Code of practice

Emergency preparedness for mines in Western Australia

MIAC and DMP RSD logos

Foreword

Basis for code of practice

This code of practice is issued by Resources Safety under the *Mines Safety and Inspection Act 1994*, with the endorsement of the Mining Industry Advisory Committee (MIAC) and approval from the Minister for Mines and Petroleum.

A code of practice is a practical guide to achieving the standards of occupational safety and health required under legislation. It applies to anyone who has a duty of care in the circumstances described in the code. In most cases, following a code of practice would achieve compliance with the duties in the legislation in relation to the subject matter of the code. However, like regulations, codes of practice deal with particular issues and do not cover all hazards or risks that may arise. Duty holders need to consider all risks associated with work, not only those for which regulations and codes of practice exist.

Codes of practice are admissible in court proceedings. Courts may regard a code of practice as evidence of what is known about a hazard, risk or control and may rely on the code in determining what is reasonably practicable in the circumstances to which the code relates. However, compliance with the legislation may be achieved by following another method, such as a technical or an industry standard, if it provides an equivalent or higher standard of work health and safety than the code.

An inspector may refer to an approved code of practice when issuing an improvement or prohibition notice.

Scope and application

This code of practice will assist those involved with emergency preparedness in Western Australia to meet their legislative obligations for work health and safety under the *Mines Safety and Inspection Act 1994*.

It is designed to provide guidance on:

- emergency response systems used in surface and underground mines and quarries
- developing and evaluating safe work procedures for such systems.

This code of practice has been developed by the Department of Mines and Petroleum in collaboration with mine operators and original equipment manufacturers (OEMs). It focuses on:

- identification of the unique risk profiles in relation to operating mines
- emergency preparedness at mine sites.

The provisions of this code of practice apply to all mines as defined in section 4(1) of the Act, except those extracting coal by underground mining.

Who should use this code of practice?

You should use this code of practice if you have functions and responsibilities for planning, designing, implementing and maintaining emergency response systems. The code of practice may also be useful for supervisors, operations personnel, and safety and health representatives who need to understand the hazards associated with emergency response systems.

How to use this code of practice

The code of practice includes references to both mandatory and non-mandatory actions.

The words "must" or "requires" indicate that legal requirements exist, which must be complied with. The word "should" indicates a recommended course of action.

Contents

Appendices .... Error! Bookmark not defined.

1   Introduction

1.1   Aims

The potentially hazardous nature of mining operations, and often remote locations where they are carried out, mean that being prepared for an emergency situation is critical to the health and safety of personnel. Emergency preparedness involves understanding the likelihood of an emergency situation and its potential consequence, and being prepared to mitigate its effects, respond effectively, and recovering afterwards. Effective emergency preparedness means that there are plans in place for all foreseeable emergency scenarios so the response is comprehensive and coordinated.

The aims of this code of practice are to:

- describe the key variables or factors to be considered when emergency response activities are undertaken, including hazard identification and risk management

- assist with establishing an emergency plan as part of the site's safety management system, including incident management systems

- outline the broader occupational health and safety requirements for undertaking emergency response in accordance with the *Mines Safety and Inspection Act 1994* and Mines Safety and Inspection Regulations 1995.

The code of practice promotes a proactive approach to the introduction and application of an emergency plan to safeguard employees.

The general duty of care applies to all stakeholders, including equipment designers, manufacturers, suppliers, mine operators and emergency responders.

Emergency preparedness involves:

- risk assessment – identifying and analysing the risks associated with potential emergency scenarios

- prevention – determining appropriate control measures to eliminate or reduce the impact of the identified risks

- preparedness – implementing control measures, including emergency response plans, to minimise the likelihood of emergencies

- response – implementing the emergency response plan

- recovery – conducting a post-emergency review of the effectiveness of the emergency plan and emergency response activities so they can be revised as necessary.

Emergency preparedness includes rescue methods, training and competence of emergency response team volunteers, operation and maintenance of equipment, to achieve the desired safety outcomes for both surface and underground operations.

1.2   Structure of this code of practice

Chapter 2 describes the risk-based approach to preparing for an emergency and managing emergency response.

Chapter 3 summarises the requirements for emergency management planning, including foreseeable scenarios, resourcing, site specific circumstances and documentation.

Chapter 4 describes emergency resources and equipment.

Chapter 5 summarises personnel requirements, with training and competency requirements outlined in Chapter 6.

Guidance on incident management is provided in Chapter 7.

Appendix 1 lists the legislative provisions that apply to mining activities in general.

Appendix 2 lists relevant Australian and International Standards, and other applicable guidance is provided in Appendix 3.

Appendix 4 lists emergency response equipment to consider.

Appendix 5 provides an example template for an emergency response team application.

Appendix 6 provides an example emergency plan (table of contents).

1.3   Stakeholder roles and responsibilities

There are three main groups involved in emergency preparedness:

- employers – those who operate the mine (e.g. managers, operators, contractors, maintainers)
- emergency management team (incident management and emergency response team) – those who are called to bring an emergency situation under control, rescue casualties and return the mine to normal operations
- suppliers – those who design, manufacture, import and supply equipment.

