



**Mining & Quarrying**  
OCCUPATIONAL HEALTH &  
SAFETY COMMITTEE

# Traffic Management Guide

Promoting Work Health and Safety in the Workplace

# The South Australian Mining and Quarrying Occupational Health and Safety Committee

## Promoting Work Health and Safety in the Workplace

This workplace industry safety resource is developed and fully funded by the Mining and Quarrying Occupational Health and Safety Committee (MAQOHSC).

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# Traffic Management Guide

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## AIM

The aim of this Guidance Material is to assist mines and quarries in how to manage roads and other vehicle operating areas, to reduce the risk of the hazards associated with vehicle and pedestrian movement and interaction around mines and quarries. It also provides information on preparing a Principal Mining Hazard Management Plan that identifies the hazards, assesses the risks and outlines risk control measures associated with roads and other vehicle operating areas in mines, quarries and exploration sites.

## Introduction

Managing traffic is essential to providing a safe workplace. Traffic can include cars, road trucks, dump trucks, forklifts, excavators, loaders, graders, mobile plant, drill rigs and pedestrians such as workers and visitors.

Vehicles including powered mobile plant moving in and around workplaces, reversing, loading and unloading are activities frequently linked with workplace injuries and fatalities.

Preparation of a detailed Traffic Management Plan and Principal Mining Hazard Management Plan along with implementation of measures identified in the approved plans is essential to ensure the safety of all workers at site. A detailed Traffic Management Plan will also assure the smooth operation of the sites road network.

### 1. Who has duties in relation to traffic management?

Under the *Work Health and Safety Act 2012 (SA)*, all persons who conduct a business or undertaking (PCBU) have a duty of care to ensure, so far as is reasonably practicable, that workers and other persons are not put at risk from work carried out as part of the business or undertaking.

In addition the *Work Health and Safety Regulations 2012 (SA)* identifies “roads and other vehicle operating areas” as a Principal Mining Hazard. To effectively control the risks, the mine operator must follow a risk management process and prepare and implement a Principal Mining Hazard Management Plan (PMHMP) which is included in the Work Health and Safety Management System (WHSMS).

### 2. Identification of the hazards

There are a number of ways to identify hazards at a mine or quarry. Some of these may include:

- a) Observing the site to identify areas where pedestrians and vehicles interact. Think about the layout of your site, if work is done close to high pedestrian areas, when traffic volumes are higher, where potential blind spots are and other areas of poor visibility;

- b) Consulting with your workers as they can provide valuable information about potential hazards; and
- c) Reviewing available information, including incident records, near miss reports and accident reports.

Trends or common problems can be identified from the information collected and may show locations or areas that are more hazardous. It could indicate a problem with the design and layout of that particular area of the site or the way work is carried out there. These trends may help in deciding which areas to address as a priority.

The types of vehicle activities conducted across the mine or quarry will indicate the sorts of hazards that may be present. The unwanted events associated with roads and other vehicle operating areas include:

- Vehicles rolling over;
- Vehicles going over edges;
- Ground failure onto or below vehicles;
- Collisions between vehicles;
- Uncontrolled movement of vehicles;
- Pedestrian interaction with vehicles;
- Vehicles contacting overhead power lines and structures;
- Contact with environmental hazards;
- Dust inhalation;
- Whole body vibration; and
- Slips trips and falls while getting onto or off vehicles.

**Note:** A checklist to assist you to identify traffic management hazards is available on the MAQOHSC website.

### 3. Assessing the risks

Assessing the risks will help the mine/quarry operator take the correct action to eliminate the risk or where this is not reasonably practicable, minimise the risks associated with roads and other vehicle operating areas. When undertaking a risk assessment to determine control measures, the following factors that contribute to the unwanted event occurring need to be considered:

1. Mobile plant characteristics, including stopping distances, manoeuvrability, operating speeds, driver position, driver line of sight, remote control mobile plant;
2. The effects of expected environmental conditions during operating periods including the time of day, visibility, temperature and the effects of weather on road conditions;
3. The impact of road design and characteristics including grade, camber, surface, radius of curves and intersections;
4. The impact of mine/quarry design including banks and steep drops adjacent to plant operating areas;
5. The potential for interactions between mobile plant with different operating characteristics including heavy and light vehicles, volume of traffic and speed of traffic;

6. The potential for interactions between mobile plant and pedestrians including consideration of park up areas and driver access;
7. The potential for interaction between mining mobile plant and public traffic; and
8. The potential for interaction between mobile plant and fixed structures including overhead and underground power lines, tunnel walls and roofs.

