support the planning for, and management of traffic to pass safely through, past or around a worksite, including the development and implementation of a traffic management plan.
4. Support appropriately trained and qualified persons to control and direct traffic.

Review Questions

2.	What are the four (4) types of laws that workplaces must follow?	☐

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3.	What is the Australian Standard for traffic control?	☐

1.3 Environmental Protection

Environmental management is aimed at considering the impacts of activities on the environment and fulfilling statutory responsibilities under state and federal government acts to minimise the damage or disruption.

1.3.1 Environmental Impact Assessment

An Environmental Impact Assessment assesses the environmental impacts of the project. They can sometimes be complex, so early and close liaison between project managers and environmental staff during project development is critical.

Identification of impacts can involve assessing the scope of the project and consultation with environmental specialists or people familiar with the region or area in which the work zone is located.

You may need to consider the confinement of the disturbed zone, likely risks of soil or water erosion and likely impact to threatened species of flora or fauna.

Once information has been gathered, you need to review and assess the impacts of the proposed activities on the environment before making the decision on whether to carry out any activities and how these might be done.

For example, there may be requirements for specialist's reports, approvals, additional standards and safeguards for the work zone and TMP.

Procedures can be developed to avoid, minimise or offset environmental impacts. This may cover matters such as pre-construction inspections, what to do in case of spills, evidence gathering and scheduled reports.

Review Questions

4.	What is the purpose of an Environmental Impact Assessment?	☐

1.4 Cultural Heritage Management

Before starting a Traffic Management Plan, you need to consider the cultural heritage and Native Title of the land you are working on.

Native Title refers to the rights that Aboriginal and Torres Strait Islander people have in Australia to land and waters under traditional laws and customs.

1.4.1 Protecting Cultural Heritage and Native Title

Your local road authority and/or council should have information on the best way to protect cultural heritage and Native Title. This may include:

- Surveys to identify significant sites.
- Analysis of potential impacts on Native Title.
- Stakeholder consultation.
- Management plans and agreements for any work impacting cultural heritage.
- Maintenance of heritage sites such as restoration and strengthening.
- Relocating sacred trees, recording and salvaging artefact locations.
- Native Title recognition, such as naming roads and/or road assets in consultation with traditional owners.
- Possible 'Welcome to Country' signage and displays.

Cultural heritage management forms part of the environmental assessment process, which will include a detailed site history and Aboriginal and non-Aboriginal archaeological surveys.

Review Questions

5.	What is Native Title?	☐

1.5 Hazards and Risks

You need to check for any hazards or dangers in the area before creating a TMP.

If you find a hazard or danger you need include control measures in your plan. This will help to make the workplace safe.

The role of a supervisor in the risk management process is to ensure the plan is applied or implemented in a way that makes sure:

- All risk management activities meet site and safety requirements.
- All activities are effective in identifying and treating risks and hazards.
- All personnel involved understand what they need to do and have the guidance to complete their activities properly.
- All information gathered by personnel is correct and relevant.
- Risks are assessed properly and treated in accordance with organisational requirements.
- Expert advice is sourced when information is unclear or potentially inaccurate.
- All resources are organised or gathered properly for effective hazard treatment.
- Approved hazard controls are implemented properly.
- Personnel are coached through the implementation of hazard controls.
- Situations are reviewed properly and hazard controls are still effective.
- The process is audited and quality outcomes are being achieved.
- All documentation and records relating to the process are completed accurately.

It is important to include team members in hazard identification and risk management to make sure everyone knows what is going on, what you are planning to do and what they need to do.

In order to successfully identify hazards in the workplace it is important that all personnel are aware of:

- What a hazard is.
- How to spot a hazard.
- What they should do when they find a hazard.

In any workplace, a strong safety focus will ensure that hazard identification is part of everyone's role.

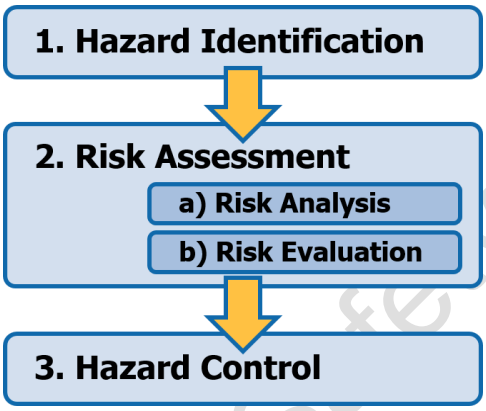
Make sure that all personnel under your supervision are aware of their responsibilities when it comes to hazard identification and that a simple and effective process for reporting them is in place.

This could include verbal reporting or a more formal documented recording of details.

A **RISK** is the chance of a hazard hurting you or somebody else or causing some damage.

RISK MANAGEMENT is the process of eliminating or controlling hazards to reduce the risks that people and equipment are exposed to at work.

The risk management process is made up of 3 main stages:



Risk management processes need to be planned for and implemented in response to incidents, accidents or near misses, such as:

Changes to the Environment:

- Construction, demolition or the movement of plant, vehicles, equipment, stock or materials.
- The public interacting with the work site.
- Limited supervision.
- High turnover of personnel who require training and orientation to complete their work safely.

Situations where the work or the work area will be dangerous:

- Personnel use of or work near vehicles, equipment or machinery.
- Personnel need to use manual handling techniques to complete their work.
- Work is completed at heights, in confined spaces or on construction or mine sites.
- Work requires personnel to use chemicals, work alone, or use explosives, tools or equipment.
- Tasks and handling of materials requires specific training and precautions to be carried out safely.
- Licensing, permits or special qualifications are required to carry out work.
- The work creates a harmful bi-product (gas, contaminant, waste).
- Waste and contaminants are handled or disposed of.

Communications between personnel is crucial for the work to be done safely.

1.5.1 Identify Hazards

A **HAZARD** is the thing or situation with the potential to cause injury, harm or damage.

Part of your job is to look around the worksite to see if you can find any hazards before you complete the TMP.

When you start checking for hazards, make sure you look everywhere.

A good way to do this is to check:

- **Up high** above your head.
- All around you at **eye level**.
- **Down low** on the ground (and also think about what is under the ground).

Some hazards you should check for:

Hazard Type	Examples	
Environmental Hazards	◆ Spills to water – stormwater. ◆ Spills to land – contamination. ◆ Wasteful resource use (e.g. water materials). ◆ Wasteful electricity use or the production of greenhouse gas. ◆ Waste generation. ◆ Spreading of weeds and pests. ◆ Potential for fire. ◆ Release of emissions to air. ◆ Noise or vibrations (offsite impacts). ◆ Disturbance to plants or animals. ◆ Removal of vegetation. ◆ Disturb cultural heritage sites. ◆ Disposal of wastes from site.	◆ Transport of wastes from site. ◆ Use of pesticides or insecticides. ◆ Poor lighting, ventilation, air quality. ◆ Excessively loud and prolonged noise or vibration. ◆ Heat and cold. ◆ Radiation. ◆ Excavations. ◆ Floors. ◆ Stairs. ◆ Work platforms. ◆ Ladders. ◆ Falling objects. ◆ Slippery surfaces.
Mechanical or Electrical Hazards	◆ Electricity. ◆ Machinery. ◆ Plant. ◆ Pressure vessels. ◆ Dangerous goods.	◆ Forklifts, cranes and hoists. ◆ Driving. ◆ Manual handling. ◆ Working at heights. ◆ Confined spaces.
Chemical Hazards	◆ Chemical substances, e.g. acids or poisons, others that could lead to fire or explosion. ◆ Cleaning agents.	◆ Dusts and fumes from various processes such as welding. ◆ Occupational gas releases. ◆ Inhalation of chemicals.
Biological Hazards	◆ Bacteria. ◆ Viruses. ◆ Mould, mildew.	◆ Insects, vermin, animals. ◆ Asbestos. ◆ Other microbiological organisms.
Psychosocial Hazards	◆ Events. ◆ Cultural heritage and standards. ◆ Impact on the community. ◆ Systems of work. ◆ Work pressure. ◆ Human factors i.e. competency, training, fitness, etc.	◆ Other circumstances that have the potential to lead to psychological and associated illness, e.g. work-related stress, bullying, workplace violence and work-related fatigue.

1.5.1.1 Work Zone Hazards

Hazards may be related to the way a job is done, or the equipment that is being used.

It is important to think about the work that will be carried out as well as the work environment.

A hazard may be caused by two different tasks being completed too close to each other, or too soon after the completion of previous work.

Worksite hazards can also be identified by:

- Analysing a situation or the way a job is carried out by other workers.
- Looking at the equipment being used.
- Checking records of injuries and incidents.
- Checking safety tags.
- Reading Safety Data Sheets (SDS).
- Talking to other workers.