Employers

The responsibilities of operators should include:

- conducting an initial site risk assessment to determine mining risks
- understanding the risks associated with mining and putting in place appropriate controls
- developing safe work procedures for the mine
- developing an emergency plan
- providing emergency response resources
- including emergency response in mine design and change management processes
- training mine personnel in relation to emergency response procedures (e.g. evacuation, fire suppression, first aid)
- conducting regular emergency simulations and post-incident analysis.

Emergency management team

The responsibilities of the emergency management team should include:

- conducting a risk assessment of credible incident scenarios
- establishing an emergency response capability (e.g. facilities, equipment and personnel) to respond to credible scenarios
- developing safe work procedures for emergency response (including training exercises)

- conducting emergency response competency training

- maintaining equipment to the original equipment manufacturer's (OEM's) recommendations.

Suppliers

The responsibilities of suppliers should include:

- evaluating credible emergency response scenarios, and designing and developing suitable emergency response equipment

- designing and manufacturing emergency response equipment to relevant standards

- establishing performance specifications

- identifying hazards, and assessing and eliminating or reducing risks

- sharing residual risk information with the operator for inclusion in the operator's emergency plan

- providing information and instructions on the use of equipment, with regard to

  - operation, maintenance and servicing

  - trouble-shooting procedures

  - performance parameters

  - safety alerts.

2 Safety and risk management process

2.1 Introduction

The site should conduct a principle mining hazard risk assessment to identify all major threats and impacts to a mining operation, and the control measures that need to be implemented to reduce the risk to an acceptable level. The international risk management process model ISO 31000:2009 *Risk management – Principals and guidelines* should be used.

Emergency events can introduce hazardous situations not normally encountered on a mine site. An emergency response risk assessment should be conducted to determine credible emergency events faced by the site. This may require input and advice from operational groups and subject matter experts.

The risk management process should address the following questions.

- What credible incidents may occur at an operation?
- What are their potential consequences and likelihood in terms of emergency management?
- What controls are available and how effective are they?

2.2 Communication and consultation

Communication and consultation are fundamental for effective risk management. Employers need to seek assistance from their key stakeholders to identify hazards and risks at the operation and appropriate measures to control them.

2.3 Information for risk management

Mining operations should be able to demonstrate that hazards associated with mining operations and emergency response are controlled so far as is practicable by considering issues such as:

- identification of specific risks and provision for regular reviews of controls
- any previous events or information (e.g. incident and injury reports, data from similar operations)
- suitability of established work procedures (e.g. separation, inspection and maintenance processes)
- the provision and competency of operational and support personnel (e.g. assessment of knowledge and training needs)
- emergency response capability.

2.4 Hazard identification

Hazard identification systems that can be used to identify credible emergency scenarios include:

- a hazard and operability study (HAZOP)
- work inspections
- change management

- employee hazard identification and reporting procedures

- monitoring the working environment

- incident investigations (e.g. ICAM, TapRoot)

- monitoring OEM and supplier bulletins, recommendations and specifications

- regulator safety alerts.

Some credible emergency scenarios are listed in Section 3.2.

2.5   Risk analysis

At the risk analysis stage, the nature of the risk is assessed and the risk level is determined. Factors to consider include:
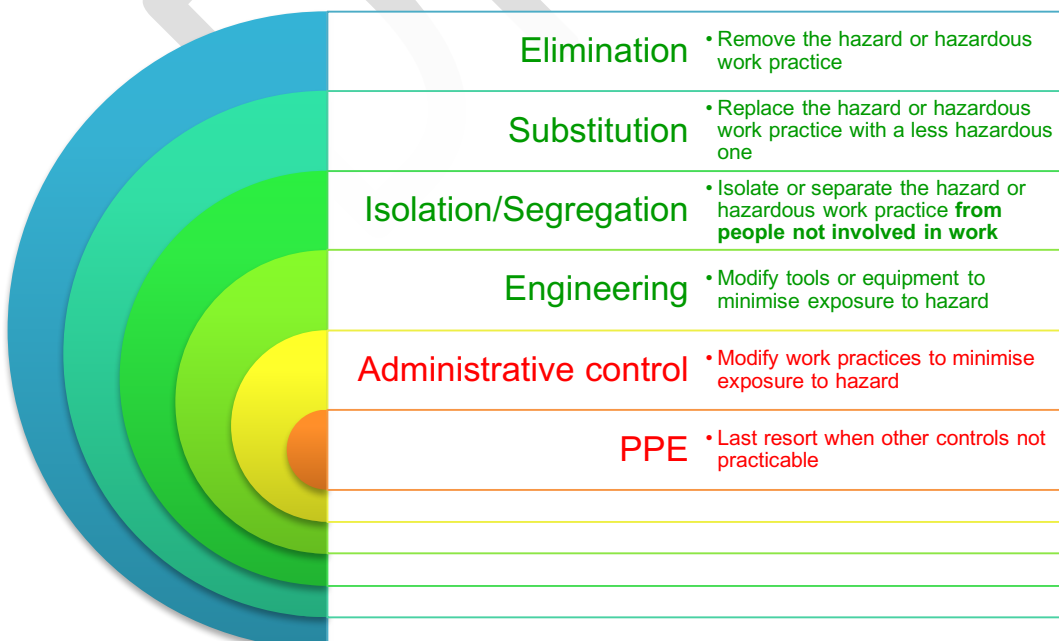
- likelihood of an incident

- potential severity of any injury, consequence or damage.