**Note:** *A Principal Mining Hazard – Roads and Other Vehicle Operating Areas Risk Assessment tool is available on the MAQOHSC website.*

## 4. Who is involved?

A risk assessment must be undertaken in consultation with your workers and their Health and Safety Representatives (if any), who will be using the road or vehicle operating area.

If there is more than one business or undertaking (e.g. contractors) involved at your workplace you must consult them and their workers as part of the risk assessment process.

It is often more effective to involve a team of people in the risk assessment process to draw on a range of knowledge and experience to ensure risks are eliminated or reduced so far as is reasonably practicable.

## 5. Controlling the risks

Work Health and Safety legislation requires a PCBU (mine / quarry operator) to do all that is reasonably practicable to eliminate or minimise risks.

The ways of controlling risks are ranked from the highest level of protection and reliability to the lowest. This ranking is known as the hierarchy of risk control. You must work through this hierarchy to manage risks.

The first thing to consider is whether hazards can be completely removed from the workplace. For example, risks can be eliminated by physically separating pedestrian routes from vehicle areas. This could be done by conducting activities at times when pedestrians are not present, using physical barriers or overhead walkways.

If it is not reasonably practicable to completely eliminate the risk then consider one or more of the following options in the order they appear below to minimise risks, so far as is reasonably practicable:

- a) Substitute the hazard for something safer e.g. replace forklifts with other load shifting equipment like a walker stacker or pallet jacks
- b) Isolate the hazard from people e.g. by creating a delivery area away from other pedestrians or work activities
- c) Use engineering controls e.g. speed limiters on dump trucks or presence sensing devices on loaders.

If after implementing the above control measures a risk still remains, consider the following controls in the order below to minimise the remaining risk, so far as is reasonably practicable:

- a) Use administrative controls e.g. warning signs or schedule delivery times to avoid or reduce the need for pedestrians and vehicles to interact; and
- b) Use personal protective equipment (PPE) e.g. high visibility clothing.

A combination of the controls set out above may be used if a single control is not enough to minimise the risks.

You need to consider all possible control measures and make a decision about which are reasonably practicable for your workplace. Deciding what is reasonably practicable includes the availability and suitability of control measures, with a preference for using substitution, isolation or engineering controls to minimise risks before using administrative controls or personal protective equipment. Cost may also be relevant, but you can only consider this after all other factors have been taken into account.

Due to roads and other vehicle operating areas being identified as a Principal Mining Hazard, you will need to take into account the following factors when establishing and managing risk controls for mine and quarry roads.

1. Design of the roads and operating areas, such as
  - i. Terrain and geotechnical considerations
  - ii. Prevailing weather and environmental conditions
  - iii. Primary Roads design, construction and maintenance
  - iv. Secondary roads design, construction and maintenance
  - v. Road widths
  - vi. Road gradients
  - vii. Road curvature – Vertical and Horizontal
  - viii. Sight distance
  - ix. Stopping distances
  - x. Drainage
  - xi. Road surface
  - xii. Edge protection
  - xiii. Intersections
  - xiv. Parking areas
  - xv. Overhead power lines and structures
  - xvi. Dumps and pads
  - xvii. Workshops and fixed plant areas
  - xviii. Runaway vehicle provisions
2. Construction and Maintenance
3. Separation and Segregation of Vehicles and Pedestrians
4. Restricted Access Exclusion Zones
5. Vehicle Selection
6. Communications
7. Lighting
8. Traffic rules
9. Signage
10. Training
11. Inspections and monitoring

**Note:** *The Principal Mining Hazard – Roads and Other Vehicle Operating Areas Risk Assessment tool, available on the MAQOHSC website takes into account the above factors and provides guidance on each.*

## 6. Traffic Management Plans

As part of your risk control measures, a detailed Traffic Management Plan will need to be developed. A Traffic Management Plan should include (but is not limited to) the following:

1. A description of the vehicles used onsite and works conducted
2. Responsibilities of people managing traffic in the workplace
3. Responsibilities of people expected to interact with traffic in the workplace
4. Instructions or procedures for controlling traffic including in an emergency
5. Traffic flows and directions
6. Speed limits
7. Rights of way on roads and at intersections
8. Controls for light vehicles interacting with heavy vehicles and mobile plant
9. Buildings, e.g.: offices, workshops, stores, packing sheds, etc.
10. Emergency and evacuation assembly points
11. Signage
12. Weighbridges
13. Restricted areas, exclusion zones and shared zones
14. Fuel storage locations
15. Stockpiles
16. Loading areas
17. Tarping and tie down areas
18. Visitor parking
19. Equipment parking
20. Delivery and drop off areas
21. Land marks such as dams, rivers, bridges, railways, etc.
22. Services such as power lines
23. Communication used on site

A Traffic Management Plan should be regularly monitored and reviewed and importantly following an incident or near miss, to ensure it is effective and takes into account changes at the workplace. You should ensure workers are familiar with the Traffic Management Plan and you should provide information, instruction and training on its use.

## 7. Information, training, instruction and supervision

Before any vehicles or mobile plant is used on your site you must provide anyone who will use it with the information, training, instruction or supervision necessary to protect them and others from the risks associated with roads and other vehicle operating areas in the workplace.

Workers including contractors who are required to perform duties associated with traffic management at the workplace should be trained to perform those duties. Training should be provided to workers by a competent person.

Responsibilities for health and safety management must be clearly allocated. It is important each worker, contractor, subcontractor, visiting driver and other relevant people clearly understand their role in following safe work practices and taking reasonable care of themselves and others.

You should provide supervision to ensure safety procedures are being followed, particularly if you are relying on administrative control measures to minimise risks.

You must ensure so far as is reasonably practicable, everyone who has access to your workplace including visitors are provided with information necessary to protect them from risks to their health and safety, for example instructions on designated safe routes, parking areas, pedestrian exclusion zones and speed limits. This could be addressed through an induction process at your workplace.

Visitors should report to the reception area or site office and be given information on the safety procedures for the workplace before they are allowed into areas where vehicles and powered mobile plant are used.

## 8. Review of control measures

It is important to monitor risks and check the control measures to ensure they remain effective. *Work Health and Safety Regulations 2012 (SA)* requires a review of the control measures to be undertaken whenever there are any changes associated with the road or other vehicle operating areas.

In undertaking the review, workers using the road or vehicle operating area, their Health and Safety Representatives (if any) and other PCBUs and their workers must be consulted.

The following questions should be considered:

1. Are the control measures working effectively in both their design and operation?
2. How effective is the risk assessment process? Are all hazards being identified?
3. Are workers actively involved in the risk management process? Are they openly raising health and safety concerns and reporting problems promptly?
4. Have new work methods or new equipment made the job safer?
5. Is the Traffic Management Plan effective and accurate?
6. Are safety procedures being followed?
7. Has instruction and training provided to workers been successful?
8. If new legislation or new information becomes available, does it indicate current controls may no longer be the most effective?

## **FURTHER ASSISTANCE**

MAQOHSC Work Health and Safety Specialists are available to provide further advice and assistance on all Work Health and Safety matters.

MAQOHSC Work Health and Safety Specialists are able to be contacted via our website at [www.maqohsc.sa.gov.au](http://www.maqohsc.sa.gov.au) or email [maqohsc@sa.gov.au](mailto:maqohsc@sa.gov.au).

## **ADDITIONAL INFORMATION**

Work Health and Safety Legislation, Codes of Practice, fact sheets, Health and Safety Representatives (HSR) information and guides can be found at the following websites:

SafeWork SA – [www.safework.sa.gov.au](http://www.safework.sa.gov.au) or call 1300 365 255

Safe Work Australia – [www.safeworkaustralia.gov.au](http://www.safeworkaustralia.gov.au), or call 1300 551 832

## **REFERENCES**

*Work Health and Safety Act 2012 (SA)*

*Work Health and Safety Regulations 2012 (SA)*

How to Manage Work Health and Safety Risks, Code of Practice (SafeWork SA)

Roads and Other Vehicle Operating Areas, Draft Code of Practice (Safe Work Australia)

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