For worksite traffic management, the major risks are:

- Speed of traffic adjacent to or through the worksite.
- Clearance between moving traffic, workers and roadwork plant and equipment.
- Traffic volume and vehicle composition.
- Geometry of the worksite, and approaches to the worksite.
- Duration of the works (both short and long term).

Site conditions to consider when creating a TMP include:

- Road furniture.
- Property access.
- Crash history.
- Probable weather conditions.

1.5.2 Risk Assessment and Analysis

Risk Assessment is the next stage of the risk management process and involves finding the risk level associated with a hazard, then working out what action you need to take.

A Risk Analysis helps you to work out the 'risk level'. You can work out the risk level by looking at two factors:

Risk Level	Factors
Consequence	◆ What would be the outcome of the event occurring? ◆ How severe would the outcome be?
Likelihood	◆ What is the chance of the event occurring? ◆ Has the event happened before? ◆ Is it likely to happen again?

Using a table similar to the one below, you can work out how high the risk level is:

	Consequence				
Likelihood	**1. Insignificant**	**2. Minor** First Aid Required	**3. Moderate** Medical Attention and Time Off Work	**4. Major** Long Term Illness or Serious Injury	**5. Catastrophic** Kill or Cause Permanent Disability or Illness
1. Rare	Low	Low	Moderate	Moderate	Moderate
2. Unlikely	Low	Low	Moderate	Moderate	High
3. Possible	Low	Moderate	High	High	Extreme
4. Likely	Moderate	Moderate	High	High	Extreme
5. Almost Certain	Moderate	High	High	Extreme	Extreme

1.5.2.1 Risk Evaluation

Criteria for the unacceptability of the risk are determined by the organisation, with reference to relevant legislation, and are detailed in:

- Internal policy.
- Workplace goals and objectives.
- Regulations.
- Codes of practice for specific risks or hazards.

Different risk levels will require different responses for work to be allowed to begin or continue.

The table shown here is an example of how different risk levels could be dealt with:

Risk Level	Action
Extreme	**This is an unacceptable risk level.** The task, process or activity **must not proceed**.
High	**This is an unacceptable risk level.** The proposed activity can only proceed, provided that: **1.** The risk level has been reduced to as low as reasonably practicable using the hierarchy of risk controls. **2.** The risk controls must include those identified in legislation, Australian Standards, Codes of Practice etc. **3.** The risk assessment has been reviewed and approved by the Supervisor. **4.** A Safe Working Procedure or Work Method Statement has been prepared. The supervisor must review and document the effectiveness of the implemented risk controls.
Moderate	**This is an unacceptable risk level.** The proposed activity can only proceed, provided that: **1.** The risk level has been reduced to as low as reasonably practicable using the hierarchy of risk controls. **2.** The risk assessment has been reviewed and approved by the Supervisor. **3.** A Safe Working Procedure or Work Method Statement has been prepared.
Low	The proposed task or process needs to be managed by documented routine procedures, which must include application of the hierarchy of controls.

1.5.3 Hazard Control

Hazard control involves choosing one or more options (risk treatments) to lower the risk level, and then implementing the selected options.

Once an option has been implemented, it is called a **'control'**.

If an existing risk management procedure is right for the situation and manages the hazard well, it should be applied.

Once a hazard control has been put into place, it should be regularly checked to make sure the risk level meets both legislative and organisational requirements at all times.

If there is no existing procedure, you will need to work out what the best course of action is to eliminate or minimise the risk.

The Hierarchy of Hazard Control is the name for a range of control methods used to eliminate or control hazards and risks in the workplace.

The Hierarchy has 6 levels shown here from most effective to least effective:

Hierarchy Level	Action
1. Elimination	Completely remove the hazard. This is the best kind of hazard control.
2. Substitution	Swap a dangerous work method or situation for one that is less dangerous.
3. Isolation	Isolate or restrict access to the hazard.
4. Engineering Controls	Use equipment to lower the risk level.
5. Administrative Controls	Site rules and policies attempt to control a hazard.
6. Personal Protective Equipment	The least effective control. Use PPE while you carry out your work.

Speak with any workers who are responsible for implementing controls to make sure they are aware of what they need to do, when they should do it and how they should do it.

Monitor the progress of the implementation of the hazard controls to make sure you can address any unexpected issues quickly.

Keep a record of any deviation from the plan during the implementation of the controls.

Ongoing reviews are necessary to ensure the implementation and application of risk controls, new procedures and investigative outcomes have occurred as required.

If during the review process you find that the implementation or application of the risk control is not working, you will need to investigate why the control is inadequate and develop a strategy for increasing the effectiveness of the control method.

Review Questions

6.	What are the three (3) steps that all personnel should be aware of to successfully identify hazards?	☐

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7.	What are five (5) possible environmental hazards?	☐

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8.	What are three (3) major risks on a traffic management worksite?	☐

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9.	How do you calculate the risk level?	☐

10.	Which risk levels are unacceptable?	☐

11.	What are the six (6) levels of hazard control in order of most effective to least effective?	☐

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2.1 Worksite Requirements

During the planning and design phases of the road project, you will begin planning and development of the TMP.

Within this planning stage you will need to gather information about the boundaries and structure of the construction site so that you can prepare a TMP that supports the function of the site and surrounds.

The worksite is the work area, where work is being completed, plus any space required for advance signage, tapers, side-tracks, detours.

As a worksite designer, your traffic management plan should consider the following principles:

- Human, vehicle, road, rail and environmental factors that apply to the site.
- Adequate warning for road works through clear line of sight and/or appropriate signage.
- Easily recognisable layout with clear legal priorities.
- Appropriate vehicle speeds.
- Preference to major traffic movements and/or specific road/rail users where appropriate (and possibly to reduce traffic wait times).
- Conflict points.
- Speed of conflicting movements.
- Adequate facilities for pedestrians, cyclists, pedestrians with mobility difficulties, public transport patrons and vehicles, and heavy vehicles.

Engineering and plant design measures to minimise risk:

- Speed limiters/bumps.
- Presence-sensing devices.
- Gates to restrict access to certain areas during traffic movement.
- Traffic signal lights (portable or permanent, with road authority approval).
- Convex mirrors to avoid blind spots.
- Warning lights and reversing alarms on mobile plant.
- Adequate lighting for all times of the day.

2.1.1 Principles of Traffic Management

There are two main principles of traffic management:

1. To ensure the safety of road workers.
2. To balance the safe and convenient movement of traffic with construction and traffic management costs.

Preparation and development of the TMP will involve the identification of viable traffic management strategies to manage the impacts of the road project and its work zone.

Strategies for traffic management may include:

- **Temporary Traffic Control.** Includes control strategies, traffic control devices, project coordination, contracting and innovative construction strategies.
- **Public Information.** Includes public awareness strategies and motorist information strategies.
- **Traffic Operations.** Includes demand management strategies such as public transport services, corridor/road network management or traffic operations strategies, work zone safety management strategies, traffic/incident management and enforcement strategies.

Strategies for traffic management can be employed on their own, such as running a motorist information campaign about changed traffic conditions 2 weeks before construction starts.

They can also be employed in conjunction with other strategies, e.g. positioning signs to indicate changed road conditions ahead, installing road delineation devices and employing Traffic Controllers with stop/slow bats.

A critical success factor in the preparation of a TMP is to consider alternatives – a number of options can be taken into account, giving you a broader range of strategies to choose from.

You need to interpret and analyse the relevant data and identify the viable options for the work zone traffic management plan you require.

2.1.1.1 Road User Behaviour

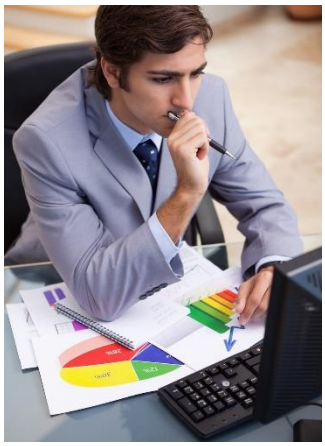
According to Austroads, a safe system approach to road safety recognises that road users are human, and therefore make mistakes. It is the responsibility of the TMP designer to create a road design/system that does not penalise people with death or serious injury should they make a mistake.

The following are important road user behavioural factors to ensure road safety:

- Excessive speed – as speed increases, driver reaction time increases, peripheral vision decreases, braking distance increases and kinetic energy of a crash increases.
- Capability of the road environment – incorporating lower speed limits where changes to the road design cannot remove hazards.
- Distraction – mobile phones and GPS systems.
- Alcohol and drug use.
- Fatigue.