It is important that those undertaking a risk assessment have the necessary information, training, knowledge and experience of:

- the operational environment (e.g. scale, complexity and physical environment of mining activities)

- operational processes (e.g. maintenance systems, work practices, interaction, separation)

- emergency response.

2.6   Risk evaluation and management

All hazards and risks related to emergency response activities need to be identified and controlled. This is best done by applying the hierarchy of control. Higher-order control measures eliminate or reduce the risk more effectively than administrative controls or personal protective equipment.

Elimination	• Remove the hazard or hazardous work practice
Substitution	• Replace the hazard or hazardous work practice with a less hazardous one
Isolation/Segregation	• Isolate or separate the hazard or hazardous work practice **from people not involved in work**
Engineering	• Modify tools or equipment to minimise exposure to hazard
Administrative control	• Modify work practices to minimise exposure to hazard
PPE	• Last resort when other controls not practicable

Prevention and management controls should be based on established processes and relevant standards, including:

- implementing critical controls
- operational and maintenance safe work procedures (SWPs)
- competency-based training and assessment of workers
- supervision and management oversight
- effective change management processes
- use of fit-for-purpose equipment
- separation of emergency response personnel from significant hazards, such as poor ground
- the use of aids such as online monitoring, drones and robots.

Emergency response action plans should be developed for all major emergency events identified by the risk assessment process.

It is advisable to implement primary controls that:

- avoid the risk by deciding not to start or continue with the activity (e.g. cease operations during adverse weather or seismicity)
- remove the source of the risk (e.g. isolate or provide alternative access for personnel not directly involved with the activity)
- change the likelihood (e.g. restrict specific functions to authorised personnel)
- change the consequence (e.g. modify access).

2.7   Documentation

The results of the risk assessment need to be formally documented in the operation's hazard and risk registers, detailing the:

- nature of credible scenarios
- consequences and likelihood of each scenario
- controls used to mitigate each risk to an acceptable level, so far as is practicable.

The documentation of this information forms the basis of the site's emergency plan and safety management system.

2.8   Monitoring and review

To ensure the effectiveness of controls is maintained at the site, a monitoring and review program should be implemented that includes inspections, testing and auditing of the emergency plan and emergency response procedures.

As part of the site's validation process, responsibilities and accountabilities should be clearly defined and assigned, and may include independent auditing. The findings should be used to:

- confirm that the recommendations of previous reviews have been actioned
- confirm that appropriate responses have been made to any incidents or issues arising

- verify compliance with specifications (e.g. inspection, monitoring, quality control)
- ensure site practices comply with the emergency plan.

3 Emergency management planning

3.1 Introduction

Emergency management and response planning should be carried out with input and advice from operational groups and subject matter experts using the risk management approach outlined in Chapter 2.

3.2 Emergency management

The development of plans to adequately manage any given emergency situation is best done under distinct category headings:

- crisis management plan
- emergency plan
- incident management control plans.

This approach is recommended to avoid duplication and repetition in regard to who is responsible for addressing a particular aspect of an emergency situation.

Crisis management plan

The crisis management plan is a document designed to cover the emergency management of the global aspects of a mine site emergency.

The document is aimed at managing the external stakeholders in an emergency and does not aim to provide guidelines for managing the specific site of the emergency. As such this component of an emergency plan is best managed at a corporate level. The crisis management plan provides a system for the overall management of an emergency, consisting of identified responsibilities for key personnel to protect the company's employees, operations, business and reputation.

The items addressed in a crisis management plan include the following:

- dealing with external authorities and stakeholders (e.g. Department of Mines and Petroleum, WA Police, Environmental Protection Authority, media)
- arranging external services such as counselling, notification of next of kin, transport, accommodation, and food, for any extended activities at the mine site
- advising the board, shareholders and other stakeholders of potential implications arising from the event, such as loss of reputation, and prolonged shutdown of the site
- advising external parties of disrupted production at the site, which could involve suppliers engaged in deliveries to the site, or customers expecting delivery of product from the site
- establishing defined and well understood links with the site's emergency plan.

Emergency plan

The emergency plan is a document covering the factors to be managed during an emergency at site level. The legislative requirements of the plan are detailed in regulation 4.30 of the Mines Safety and Inspection Regulations 1995.

The purpose of the emergency plan is to:

- minimise the level of risk to life, property and the environment as a result of an emergency situation

- identify the resources (e.g. people, equipment, information, knowledge) necessary to ensure that, when used effectively, minimise that risk

- provide guidance for all employees on what to do in emergencies.

The person responsible for coordinating the response is the most senior person on site who has direct control of the area where the emergency incident is located — they assume the role of the incident controller.

The response may require the partial or total evacuation of site personnel to designated safe points (e.g. emergency muster points, refuge chambers).

Due to the diverse nature of potential emergencies, covering a range of situations and arising from internal (operational activities) and external (environmental events) causes, it is recommended that emergency plans be developed for a range of specific scenarios, rather than relying upon one generic response plan. For example, possible emergency scenarios include:

- surface events, including those occurring in open pits and processing plants

- underground events such as fires, entrapment, and loss of ventilation

- environmental disasters including bushfires, flash floods, cyclones

- man-made events, such as bomb threats, armed hold-ups.

The development and implementation of the emergency plan should be undertaken in consultation with the workforce, external agencies, emergency services and neighbouring mutual aid sites.

Incident management control plans

Incident management control plans should be developed for foreseeable scenarios applicable to the operation, such as:

- fire

- vehicle accident

- aircraft accident

- rail accident

- medical event

- fall from height

- confined space

- engulfment

- chemical or fuel release

- natural event (e.g. cyclone, earthquake, flooding)

- lost person(s)

- explosives accident

- mechanical failure

- electrical incident

- gas release or explosion

- rockfall

- other.

Further useful information based on real-life emergencies may be obtained from industry safety alerts.

Guidance on developing emergency plans is available on the Department's website, and a sample table of contents is included in Appendix 6.

4 Emergency resources and equipment

4.1 Introduction

Based on the risk profile or assessment, sites need to demonstrate their commitment to the emergency plan by obtaining the resources and equipment necessary to carry out the plan. Each individual site has its own potential hazards and needs. Wherever possible, local professional services should be integrated into the site emergency plan (e.g. fire brigade, ambulance service).

Where sites rely on external agencies, they need to consider their minimum resources and their capability to provide adequate immediate response, given the external agencies may have other priorities. Equipment should be appropriately stored in a building that allows for its storage and maintenance.

4.2 Resources

Resources for emergency management should be determined based on risk assessment and site-specific circumstances. The following areas should be considered:

- internal personnel
  - full-time emergency services staff
  - volunteer team members
- facilities
  - incident management room
  - emergency response team room
  - medical centre
- equipment
  - alarm systems (e.g. fixed, portable)
  - communications (e.g. internal, mobile and satellite phones, two-way radios)
  - emergency response
  - medical
- vehicles
  - ambulance
  - fire
  - emergency or rescue
  - other vehicles (e.g. watercarts, loaders, dozers, cranes)
- external support
  - mutual aid with neighbouring sites
  - Royal Flying Doctor Service (RFDS)
  - local police
  - local hospitals and nursing posts
  - medical provider

- Department of Fire and Emergency Services (DFES)
- Department of Mines and Petroleum (DMP)
- Bureau of Meteorology (BOM)
- local shire
- Local Emergency Management Advisory Committee (LEMAC)
- State Emergency Services (SES)
- Department of Health
- Civil Aviation Safety Authority (CASA)
- Department of Parks and Wildlife (DPaW)
- environmental agencies
- other external personnel.

4.3   Personnel

Adequate personnel need to be allocated for emergency planning and response based on the size and nature of the operation. Systems and structures should be developed with key personnel and assistance from subject matter experts. Refer to Chapter 5.

4.4   Facilities

Fit-for-purpose facilities need to be established in proximity to the operations, and have appropriate access and egress. Consider the following features:

- control room(s)
- adequate room to store, clean and maintain emergency response equipmen
- adequate room to provide first aid to injured persons (including eye wash, shower, toilet)
- areas for skills-based training
- parking or garaging for emergency vehicles.

4.5   Equipment

Sufficient equipment needs to be purchased and kept operationally ready to be able to achieve the emergency response plan. The type of equipment required will be determined by the risk assessment process and the size and nature of the operation. Appendix 4 lists equipment to consider. Consideration should also be made for the following:

- training and maintenance requirements
- maintaining suitable consumable levels (e.g. soda lime, oxygen, PPE)
- wear and tear of equipment
- replacement program
- contingency plans for equipment when out of service for maintenance
- access to mutual aid equipment
- safety sata sheets (SDS) for chemicals.

The following communications equipment should be available:

- telephone communications, including land lines, mobile phones, and satellite phones

- two-way radios, including VHF, UHF and CB frequencies.

- computers with internet and email capabilities.

4.6   Maintenance

To achieve the desired safety outcomes, maintenance activities for emergency response equipment should adequately address matters such as:

- scheduled maintenance and inspection processes based on OEM recommendations

- calibration and testing of specific equipment

- cleaning, sterilisation (where required) and storage

- training to maintain equipment

- inspections by qualified technicians (e.g. annual)

- inspection and maintenance checklists, logs, repairs and servicing records

- access to manufacturer's manuals.