2.1.2 Data to Interpret

Data and aspects to interpret may include:



1. **Traffic Surveys.** E.g. vehicle flow, speed, travel time, delays, pedestrian and cyclist movement, journey origin and destination, vehicle types and characteristics.
2. **Traffic Studies.** Evaluation of existing conditions or projections relating to proposed changes, e.g. capacity analysis, level of service.
    - **Capacity Analysis.** Quantitative techniques for measuring the effectiveness of existing transport facilities. Determines the number of lanes, lane disciplines and lane types to be provided.
    - **Level of Service.** Qualitative technique for ranking operating conditions or service quality, using speed, travel time, delay, density, freedom to manoeuvre, interruptions, comfort and convenience.
3. **Cultural and Heritage Data.** E.g. local archaeological finds, depth and location of underground sites.
4. **Hydrological Data.** E.g. assessing the underground water supply. What rating is given to sub soil water retention? How reliable are rainfall recordings and patterns? Will installation of traffic control devices be suitable based on this data?
5. **Engineering Survey Information.** E.g. road gradients, and which geographic features need to be considered for visibility of signage.
6. **Meteorological Data**. E.g. the expected temperatures, weather systems and patterns for the season when construction and traffic management is planned.

2.1.2.1 Specifications, Plans and Drawings

Relevant specifications, plans and drawings to interpret may include:

- **Technical Specifications.** E.g. what are the minimum distances between road works signage? What are the specifications for flashing arrow signs and barrier boards?
- **Plans and Drawings.** E.g. what safety plans are applicable? Are there plans for continuously moving plant and equipment in and out of the work zone? Are road drawings accurate and what modifications are required?

Review Questions

1.	What is the difference between the worksite and the work area?	☐

2.	What are three (3) strategies for traffic management?	☐
	1. 2. 3.	

3.	What are three (3) behavioural factors that may impact road user safety?	☐
	1. 2. 3.	

4.	What are two (2) components of traffic studies?	☐

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2.2 Establish Scope of Traffic Management Plan

A Project Brief/TMP brief is so named because it is a brief or short version of a complete Project Plan/TMP. You need to read and interpret it to get preparation started.

It generally includes three elements:

- A complete description of the project.
- What is expected once the project is completed.
- Any constraints or limitations applying to it.

Once you have a project brief to prepare and develop a TMP, you should start planning. A preparation plan is where research and planning activities are considered for the traffic management plan.

It is typically used to assist you in identifying management tools and resources to assure an effectively managed project outcome. It can also be used to confirm the client's expectations.

You need to prepare a preparation plan which makes best use of the available resources and meets the traffic management plan's requirements.

Prior to developing a preparation plan, you need to review the project brief again to ensure the scope has been fully defined. The size, content and level of detail of your TMP will vary.

You need to size traffic management plan components, i.e. carefully assess the extent and magnitude of what's involved at the work zone and subsequent impacts of traffic.

This is particularly important in situations where the project has been scoped and costed months, or even years, prior.

2.2.1 Project Scope

Factors affecting project scope and TMP size include:

- Risk factors.
- Funding arrangements.
- Approval processes required.
- Past history of the site, known as Brownfield issues.
- Other projects taking place on or near the same site, and building developments.
- Changes in cultural and heritage requirements and procedures, additional council overlays or zones, new findings or declarations in the local area.
- Current industry best practice in traffic management plan design and implementation, including new studies and theories into work zone practices, results of accident investigations at or near work zones and strategies to improve implementation.
- Factors likely to affect delivery of the road works project and traffic management plans, including availability of supplies and resources, road authority's work zone policies and anticipated work zone impacts.

Your assessment should detail a description of any changes, background, reasons for change, implications of not making changes, impact of changes on time, costs and planning.

You need to interpret and analyse relevant data and recommend the preferred option that best meets the required project outcomes. When determining a preferred option, you should consider:

- **General Project Matters.** Includes costs and available resources.
- **Safety Specific Matters.** Includes previous records of incidents and accidents at work zones and the results of safety audits and inspections.
- **Design Review Principles and Procedures.** Includes use of traffic controllers if road users are to be directed to disobey a traffic regulation such as crossing a barrier line.
- **Principles of Road User Behaviour.** Includes based on minimum disruption to road users at peak times, nights, weekends, holiday periods, and during special events.

2.2.2 Preparation Plan

In many instances, you may not be the one who manages implementation of the TMP.

As a consequence, all planning and preparation must be sufficiently complete for the next project manager or a construction service provider to proceed without undue delay.

There are many elements of a preparation plan to work through and, like most projects, you need to work through each of them, plan and get organised for the work and effort required to prepare a TMP.

These elements include:

- Human resource requirements.
- Review requirements.
- Design hardware and software.
- Current industry best practices.
- Scheduling and coordinating.
- Communication and reporting requirements.

2.2.2.1 Human Resource Requirements

You need to ensure you have the right people for the task ahead. Human resource requirements can include:

- **Project roles**, such as project manager, project officer providing administrative assistance to the project manager, records controller responsible for controlling project and contract records and correspondence.
- **Leaders and managers**, such as work supervisors/team leaders who may need to make modifications to the Traffic Guidance Scheme (TGS), road safety auditors.
- **Field roles** including those who need to set up and work with the TGS, Traffic Controllers who are trained and qualified, and surveillance officers.

Review Questions

5.	What is a preparation plan?	☐

6.	What are three (3) elements of a preparation plan?	☐
1. 2. 3.		

2.3 Components of a Traffic Management Plan

Many road projects may be similar, yet each one is unique.

You need to identify and confirm the work zone TMP project requirements and information.

Check the plans, drawings and specifications of the task being completed and also read the traffic management plan brief to get a proper understanding of the situation and the requirements of the project.

There are a number of aspects to be considered when creating a TMP, including:

Aspects to be included	Examples
General Details The TMP needs to include general information or an overview about the construction or maintenance project and the environment in which the project will operate.	◆ Project name, purpose, and scope. ◆ Responsibilities of the construction contractor and their contact details. ◆ Compliance requirements, details and follow up action/s. ◆ Location description, such as road name, council area, map reference. ◆ Directions to restrict, such as days and hours of operation. ◆ Traffic Management Objectives, such as to ensure the health and safety of the works personnel, public and those impacted. ◆ Emergency contacts of responsible parties, such as police, ambulance, contractors, road authorities. ◆ Any other relevant information required by an authority.
Works on Road The TMP needs to include information about the works to be undertaken.	◆ Works scope and description, e.g. bridge repair, road widening, installation of a road sign, intersection treatment. ◆ Details of works, such as commencement/completion dates, hours of work. ◆ Activities under traffic control, e.g. proposed speed zone, vehicle movements, deliveries. ◆ Staging of work, if applicable and sufficient to give the reader a clear understanding of the nature of the work activities. ◆ Roles, responsibilities, project representatives and traffic management administration.
Planning	◆ Risk assessment and safe work method statement for traffic control for the site, e.g. hazards to traffic control at a particular site. ◆ Capacity of traffic lanes, intersections. ◆ Speed zones, parking, and special events. ◆ Adjoining developments, sequence of works, night works. ◆ Hazards and what to do in emergencies. ◆ Consultation and communication, including approvals, public notices.
Implementation	◆ Vehicle Movement Plan (VMP) – to outline the appropriate paths of travel for worksite vehicles including access and egress, stockpiling and turn around areas. ◆ Traffic Control Plan (TCP) – details of measures to be implemented for specific stages of the works including line marking, lane widths, signposting, delineation and safety devices. ◆ Traffic Guidance Scheme (TGS) – to show how traffic will pass safely through or around the construction site during the various construction stages. ◆ Provision for access to adjoining properties for pedestrians or cyclists. ◆ Design drawings, for any temporary roadways and detours.
Statutory Requirements The TMP needs to address Work Health & Safety (WHS), legislation and other provisions and responsibilities.	◆ Monitoring and management of traffic control using checklists, proposed inspection times and incident and accident procedures.
Monitoring, Measurement and Reviews The TMP needs to cater for site inspections, record keeping, auditing and feedback. The plan should be reviewed by relevant personnel and their feedback taken on board.	

2.3.1 Geometric Design

There are three parameters to geometric road design:

1. **Design:** road classification, design speeds, design vehicles, alignment controls, cross-section components, shoulders, verges, and provisions for public transport and cyclists.

2. **Speed:** operating speed, desired speed and design speed, plus how they relate to each other.

3. **Horizontal and vertical alignment:** circular curves, super-elevation, grades, grading of road alignment, determination of sight distances across vertical curves.

Austroads provides guidance on geometric design and other types of road design. Understanding the following key points will help you to make decisions about taper length and temporary road and shoulder width:

- Standard traffic lane width of 3.5m.
- Narrower lanes of 3.3m may be used when: road reserve prevents wider lanes, low speed environment, little or no truck traffic.
- Functions of a road shoulders: provide lateral support to road pavement layers, recovery area for damaged vehicles, refuge, space for cyclists, emergency, large vehicles (oversize).
- Left shoulder width for urban and rural roads should be at least 2m.