4.7   Vehicles

Suitable vehicles need to be available to transport patients, fight fires and respond to emergencies. These vehicles need to be fitted with response equipment and adequately maintained. The type of vehicle required will be determined by the risk assessment process, and the size and nature of the operation. Consideration should also be made for the following:

- four wheel drive

- diesel engines

- height clearance

- visibility

- storage accessibility

- scheduled maintenance and inspection processes.

4.8   External support

Relationships and links with neighbouring sites and external support agencies should be established, particularly when developing a new site. When consulting, the following should be considered:

- the resources that can be contributed to respond to emergencies at the mine

- access, equipment compatibility and response framework

- response time

- memoranda of understanding.

5 Personnel

5.1 Introduction

Competent emergency leadership that is supported by first aid personnel and emergency responders is fundamental to effective emergency preparedness. The personnel required will be determined by the risk assessment process and size and nature of the operation.

5.2 Roles and responsibilities

It is important to establish systems and structures to implement the emergency plan. Responsibilities should be documented for the following roles:

- site management
  - registered manager
  - health and safety manager
  - emergency response coordinator
  - support services (e.g. scribe)
  - specialist advice (e.g. ventilation, geotechnical)
  - security
- site nurse or paramedic
- emergency response team (ERT).

Note: Some of these roles may be combined for smaller operations.

5.3 Selection of emergency response team

When selecting an ERT member, it is important to consider:

- the application process
- a medical assessment
- a psychological assessment
- a physical assessment.

Appendix 5 is an example template of an ERT application.

5.4 Fitness of emergency response team

The work of emergency response is unpredictable, occurring at extremely short notice, and is usually physically and psychologically demanding. It therefore requires individuals who are in good health and have an adequate level of fitness for the role. Important considerations to maintain the necessary fitness levels include:

- use of medical practitioners with knowledge of emergency response requirements
- testing of applicants before starting in teams
- use of personal trainers or gyms to improve and maintain fitness levels
- use of on-site nurses, paramedics and rehabilitation coordinators

- annual review of medical, psychological and fitness assessments.

6 Training and competency

6.1 Introduction

The provision of information, instruction, training and supervision is an essential component of any safe system of work.

Training and competency assessment are important to ensure all employees, including emergency responders, can effectively implement the site's safe systems of work and emergency plan. Training may be:

- formal industry-based with accredited and certificated courses
- undertaken on site while being supervised or mentored using competent trainers and assessors, with the trainer competent in the subject matter
- a combination of these approaches.

A training needs analysis will help identify the required competencies, training needs and skill gaps for the site and individual workers.

The training strategy adopted should take into account the functions of each worker, and provide them with the necessary skills and knowledge to enable them to do their work safely.

In-house training should be specific for the mine, covering:

- the type of tasks and working environments likely to be encountered
- appropriate use of the equipment provided.

Assessment of competency should be evidence based, recorded and verified before work commences.

6.2 Training

Training needs analysis

A training needs analysis should be undertaken to determine training and verification of competency requirements for the incident management team and ERT members by:

- identifying the required competencies to perform the role, job or task
- identifying current competencies of personnel
- identifying the gaps
- planning and implementing a means of filling the gaps.

This may involve:

- questionnaires and interviews
- practical tasks observations
- third party reports
- training records
- resumés.

Training records

For auditing purposes, a formal record should be kept of training conducted, both accredited and non-accredited. Records to be kept include:

- name of person who received training
- dates and times when training was provided
- specific details of what was covered
- duration of the training sessions or courses
- how the training was assessed.

A training matrix will assist in identifying training needs to be addressed, and help maintain a record of all training that has been delivered.

Emergency response and other relevant training

Emergency response team training may include:

- inductions
- regular training dates (e.g. weekly or monthly)
- nationally accredited training by qualified trainers or assessors
- licensing (e.g. heavy duty vehicles)
- vocational and professional courses
- emergency exercises.

Nationally accredited training topics that should be considered as mandatory for ERT personnel include:

- provide first aid
- open circuit breathing apparatus
- hazardous materials (HAZMAT)
- road crash rescue
- firefighting
- vertical rescue
- confined space rescue.

Underground topics include:

- closed circuit breathing apparatus
- underground search and rescue
- underground firefighting
- refuge chambers.

Additional training for consideration will depend upon the risk assessment for each operation, and may include:

- advanced first aid

- land search and rescue

- suppression of wildfire

- emergency vehicle driving

- gas testing

- working at height

- confined space entry.

The nationally accredited qualification for mine emergency response is the *Certificate III in Mine Emergency Response and Rescue*. Information about this standard is available on the Australian Quality Training Framework (AQTF) website at www.training.gov.au

Vocational and professional courses are available for coordinators and trainers. These usually involve part-time study at a college or university, and lead to a qualification at Certificate IV or Diploma level.

6.3   Emergency drills and exercises

Emergency response plans should be regularly tested to ensure their effectiveness. Both desktop tests and emergency response drills involving all on-site personnel should be carried out for the major foreseeable scenarios.

The following actions are recommended:

- conduct at least one physical drill each year for all crews

- conduct at least one desktop drill each year for the incident management team

- prepare briefing notes and reports during drills and exercises.

Debriefings should be conducted as soon as practicable after each drill or emergency to help identify potential improvements to the emergency plan. The need for counselling should be considered and activated as appropriate via the employee assistance program.

6.4   Emergency response competitions

Emergency response competitions provide an opportunity for ERTs to test their skills in scenarios that are as close as possible to real-life.

In the event that identified skills (risk profile) are *not* tested in training or in real life within two years, attendance at a suitable competition is recommended.

Reports generated by the competition provide a learning opportunity for improvement.

7　Incident management

The nature and location of many mining operations in regional and remote communities means that their ERTs may be called upon to assist with incidents on site and in the community.

The State Government has established State, District and Local Emergency Management policies, plans, procedures and guidelines to assist with emergency management, which is managed by committees at a Local, District or State level, depending on the impact of the incident. Further information can be found at www.semc.wa.gov.au

Incident management systems provide a common operating framework that allows for a structured and coordinated response within which agencies can work together effectively. Combat and emergency authorities throughout Australia currently use the Australasian Inter-service Incident Management System (AIIMS) to facilitate the effective and efficient coordination of all activities by all parties involved. AIIMS is also used by a number of mining companies in emergency management. Further information is available from the Australian and New Zealand National Council for Fire, Emergency Services and Land Management at www.afac.com.au

During emergency situations, quick but considered decisions are needed. To minimise confusion, it should be clear who is in charge and who is responsible for key actions. Action plans should be developed to assist with the discharge of duties, such as:

- trigger action response plans
- emergency action plans
- crisis management duty cards
- incident management duty cards
- emergency response plans.

Trigger action response plans (TARPs)

Established from the site's risk profile, TARPs are specific response plans developed for the management of particular scenarios or emergency events. They can form the basis for ERT training programs.

Emergency action plan sheets

Emergency action plan sheets should be developed for all major emergency events identified from the risk assessment process. They should cover:

- the event
- hazards, risks and consequences
- response strategy for the ERT
- emergency response equipment required.

The emergency action plan sheets also provide the incident controller with an overview of the response strategy that the ERT will apply to the emergency event. This will assist the incident controller when deciding whether or not to commit the ERT to respond to the incident.

When managing an incident at a mine, a select group of personnel should be available to

assist the incident controller in managing the incident.

Crisis management team and incident management team – duty cards

The roles played and the duties assigned to each of the management teams should be detailed in a series of documents called duty cards.

While the number and content of these duty cards may vary from site to site, the most common and essential roles are described below:

- *incident controller* – responsible for setting and achieving objectives

- *scribe* – also known as a record keeper, this role is extremely important as the accurate recording of events, as the emergency develops and unfolds, is not only essential for managing the incident, but may also be called upon at a later date, for legal purposes

- *communications officer* – provides a buffer and filter for the incident controller for incoming and outgoing communications

- *logistics officer* – sometimes called the planning officer, this role is responsible for accessing the resources required to manage the incident

- *ventilation officer* – the mine ventilation officer should be utilised to provide advice and expertise regarding the impact the incident may have upon the mine ventilation system (reliance on this information is usually more critical in underground emergencies).

- *security* – also known as the muster warden or tag board coordinator, this role accounts for all personnel entering and leaving the incident site, as well as those unaccounted for

- other duty card roles assigned may include human resources, media, or next of kin, but, to relieve pressure on the on-site incident controller, these functions are better performed by personnel at the corporate or crisis management team level.

Communication

Access to reliable communications during an emergency situation is essential to the ability to manage the event. The availability of modern electronic communications provides this service, but over reliance upon one type of communication should be avoided. Multiple channels of communication should be established between all parties involved in responding to the emergency. This includes the crisis management team to incident controller, incident controller to ERT, and general across-site communications.

The key factor in any communications network is redundancy and back up. Black spots in either phone or radio networks should be identified and covered by an alternate method of communicating.

All communications during an incident should be timely, succinct and, as far as possible, in plain language.

Emergency response plans

A critical element of preparedness is the development of emergency response plans for identified emergency scenarios. Emergency response plans assign responsibilities and procedures in the event of an emergency. These should be clearly documented to manage any given emergency and providing clear instruction to all stakeholders. They should:

- be written in plain English

- be compiled and laid out to facilitate quick access to important information

- include appropriate use of illustrations, such as up-to-date maps and diagrams

- include a site profile (e.g. open cut, underground)

- identify site-specific hazards and risks

- be available to all personnel on site.

There should be document review and control procedures that ensure emergency response control plans are maintained and current. The following information should be included:

- how to raise the alarm

- duties of the person responsible for implementing the emergency response plan

- duties of site personnel during an emergency

- contact information for persons or agencies that may need to be contacted during an emergency

- assignment of emergency response duties

- contact details and specific competencies for personnel trained in first aid, communications systems and other specialist fields (e.g. firefighting)

- communication systems that will ensure all personnel are kept informed during an emergency, and the relevant external agencies are promptly informed and updated as the emergency response unfolds

- training in the plan

- identification of muster points

- provision for evacuation of injured personnel

- provision for site evacuation (including accommodation where provided)

- location of potential transfer sites for emergency transport vehicles

- equipment and facilities identified in the risk assessment as being necessary to deal with an emergency (e.g. first aid, firefighting and rescue equipment), including equipment and services from external sources for remote sites

- first aid training for all workers, and other training as appropriate (e.g. communications equipment, firefighting).