Any temporary changes through the use of tapering or channeling devices should ensure that these geometric design standards are applied to the TMP as well.

Review Questions

7.	What are four (4) aspects of a Traffic Management Plans?	☐

1.

2.

3.

4.

2.4 Communications

Good communication and reporting throughout the preparation of a TMP will ensure your team and stakeholders are well informed about what is expected of them and how the preparation is going.

Activities can range from team meetings to keeping the community up to date with the potential impacts of the work zone, notifications about schedules, advice and their involvement.

The media, government and local authorities may need to be kept informed about funding announcements, project start-up/completion deadlines and opening events.

2.4.1 Coordinate Personnel

Effective leadership is one of the most important factors in any project's success. Research has shown that leaders determine the success of a project through their impact on workers.

Monitoring and coordinating the progress of your team and the preparation of the TMP is the process of ensuring that the actual TMP prepared and developed meets what was planned and the deadlines applied.

Leadership also involves investigating situations and taking corrective action as and when required.

For example, if there is a hold up in approvals from a local government council or road authority, you need to take the lead to investigate the cause of the delay. You can determine whether your project team may be delaying the approval process. You can also confirm that the person who provides the approval is working on your application and has all the information required. If not, you may need to coordinate information flow from your project team to the relevant government office in a timely manner to keep the application moving forward.

Before implementing any traffic management plan, ask yourself the following questions:

- Have you consulted with workers, mobile plant operators and your supply chain to understand all possible risks relating to the interaction of traffic and people on site?
- Have you documented communication and consultation for coordinating significant traffic movements?
- Is everyone entering the worksite informed of the content of the TMP, and their understanding confirmed?
- Is work scheduled to minimise the interaction of mobile plant and vehicle traffic and people in the same area at the same time?

2.4.2 Team Leadership

Good techniques for team leadership when monitoring and coordinating resources include:

- Provision of direction and guidance to the team, including completion dates and quality of documents.
- Understanding and articulation of the context in which the project operates, including contract providers, authorities and funding availability.
- Modelling project relationships based on trust and respect for all stakeholder groups.
- Facilitation of meetings and group discussions, including those concerned with monitoring progress, obtaining updates, investigating deviations, and taking corrective action.
- Management of risk and resolution of conflict within the project and between the project and other parties. For example, to keep the plan completion on track.
- Developing effective team roles through delegation.
- Management and improvement of the performance of individuals and teams.

2.4.2.1 External Communications

When roads are closed or traffic conditions have changed, you need to communicate these changes to the public, including nearby and/or affected residents and businesses.

Your workplace should have procedures in place for external/public communications.

You may also need a Traffic Communication Plan, which details how you will communicate traffic condition changes and make arrangements for access for residents and businesses.

Specific details on requirements for public communications can be found within the local council of the work site.

2.4.2.2 Client Communications

You need to ensure that the TMP is verified for completeness and accuracy, and that it satisfies the requirements of the client. Obtaining client feedback may be conducted using anyone (or a combination) of communication requirements, techniques and procedures.

For example:

- Presentation of the final TMP.
- Meeting the team behind the work effort and a description of the design and planning process.
- An interview using a checklist of the client's requirements.
- A formal sign-off process involving various representatives of the client.

Additional feedback for verification can be gathered from previous peer and stakeholder reviews, performance reviews, and benchmarking against industry best practices. Any adjustments can then be made accordingly.

Review Questions

8.	Why is effective leadership important?	☐

9.	What are two (2) methods you might use to obtain client feedback?	☐
1. 2.		

2.5 Assemble Traffic Management Plan

The information required for a detailed TMP may include the following:

- A list referring to the road authority standard.
- Drawings.
- Comprehensive plan sheets.
- Special provisions.

It may require a sufficient level of detail to allow the invitation of tenders or quotations and carrying out construction and utility designs for the area.

You need to complete the detailed work zone traffic management plan that safely, effectively and efficiently meets the required project outcomes. The level of detail should be determined on a project-by-project basis.

2.5.1 Tools and Technologies

Detailed TMPs can be created using a number of tools and technologies. This could include application of:

- **Computer-based design technology**, including maps, infrastructure design and drawing applications.
- **Industry or government standard design software**, including traffic analysis tools, TMP capacity requirements, survey mapping tools, aerial photography.
- **Engineering graphical presentation techniques**, including travel demand models such as transit services, carpooling, ramp metering, and/or simulation models such as for incidents, accidents and detours using traffic control devices.

These tools are used to provide a comparison between existing and future traffic conditions and operations, with and without the TMP management strategy you are proposing.

2.5.2 Documentation and Drawings

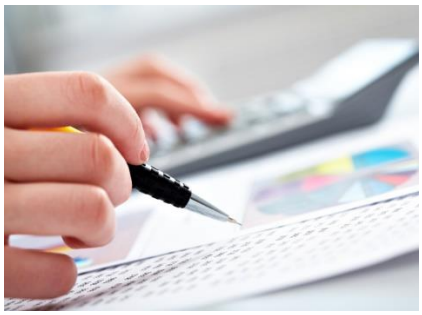
A detailed plan may include documentation of:

Level of Service	Including time to travel distances, signage for direction, reduced braking times.
Calculated Flow Rates, Capacities and Percentages	Including vehicles per hour, maximum queue capacities at stop signs, percentage of vehicles affected/unaffected.
TMP Capacity Requirements	Including any work schedule restrictions for each stage, night work, peak hour restrictions, parking.
Construction Materials and Services Quantities	Including the construction approach/phasing/staging strategy with plans for expected works including products, access and deliveries, accommodating traffic at each stage.
General Construction Information	Including what is being built, cost estimates, treatment or protection for natural features and vegetation.

A detailed plan may include drawings, photos and/or attachments of:

- Work zone traffic management strategies such as geometric requirements and improvements, e.g. road gradients, turning angles and stop positions.
- Selection and specification of traffic management structures and systems, such as the type, number, location, and timing for traffic control devices for directing traffic through the work zone.
- Traffic entry and exit directions.
- A construction management plan showing the extent of works, tree protection zones, stockpile and storage areas.

2.5.3 Cost Estimate



Once the detailed TMP is completed, you can cost it.

The costs for traffic management strategies need to be incorporated in early project estimates and the budgeting process to ensure that funding is available for TMP implementation.

This is especially applicable to projects likely to have greater work zone impacts.

A cost estimate is a calculated prediction of the amount of money required to undertake a specific amount of work, expressed in dollar values of the year in which it was prepared.

Costs can be:

Variable	i.e. where the amount varies according to use, such as wages, energy supply.
Fixed	(known as overheads) i.e. where the amount is set for a period of time, such as vehicle registrations, insurance.

You need to prepare an estimate of the cost of executing the work zone traffic management plan.

2.5.3.1 Operational Strategy Costs

You will need to estimate the costs of the operational strategies for work zone traffic management.

Estimation techniques could include:

Global Estimating	i.e. involving general composite rates, such as traffic control costs per kilometre, public information costs per week.
Unit Rates Estimating	i.e. making use of historical rates and calculated quantities to derive elemental costs. For example, referring to the previous contractor's costs, margins and allowances, or as per your organisation's charges.

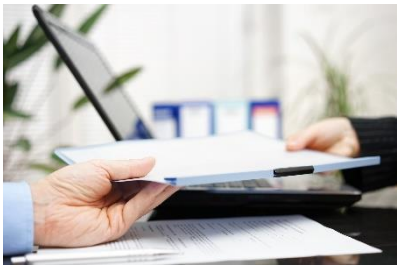
2.5.3.2 Itemised Costs

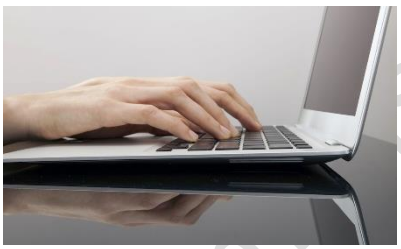
Itemised TMP costs estimates:

- On site costs, such as equipment and devices.
- Detour costs, such as capital and operating.
- Cost responsibilities/sharing opportunities.
- Funding source(s), i.e. TMP components can be funded as part of the construction contract and/or in separate agreements.
- Special considerations, such as public information meetings, brochures, websites, car-pool programs, and coordination with local agencies for detour routes.
- Contingency, i.e. non-variation provision which covers circumstances that could not be foreseen at the time of preparation of the estimate.

2.5.3.3 Submit Costs and Reports

Preparation costs and other reports that need to be completed and submitted may include:





- Costs involved with the preparation and design of the TMP, e.g. costs for design work, technology services and supplies, and application fees to authorities for approvals.
- Workings behind how TMP costs were calculated, such as measurements used, item costs, percentages for contingencies, sums and answers.
- Cost-benefit analysis for the TMP, which demonstrates that costs of the project offer value for money, e.g. when costs are compared to previous projects, current market rates or your own industry knowledge.
- Reports pertaining to the re-evaluation of priorities and time scales based on TMP cost estimates. This could include realising cost savings through bulk purchasing or hiring agreements for devices, signs and equipment made earlier than planned.