Appendix 1 – Legislative provisions

The parts of the *Mines Safety and Inspection Act 1994* and Mines Safety and Inspection Regulations 1995 that are applicable to this code of practice are listed below.

Mines Safety and Inspection Act 1994

Part 1 – Preliminary

Section 4   Terms used

Part 2, Division 2 – General duties

Section 9   Employers, duties of

Section 10   Employees, duties of

Section 11   Duty to report some occurrences and situations

Section 11A   Mine manager's duties when s. 11 report received

Section 12   Employers and self-employed persons, duties of

Section 14   Plant designers etc., duties of

Part 7, Division 2 – Accidents and occurrences

Section 76   Accidents involving disabling injury to be notified

Section 78   Some occurrences at mines to be notified and recorded

Section 79   Some potentially serious occurrences to be notified

Mines Safety and Inspection Regulations 1995

Part 3   Management of mines

Part 4   General safety requirements

Part 6   Safety in using certain types of plant in mines

Part 10   Specific requirements for underground mines

Part 13   Surface mining operations

Note: The only authorised versions of the Act and regulations are those available from the State Law Publisher (www.slp.wa.gov.au), the official publisher of Western Australian legislation and statutory information.

Other legislation

Other relevant legislation includes the following Acts and their subsidiary legislation:

- *Dangerous Goods Safety Act 2004*
- *Bush Fires Act 1954*

- *Poisons Act 1964*
- *Emergency Management Act 2005*

Appendix 2 – Selected standards

Examples of Australian Standards (www.standards.org.au) that may apply to emergency preparedness and response are listed below.

Note: This list is not exhaustive but gives an indication of the many aspects to be considered.

Safety lifecycle (risk assessment)

AS/NZS ISO 31000 *Risk management – Principles and guidelines*

Emergency response

Breathing apparatus

AS/NZS 1715 *Selection, use and maintenance of respiratory protective equipment*

AS/NZS 1716 *Respiratory protective devices*

AS 2030.1 *Gas cylinders – General requirements*

AS 2030.2 *The verification, filling, inspection, testing and maintenance of cylinders for the storage and transport of compressed gases – Cylinders for dissolved acetylene*

AS 2030.4 *The verification, filling, inspection, testing and maintenance of cylinders for the storage and transport of compressed gases – Welded cylinders – Insulated*

AS 2030.5 *Gas cylinders – Filling, inspection and testing of refillable cylinders*

AS 2337.1 *Gas cylinder test stations – General requirements, inspection and tests – Gas cylinders*

AS 3848.2 *Filling of portable gas cylinders – Filling of portable cylinders for self-contained underwater breathing apparatus (SCUBA) and non-underwater self-contained breathing apparatus (SCBA) – Safe procedures*

Working at height

AS 1353.1 *Flat synthetic-webbing slings – Product specification*

AS 1353.2 *Flat synthetic-webbing slings – Care and use*

AS 1891.1 *Industrial fall arrest systems and devices – Harnesses and ancillary equipment*

AS 1891.2 *Industrial fall arrest systems and devices – Horizontal lifelines and rail systems*

AS 1891.3 *Industrial fall arrest systems and devices – Fall arrest devices*

AS 1891.4 *Industrial fall arrest systems and devices – Selection, use and maintenance*

AS 4142.1 *Fibre ropes – Care and safe usage*

AS 4142.2 *Fibre ropes – Three-strand hawser-laid and eight-strand plaited*

AS 4142.3 *Fibre ropes – Man-made fibre rope for static life rescue lines*

AS 4143.1 *Methods of test for fibre ropes – Dimensions, linear density, breaking force and*

elongation

AS 4143.2 *Methods of test for fibre ropes – Knotability and knot breaking force*

AS 4143.3 *Methods of test for fibre ropes – Sheath slippage*

AS 4143.4 *Methods of test for fibre ropes – Impact strength index*

AS 4143.6 *Methods of test for fibre ropes – Resistance to abrasion*

AS/NZS 4488.1 *Industrial rope access systems – Specifications*

AS/NZS 4488.2 *Industrial rope access systems – Selection, use and maintenance*

AS 4497.2 *Roundslings – Synthetic fibre – Care and use*

Confined spaces

AS 2865 *Confined spaces*

HB 213 *Guidelines for safe working in a confined space*

Fire

AS/NZS 1221 *Fire hose reels*

AS/NZS 1841.1 *Portable fire extinguishers – General requirements*

AS/NZS 1841.2 *Portable fire extinguishers – Specific requirements for water type extinguishers*

AS/NZS 1841.3 *Portable fire extinguishers – Specific requirements for wet chemical type extinguishers*

AS/NZS 1841.4 *Portable fire extinguishers – Specific requirements for foam type extinguishers*