Once costs and reports are submitted, you can participate in a performance review.

2.5.4 File Records

You may be required to maintain documentation relevant to the TMP for various reasons, such as:

Documentation Reason	Explanation
Project Governance	Documentation may be required for reasons of project oversight and your organisation's record keeping requirements. It may involve records for communications, reviews, decision-making and expenses.
Compliance	Documentation relating to compliance, such as with Codes of Practice, need to be maintained as it may be required to meet the needs of road authority inspectors and auditors. Where non-compliance is observed, documentation needs to be maintained to demonstrate any formal corrective action that was taken.
Risk Assessment and Safety Plans	Documentation of the identification and assessment of risks and the processes, procedures and standards used, needs to be maintained in accordance with standards, specifications, workplace and/or road authority policies and requirements. It can also assist facilitation of the 'handover' of the TMP for implementation.

It is best to clarify documentation requirements up front so you can access or set up systems and procedures from the start and make use of project templates, record keeping processes and/or project management software applications.

These tools and methods will assist you in establishing 'paper trails' which may be important should issues arise with the TMP and for the benefit of future projects and practices.

It is important to ensure that any relevant documentation is filed and stored according to organisational and other relevant requirements.

This is important as it ensures information is kept and used efficiently, access is controlled and the system is reliable.

Filing of preparation records may include:

- General administration, e.g. letters, reports, memos, emails, faxes, receipts.
- Professional service and construction contracts, e.g. with specialists or consultants.
- Project matters, other than contractual, between stakeholders, road authorities and its agents.
- Design records, e.g. standards, procedures, specifications, drawings, plans, quotes, costs, feedback, versions.
- All records to demonstrate the achievement of the project requirements, contract requirements and compliance with legislation.

You need to ensure filing of preparation records is completed. Once filing is completed, you can submit costs and other reports.

Review Questions

10.	How should the level of detail required for a TMP be determined?	☐

11.	What are three (3) types of information you might find documented in a detailed TMP?	☐

1.

2.

3.

12.	What is a cost estimate?	☐

13.	What are two (2) cost estimation techniques?	☐

1.

2.

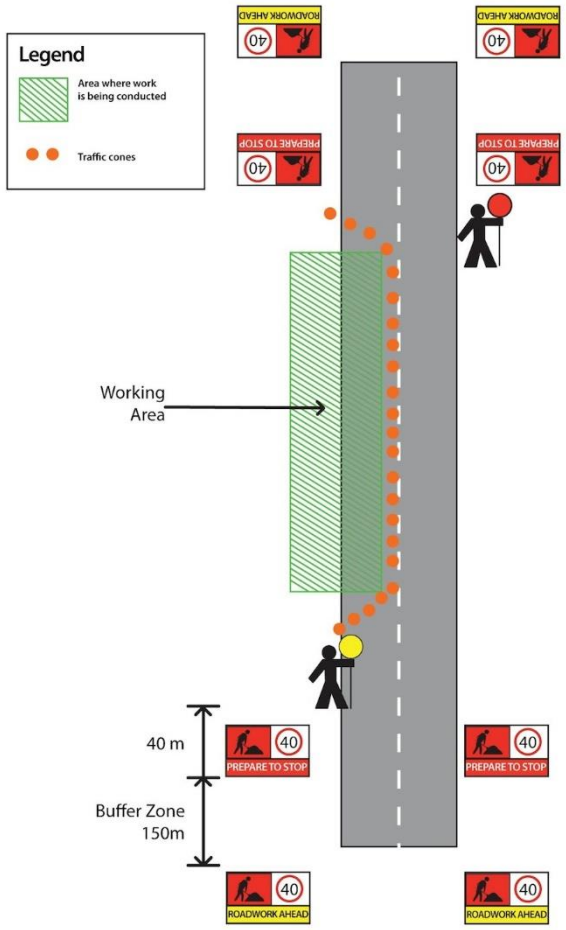
14.	What are three (3) reasons why you need to maintain documentation relevant to the TMP?	☐

1.

2.

3.

2.6 Traffic Guidance Scheme



A Traffic Guidance Scheme shows, on a diagram or sketch, the physical arrangement of temporary traffic control signs and devices, to warn traffic and guide it through, past or around a work area or temporary hazard.

It was previously known as a Traffic Control or Traffic Staging plan.

This may include:

- Warning signs, lights, markers.
- Cones, bollards, barriers.
- Road and footpath closures.
- Detours or side-tracks.
- Traffic controllers.

2.6.1 Scope Need for Traffic Guidance Scheme

As per AS1742.3:2019, a Traffic Guidance Scheme (TGS) is required for:

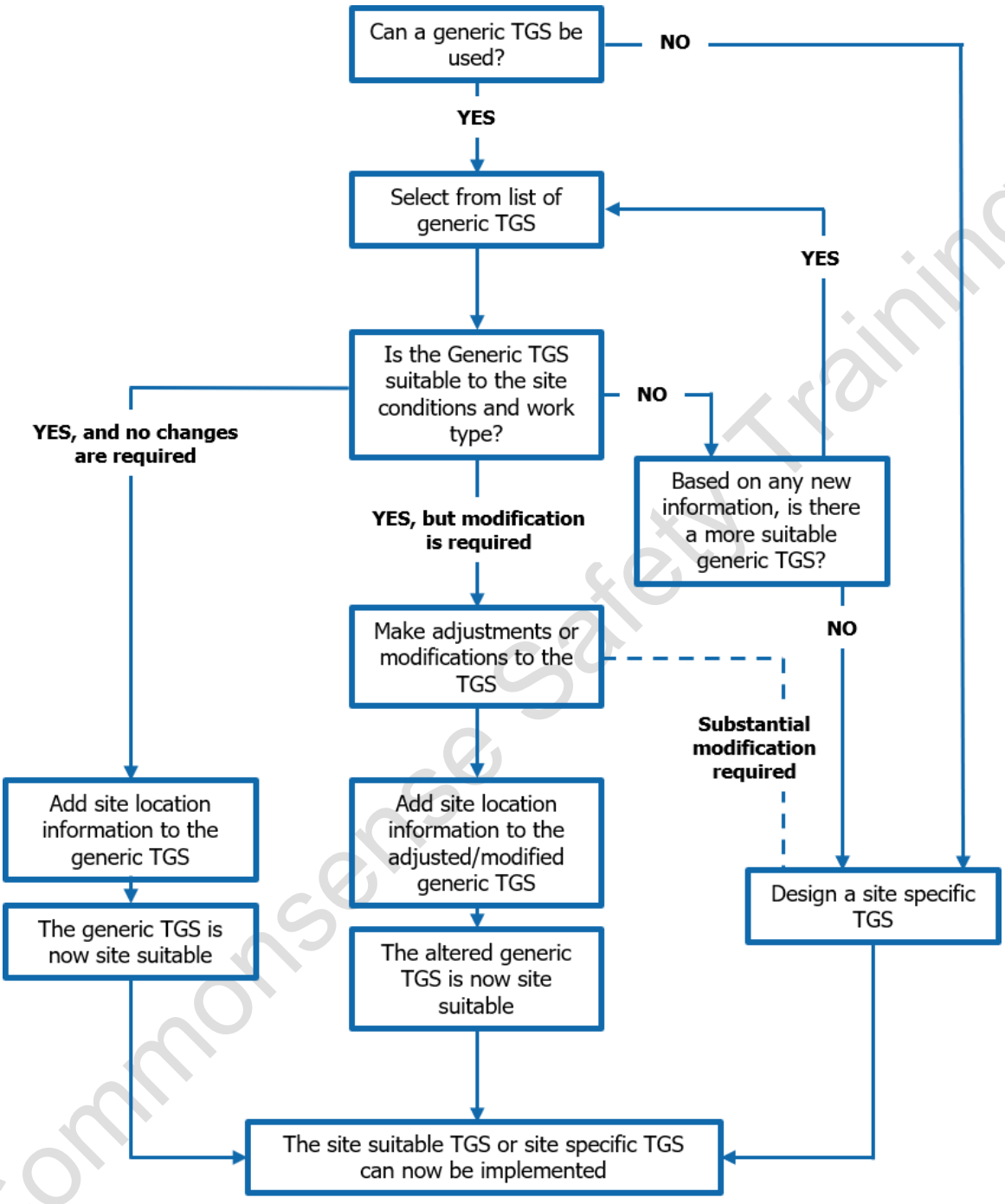
- Short-term and mobile works not involving road closure.
- Works involving relatively simple part-roadway closures.
- Works involving complex traffic arrangements or staging, or both.

There are three types of TGS:

- **Generic TGS** – TGS with no location, generally applicable to a number of situations.
- **Site Suitable TGS** – a generic TGS that has been reviewed alongside a site visit or investigation for it's relevance.
- **Site Specific TGS** – a TGS developed to be used at a specific road location for a specific type of work. Can also be a modified generic TGS.

2.6.2 Select, Modify and Design an Appropriate TGS

The following flowchart can be used to determine which type of TGS is required, and what changes you may have to make.



The AS1742.3:2019 provides standard diagrams for traffic guidance schemes across a range of work activities and worksites. While these may be convenient to work off, they should not be used as generic TGSs. Use them as guidelines only.

Review Questions

15.	What is one (1) situation in which you would need a TGS?	☐

16.	What are two (2) circumstances in which you would need to design a site specific TGS?	☐
	1. 2.	

2.7 Review Traffic Management Plan

Once cost estimates are complete, you can conduct a review of the preparation of the work zone traffic management plan.

The TMP preparation and development process evolves over time.

As the TMP evolves, it is important to reassess the management strategies to confirm that the work zone impacts are addressed and the necessary funding is available.

The preparation of a TMP can be a complex activity and can involve external and internal resources.

You may be able to improve your plan – aspects such as better strategies, practices, and adjustments – in order to ensure the work zone TMP will be operating as efficiently and effectively as possible during the period required.

2.7.1 Performance Review

A review of the preparation process aids in addressing its performance and managing future projects.

It is essential that you, and all members of your team, participate in a performance review of the preparation process.

Some questions to consider when conducting the review include:

- Which management strategies are either more or less effective in preparing TMPs?
- Are there combinations of strategies that seem to work well?
- Should TMP preparation policies, processes, procedures, standards, and/or costs be adjusted based on what has been observed or measured previously?
- Are the best decisions in planning and designing TMPs being made?

A review may highlight successes and failures, changes made to the preparation process and results of those changes, any feedback received, higher quality than what was predicted, cost for implementation of the strategies and suggested improvements.

2.7.1.1 Performance Monitoring

Performance measures for TMP monitoring can include:

- Cumulative impacts from adjacent construction activities.
- Incident response and clearance times.
- Volume.
- Travel time.
- Queue length.
- Delay.
- Number of incidents.
- Contractor incidents.
- Community complaints.
- User costs.

Performance monitoring requirements and performance measures should be based on policies, standards, and procedures, and could be included in the project contract documents when appropriate.

Techniques for gathering and reporting information can involve:

- Site visits and inspections.
- Traffic counts over predetermined time periods.
- Feedback from the community and public awareness campaigns.
- Interviews with workers in the field.
- Incident and accident reports.

2.7.2 Approval from Authorities

Once the TMP is complete, you need to seek approval. Approvals are typically required for specific activities during different phases of the project and for the final TMP.

Approvals associated with the general running and management of your project may be to:

- Grant funding.
- Determine timelines.
- Prepare further designs with input from appropriate specialists or consultants.
- Procure technology, plant or equipment.
- Meet project client or project sponsor requirements.

Approval procedures need to be followed. They can be:

Formal

Requires formal correspondence and signatures from different levels or organisations to 'release' the plan.

Informal

Based on delegated authority for expenditure limits.

Approval procedures may be documented and thus need to be followed with records kept and/or to form as an attachment to the TMP or other workplace project documentation.

Approvals associated with different authorities in different locations are generally required.

Authorities may include:

- Road authorities for the use and treatment of roads, or lanes within roads, road design, road signage, speeds and rest areas.
- Utility and service authorities to interrupt supply of services and/or move infrastructure.
- Local authorities to maintain landscaping and lighting as appropriate.

Authorities in different locations will follow different approval processes and need to be contacted individually. For example, utility providers may distinguish between complex works and low complexity works.

The TMP should show how road, utility and service authorities have been consulted with and their requirements complied with to gain approval. This may include items such as the risk analysis that was carried out and approval conditions, e.g. speeds for wet weather and interruption of supply services during certain hours.

Approval should be evidenced by a relevant reference number, contact details and/or attachments to the TMP.

If approvals have not been gained at the time of preparing the TMP, details of approvals yet to be obtained should still be included.

Review Questions

17.	What are three (3) points that a performance review may highlight?	☐

1.

2.

3.

18.	What are three (3) examples of authorities you may need to go to for approval of your TMP?	☐

1.

2.

3.

3.1 Implement a Traffic Management Plan

TMP preparation is finalised and the TMP is ready to be implemented.

Those who are responsible for the implementation will need your support, which may be provided through clarification of TMP details or giving advice.

Monitoring the performance of the work zone and that of the TMP during the construction phase is important.

It will enable you to see if the predicted impacts closely resemble the actual conditions in the field, and if the strategies in the TMP are effective in managing the impacts.

You need to review the application of the work zone traffic management plan and recommend any changes that may be required for continuous improvements.

3.1.1 Advise Personnel on Implementation

Clarification and advice you may need to supply may relate to:

- **Components of the TMP** – e.g. Are they all accounted for? Are they current?
- **Appropriate implementation techniques** – including a set-up sequence, and qualification of workers in the field.
- **Requirements for structure capabilities** – such as improvements to detour routes.
- **Operational techniques** – including components of the TMP that may need to be implemented prior to work zone construction, e.g. a public relations campaign.

Assistance may be provided through meetings, presentations, question-and-answer sessions or walk-through scenarios of the TMP. Once the details of the plan are clarified, the TMP can be implemented.

3.1.2 Tools and Equipment

Refer to AS1742.3:2019 for information on the selection and use of any traffic control signs and devices on civil construction worksites.

The Traffic Management Plan should state the types, sizes and numbers of signs and devices required for the project.

Information about technical capabilities and limits can be found in the operator manuals for each item.

Signage and devices required at all construction and maintenance sites will always include:

Temporary Warning Signs

Temporary warning signs are used to alert the public of changed conditions ahead, for example: Roadwork ahead; Prepare to stop; Workers (symbolic).

Traffic Cones

Traffic cones are generally used on short-term works to define the traffic path past or around the work area. Various sizes are available for different situations such as footpaths or freeways.

Other Signage and Devices

Other signage and devices that may be required depending on the nature and duration of the work include:

- Vehicle mounted signs and flashing lights.
- Guide and warning signs.
- Multi-message signs.
- Barriers.
- Hazard markers.
- Portable traffic signals.
- Bollards.
- Arrow boards.
- Tapers.

3.1.3 Traffic Guidance Scheme

In deciding what measures will be taken to set out the Traffic Guidance Scheme to control traffic movements around or through the works, consideration must be given to prevailing site conditions, traffic volumes and work activities.

Site conditions that could affect the setting out of the Traffic Guidance Scheme may include:

- All weather conditions.
- Varying terrain.
- Varying road surfaces.
- All vehicle types.
- Rural, urban or residential localities.
- Varying traffic volumes.
- All times of day.
- Varying road types.
- Congested urban environments.
- Low traffic rural areas.
- Off-road un-trafficked areas.
- Civil construction site.
- Buildings.
- Parking sites.
- Pedestrian areas.
- Road where civil construction work is conducted.

All of the following factors will influence decisions on traffic provisions:

- Traffic flow (one-way or two-way).
- Diversions and detours.
- Travel speeds.
- Traffic guidance devices and the use of traffic controllers.

Review Questions

1.	Why do you need to review the application of the TMP?	☐

2.	Where would you find information, instructions or guidelines for each of the following: **a.** Technical capabilities/limits of tools and equipment. **b.** Signs and devices required for the project. **c.** Information on selecting signs and devices.	☐
	a. b. c.	

3.	What three (3) things do you need to consider when implementing a TGS?	☐
	1. 2. 3.	

3.2 Review Changes

You need to participate in the review of the work zone traffic management plan preparation with your peers. This may include colleagues, team members, and stakeholders such as road authorities, contractors, and senior managers.

You can use the review to address the following requirements and outcomes:

- Were all compliance requirements adequately addressed and correct organisations contacted?
- How valid was the initial project brief?
- Has the scope of the project been consistent?
- How did we track against our preparation plan?
- How innovative have we been in traffic management strategies and options?
- How was the quality of data and specifications used?
- How well did tools and technology perform?
- Is the level of detail in the TMP as per project requirements?
- Are cost estimates within an acceptable range?
- Are we on time?

3.2.1 Continuous Improvement

A review with peers and stakeholders may highlight average versus excellent practices, lessons learned, skills and knowledge levels.

This knowledge can be used to improve the quality of the TMP.

For example, if any gaps in information were identified, these can be addressed. If information was incomplete, this can be expanded. If additional resources are needed, these may be able to be obtained.

You can continue to communicate with your peers and stakeholders to source further information, access contacts and specialists known to them, discuss sensitive or political issues, run ideas past them and gain from their experience.

The TMP is a '**dynamic document'** that must be maintained and revised with changes made by the project team.

If performance requirements are not met, you should revisit the TMP and consider or recommend alternative management strategies.

This could involve adjusting the duration and timing of the phases of the work zone project and hence the TMP, and/or adjusting when activities within the work zone are scheduled and therefore what traffic control devices are used.

Small adjustments can lead to greater efficiencies of traffic flow through and around the work zone.

Review Questions

4.	Who are three (3) people who may be involved in reviewing the TMP?	☐

1.

2.

3.

3.3 Validation

Once changes are recommended, the work zone traffic management plan can be validated.

Validation of the TMP is about substantiating whether or not it works. You need to contribute to the validation of the plan.

3.3.1 Evaluation of the Traffic Management Plan

You can use a monitor log, and/or prepare a short report that contains an evaluation of the TMP. The report may include:

- Successes and failures.
- Changes made to the TMP and results of those changes.
- Any feedback received from the public.
- Actual measurements of conditions versus what was predicted.
- Cost for implementation of the strategies.
- Suggested improvements.

The results of TMP validations can be useful in the process reviews, and vice versa. Collecting, analysing, and synthesising the findings from multiple projects can help in the development and implementation of future TMPs.

Review Questions

5.	What are three (3) elements that should be included in a TMP validation report?	☐

1.

2.

3.

Practical Assessment Instructions

The practical assessment consists of 6 individual assessments, which must be completed by the due date provided by your trainer/assessor.

Attach a completed and signed cover sheet with each assessment, along with any other documents relevant to the assessment.

All work must be your own. Please make sure all submitted documents are word processed, size 12 font and double spaced.

Conditions of Assessment

1. You are required to undertake an assessment for preparing a work zone traffic management plan in the civil construction industry.
2. The assessor will provide you with instructions about what you are required to do.
3. If you are unclear about what you have to do, ask the assessor before you start.
4. Each person must be assessed as being competent in each task even in situations where the work is completed by a team.
5. All assessments must be satisfactorily completed. If you do not satisfactorily complete an assessment a result of 'Not yet competent' will be recorded.

Achieving a Satisfactory Outcome

In order to achieve a satisfactory outcome for the practical assessment you will need to:

- Complete all assessments correctly.
- Demonstrate sufficient knowledge of the subject.
- Use reasonable methods or considerations to complete each assessment.
- Correctly explain principles when questioned by the assessor in an instance where the original work is unclear.
- Working with others, where necessary, to safely, effectively and efficiently achieve all outcomes of the tasks and assessments.

Practical Assessments

Assessment 1: Prepare to Create a Work Zone Traffic Management Plan (Occasion 1)

Gather, organise and document information and resources required to create the traffic management plan and create a preparation plan in conjunction with relevant team members by completing the following tasks. **Ensure you submit a completed preparation plan.**

a) Determine and document the project scope and size, considering the following factors:

- Details of job.
- Location.
- Schedule/start date.
- Plans, drawings and specifications.
- Traffic management plan briefs.
- Engineering survey information.
- Hydrological data.
- Meteorological data,
- Cultural and heritage data.
- Risk factors.
- Approval processes required.
- Past history of the site.
- Other projects taking place on or near the same site, and building developments.
- Changes in cultural and heritage requirements and procedures, additional council overlays, or zones, new finds or declarations in the local area.
- Factors likely to affect delivery of the road works project and traffic management plans.

b) Locate and apply health & safety documentation, policies and procedures relevant to the task including:

- Site safety requirements.
- Risk management.
- Traffic management.
- Environmental protection.

c) Carry out a risk assessment and document your findings including:

- Identifying potential hazards, constraints or conditions that will impact on the traffic management approach taken.
- Determining unacceptable risk associated with the identified hazards.
- Identifying appropriate control measures.

d) Access, interpret & analyse the following details to identify and document viable traffic control options:

- Human resource requirements.
- Review requirements.
- Design hardware and software.
- Current industry best practices.
- Scheduling and coordinating.
- Communication and reporting requirements.
- Traffic analysis data.
- Cultural and heritage data.
- Hydrological data.
- Engineering survey information.
- Meteorological data.
- Technical specifications.
- Plans and drawings.
- Traffic management plan brief.

e) Identify and prepare a written recommendation of the preferred traffic management option that best meets the required project outcomes by considering the following:

- General project matters.
- Safety specific matters.
- Design review principles and procedures.
- Principles of road user behaviour.

Assessment 2: Complete a Detailed Work Zone Traffic Management Plan (Occasion 1)

Prepare a detailed work zone traffic management plan in conjunction with relevant team members, covering the following requirements. **Ensure you submit a completed job plan.**

a) Prepare a detailed work zone traffic management plan providing details relating to the following components:

(i) General details:
- Project name, purpose, and scope.
- Responsibilities of the construction contractor and their contact details.
- Compliance requirements, details and follow up action/s.
- Location description.
- Directions to restrict.
- Traffic Management Objectives.
- Emergency contacts of responsible parties.
- Copies of Road Occupancy Licence application or obtained.
- Any other relevant information.

(ii) Works on road:
- Works scope and description.
- Details of works.
- Activities under traffic control.
- Staging of work.
- Roles, responsibilities, project representatives and traffic management administration.

(iii) Statutory requirements:
- Site safety requirements.
- Risk management.
- Traffic management.
- Environmental protection.

(iv) Planning:
- Risk assessment and safe work method statement for traffic control for the site.
- Capacity of traffic lanes and intersections.
- Speed zones, parking, and special events.
- Adjoining developments, sequence of works and night works.
- Hazards and what to do in emergencies.
- Consultation and communication.

(v) Implementation:
- Vehicle Movement Plan (VMP).
- Traffic Control Plan (TCP).
- Traffic Staging Plan (TSP).
- Provision for access to adjoining properties for pedestrians or cyclists.
- Design drawings.

(vi) Monitoring, measurement and reviews:
- Site inspections.
- Record keeping.
- Auditing.
- Feedback.

b) Compare existing and future traffic conditions and operations, with and without the proposed Traffic Management Plan management strategy, ensuring flow rates, level of service, capacities and percentages are calculated including:
- Engineering graphical presentation techniques.

c) Prepare cost estimates for your completed work zone traffic management plan, by:
- Calculating the cost of operational strategies for the work zone traffic management plan using appropriate estimation techniques.
- Calculating the cost of itemized work zone traffic management plan using appropriate estimation techniques.

d) Communicate clearly and concisely with other personnel to complete plan preparations including monitoring the progress of other team members involved in the preparation by:

(i) Participating in the review of the plan with peers and stakeholders to:
- Reassess the management strategies.
- Confirm that the work zone impacts have been addressed.
- Confirm the necessary funding is available.
- Highlight average versus excellent practices.
- Identify lessons learned.
- Identify skills and knowledge levels of team members.

Attach a copy of the minutes and/or notes for the review process and a report of any identified issues or improvement suggestions to your job plan.

(ii) Obtaining plan approval.
Attach a copy of all approval documentation to your job plan.

e) Finalise the preparation process including:

(i) Filing preparation records.
Attach a brief description of the filing system used to file your job plan.

(ii) Completing and submitting preparation costs and other reporting.
Attach a copy of all submitted cost and reporting documents to your job plan.

(iii) Participating in a performance review of the preparation process.
Attach a report detailing the outcomes and findings to your job plan.

Assessment 3: Support the Implementation of a Work Zone Traffic Management Plan Preparation (Occasion 1)

Demonstrate how to support the implementation of a work zone traffic management plan by completing the following:

a) Communicate clearly and concisely to provide clarification and advice to those applying the plan including details of:
- Components of the work zone traffic management plan.
- Appropriate implementation techniques.
- Requirements for structures capabilities.
- Operational techniques.

b) Provide continuous improvement recommendations by:
- Monitoring the work zone traffic management plan application through performance measures.
- Recommending alternative management strategies to better meet performance requirements.

Submit a report detailing any recommendations.

c) Contribute to the validation of the plan to substantiate its effectiveness and prepare a report with details of the following:
- Successes and failures.
- Changes made to the work zone traffic management plan and results of those changes.
- Feedback from the public.
- Actual versus predicted measurements of conditions.
- Cost of implementation.
- Suggested improvements.

Submit a copy of the report.

Assessment 4: Prepare to Create a Work Zone Traffic Management Plan (Occasion 2)

Gather, organise and document information and resources required to create the traffic management plan and create a preparation plan in conjunction with relevant team members by completing the following tasks. **Ensure you submit a completed preparation plan.**

a) Determine and document the project scope and size, considering the following factors:

- Details of job.
- Location.
- Schedule/start date.
- Plans, drawings and specifications.
- Traffic management plan briefs.
- Engineering survey information.
- Hydrological data.
- Meteorological data,
- Cultural and heritage data.
- Ricks factors.
- Approval processes required.
- Past history of the site.
- Other projects taking place on or near the same site, and building developments.
- Changes in cultural and heritage requirements and procedures, additional council overlays, or zones, new finds or declarations in the local area.
- Current industry best practice.
- Factors likely to affect delivery of the road works project and traffic management plans.

b) Locate and apply health & safety documentation, policies and procedures relevant to the task including:

- Site safety requirements.
- Risk management.
- Traffic management.
- Environmental protection.

c) Carry out a risk assessment and document your findings including:

- Identifying potential hazards, constraints or conditions that will impact on the traffic management approach taken.
- Determining unacceptable risk associated with the identified hazards.
- Identifying appropriate control measures.

d) Access, interpret & analyse the following details to identify and document viable traffic control options:

- Human resource requirements.
- Review requirements.
- Design hardware and software.
- Current industry best practices.
- Scheduling and coordinating.
- Communication and reporting requirements.
- Traffic analysis data.
- Cultural and heritage data.
- Hydrological data.
- Engineering survey information.
- Meteorological data.
- Technical specifications.
- Plans and drawings.
- Traffic management plan brief.

e) Identify and prepare a written recommendation of the preferred traffic management option that best meets the required project outcomes by considering the following:

- General project matters.
- Safety specific matters.
- Design review principles and procedures.
- Principles of road user behaviour.

Assessment 5: Complete a Detailed Work Zone Traffic Management Plan (Occasion 2)

Prepare a detailed work zone traffic management plan in conjunction with relevant team members, covering the following requirements. **Ensure you submit a completed job plan.**

a) Prepare a detailed work zone traffic management plan providing details relating to the following components:

(i) General details:
- Project name, purpose, and scope.
- Responsibilities of the construction contractor and their contact details.
- Compliance requirements, details and follow up action/s.
- Location description.
- Directions to restrict.
- Traffic Management Objectives.
- Emergency contacts of responsible parties.
- Copies of Road Occupancy Licence application or obtained.
- Any other relevant information.

(ii) Works on road:
- Works scope and description.
- Details of works.
- Activities under traffic control.
- Staging of work.
- Roles, responsibilities, project representatives and traffic management administration.

(iii) Statutory requirements:
- Site safety requirements.
- Risk management.
- Traffic management.
- Environmental protection.

(iv) Planning:
- Risk assessment and safe work method statement for traffic control for the site.
- Capacity of traffic lanes and intersections.
- Speed zones, parking, and special events.
- Adjoining developments, sequence of works and night works.
- Hazards and what to do in emergencies.
- Consultation and communication.

(v) Implementation:
- Vehicle Movement Plan (VMP).
- Traffic Control Plan (TCP).
- Traffic Staging Plan (TSP).
- Provision for access to adjoining properties for pedestrians or cyclists.
- Design drawings.

(vi) Monitoring, measurement and reviews:
- Site inspections.
- Record keeping.
- Auditing.
- Feedback.

b) Compare existing and future traffic conditions and operations, with and without the proposed Traffic Management Plan management strategy, ensuring flow rates, level of service, capacities and percentages are calculated including:
- Engineering graphical presentation techniques.

c) Prepare cost estimates for your completed work zone traffic management plan, by:
- Calculating the cost of operational strategies for the work zone traffic management plan using appropriate estimation techniques.
- Calculating the cost of itemized work zone traffic management plan using appropriate estimation techniques.

d) Communicate clearly and concisely with other personnel to complete plan preparations including monitoring the progress of other team members involved in the preparation by:

(i) Participating in the review of the plan with peers and stakeholders to:
- Reassess the management strategies.
- Confirm that the work zone impacts have been addressed.
- Confirm the necessary funding is available.
- Highlight average versus excellent practices.
- Identify lessons learned.
- Identify skills and knowledge levels of team members.

Attach a copy of the minutes and/or notes for the review process and a report of any identified issues or improvement suggestions to your job plan.

(ii) Obtaining plan approval.
Attach a copy of all approval documentation to your job plan.

e) Finalise the preparation process including:

(i) Filing preparation records.
Attach a brief description of the filing system used to file your job plan.

(ii) Completing and submitting preparation costs and other reporting.
Attach a copy of all submitted cost and reporting documents to your job plan.

(iii) Participating in a performance review of the preparation process.
Attach a report detailing the outcomes and findings to your job plan.

Assessment 6: Support the Implementation of a Work Zone Traffic Management Plan Preparation (Occasion 2)

Demonstrate how to support the implementation of a work zone traffic management plan by completing the following:

a) Communicate clearly and concisely to provide clarification and advice to those applying the plan including details of:
- Components of the work zone traffic management plan.
- Appropriate implementation techniques.
- Requirements for structures capabilities.
- Operational techniques.

b) Provide continuous improvement recommendations by:
- Monitoring the work zone traffic management plan application through performance measures.
- Recommending alternative management strategies to better meet performance requirements.

Submit a report detailing any recommendations.

c) Contribute to the validation of the plan to substantiate its effectiveness and prepare a report with details of the following:
- Successes and failures.
- Changes made to the work zone traffic management plan and results of those changes.
- Feedback from the public.
- Actual versus predicted measurements of conditions.
- Cost of implementation.
- Suggested improvements.

Submit a copy of the report.

Assessment 1 Cover Sheet

Learner Name:	
Unit:	RIICWD503E Prepare Work Zone Traffic Management Plan
Trainer/Assessor Name:	
Due Date:	

Document List:	Submitted
Preparation Plan	☐
	☐
	☐
	☐
	☐

All submitted assessments are to be word processed, size 12 font and double spaced.

Learner Declaration:

I certify that:

- ☐ I have not impersonated, or allowed myself to be impersonated by any person for the purposes of this assessment.
- ☐ This assessment is my original work and no part of it has been copied from any other source except where appropriate reference or acknowledgement is made.
- ☐ No part of this assessment has been written by any other person except where such collaboration has been authorised by the trainer/assessor concerned.
- ☐ I have not previously submitted this work for this or any other course/unit.

Learner Signature: _____ Date: _____

Assessment 2 Cover Sheet

Learner Name:	
Unit:	RIICWD503E Prepare Work Zone Traffic Management Plan
Trainer/Assessor Name:	
Due Date:	

Document List:	Submitted
Job Plan	☐
Minutes and/or Notes for the Review Process	☐
Report of Any Identified Issues or Improvement Suggestions	☐
Approval Documentation	☐
Description of the Filing System	☐
Cost and Reporting Documents	☐
Performance Review Report	☐
Feedback Received and Action Taken during Plan Verification	☐
List of Systems and Action Taken to Close Out	☐
	☐
	☐
	☐
	☐

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- ☐ I have not previously submitted this work for this or any other course/unit.

Learner Signature: _____ Date: _____

Assessment 3 Cover Sheet

Learner Name:	
Unit:	RIICWD503E Prepare Work Zone Traffic Management Plan
Trainer/Assessor Name:	
Due Date:	

Document List:	Submitted
Continuous Improvement Recommendations Report	☐
Validation Report	☐
	☐
	☐
	☐
	☐

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- ☐ I have not previously submitted this work for this or any other course/unit.

Learner Signature: _____ Date: _____

Assessment 4 Cover Sheet

Learner Name:	
Unit:	RIICWD503E Prepare Work Zone Traffic Management Plan
Trainer/Assessor Name:	
Due Date:	

Document List:	Submitted
Preparation Plan	☐
	☐
	☐
	☐
	☐

All submitted assessments are to be word processed, size 12 font and double spaced.

Learner Declaration:

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- ☐ I have not previously submitted this work for this or any other course/unit.

Learner Signature: _____ Date: _____

Assessment 5 Cover Sheet

Learner Name:	
Unit:	RIICWD503E Prepare Work Zone Traffic Management Plan
Trainer/Assessor Name:	
Due Date:	

Document List:	Submitted
Job Plan	☐
Minutes and/or Notes for the Review Process	☐
Report of Any Identified Issues or Improvement Suggestions	☐
Approval Documentation	☐
Description of the Filing System	☐
Cost and Reporting Documents	☐
Performance Review Report	☐
Feedback Received and Action Taken during Plan Verification	☐
List of Systems and Action Taken to Close Out	☐
	☐
	☐
	☐
	☐

All submitted assessments are to be word processed, size 12 font and double spaced.

Learner Declaration:

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- ☐ I have not previously submitted this work for this or any other course/unit.

Learner Signature: _____ Date: _____

Assessment 6 Cover Sheet

Learner Name:	
Unit:	RIICWD503E Prepare Work Zone Traffic Management Plan
Trainer/Assessor Name:	
Due Date:	

Document List:	Submitted
Continuous Improvement Recommendations Report	☐
Validation Report	☐
	☐
	☐
	☐
	☐

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Learner Signature: _____ Date: _____