AS/NZS 1841.5 *Portable fire extinguishers – Specific requirements for powder type extinguishers*

AS/NZS 1841.6 *Portable fire extinguishers – Specific requirements for carbon dioxide type extinguishers*

AS/NZS 1841.7 *Portable fire extinguishers – Specific requirements for vaporizing liquid type extinguishers*

AS/NZS 1850 *Portable fire extinguishers – Classification, rating and performance testing*

AS 1851 *Routine service of fire protection systems and equipment*

AS 2444 *Portable fire extinguishers and fire blankets – Selection and location*

AS 2792 *Fire hose – Delivery layflat*

AS 2700 *Colour standards for general purposes (colour chart)*

AS/NZS 4067 *Protective helmets for structural firefighting*

AS/NZS 4821 *Protective footwear for firefighters – Requirements and test methods (EN 15090:2012, MOD) (Ruling 1 to AS/NZS 4821:2014)*

AS/NZS 4824 *Protective clothing for firefighters – Requirements and test methods for protective clothing used for wildland firefighting (ISO 15384:2003, MOD)*

AS/NZS 4967 *Protective clothing for firefighters – Requirements and test methods for protective clothing used for structural firefighting*

First aid

AS 2472 *Valves for medical gas cylinders*

AS 2488 *Resuscitators intended for use with humans*

AS/NZS 2496 *Breathing attachments for anaesthetic purposes for human use*

AS 4259 *Ancillary devices for expired air resuscitation*

HAZMAT

AS 2931 *Selection and use of emergency procedure guides for the transport of dangerous goods*

AS 3780 *The storage and handling of corrosive substances*

AS 3961 *The storage and handling of liquefied natural gas*

AS/NZS 4081 *The storage and handling of liquid and liquefied polyfunctional isocyanates*

AS/NZS 4503.1 *Protective clothing – Protection against liquid chemicals – Test method: Resistance of materials to permeation by liquids*

AS/NZS 4503.2 *Protective clothing – Protection against liquid chemicals – Test method: Determination of resistance to penetration by a jet of liquid (jet test)*

AS/NZS 4503.3 *Protective clothing – Protection against liquid chemicals – Test method: Determination of resistance to penetration by spray (spray test)*

AS/NZS 5026 *The storage and handling of Class 4 dangerous goods*

AS/NZS 6529 *Protective clothing – Protection against chemicals – Determination of resistance of protective clothing materials to permeation by liquids and gases*

Personal protective equipment (PPE)

AS 1801 *Occupational protective helmets*

AS/NZS 2210.1 *Safety, protective and occupational footwear – Guide to selection, care and use footwear*

AS/NZS 2210.2 *Occupational protective* footwear *– Test methods (ISO 20344:2004, MOD)*

AS/NZS 2210.3 *Occupational protective* footwear *– Specification for safety footwear (ISO 20345:2004, MOD)*

AS/NZS 2210.4 *Occupational protective* footwear *– Specification for safety footwear (ISO 20346:2004, MOD)*

AS/NZS 2210.5 *Occupational protective* footwear – *Specification for safety footwear (ISO 20347:2004, MOD)*

AS/NZS 4501 Set *Occupational protective clothing – Set*

Miscellaneous

AS 3745 *Planning for emergencies in facilities*

Appendix 3 – Further information and guidance

Safe Work Australia

Safe Work Australia (www.safeworkaustralia.gov.au) has model codes of practice that may be useful, including:

- *Confined space*, February 2016
- *Emergency response at Australian mines*, July 2011 [draft]
- *First aid in the workplace*, February 2016
- *Managing risks of hazardous chemicals in the workplace*, July 2012
- *Managing the risks of falls at workplaces*, March 2015

Department of Mines and Petroleum

The Department of Mines and Petroleum (www.dmp.wa.gov.au) has codes of practice, guidelines and significant incident reports that may be useful, including:

- *Emergency* preparedness – audit guide and template, November 2015
- *Fitness for mine rescue personnel – guideline*, December *1997*
- *Prevention of fires in underground mines – guideline*, October 2013
- *Refuge chambers in underground mines – guideline*, September 2013
- *Working at height in underground mines – guideline*, October 2014
- Mines Safety Significant Incident Report No. 111 *Team member collapsed*
- Mines Safety Significant Incident Report No. 131 *Drill rig fire – self-rescuer failed*
- Mines Safety Significant Incident Report No. 137 *Emergency response team member struck by falling oxygen cylinder*
- Mines Safety Significant Incident Report No. 173 *Employee burnt while setting up fire scenario for emergency response training*

Appendix 4 – Emergency response equipment

Based on the risks, size and type of operation, equipment considerations should include:

- breathing apparatus (open or closed circuit)
- breathing apparatus test unit(s)
- oxygen cylinders (spare)
- cylinder recharging facilities
- entry control board
- distress signal units
- firefighting equipment
- rescue equipment to recover from height or depth
- equipment to protect against exposure to chemicals
- first aid equipment
- cutting, lifting and spreading equipment
- auxiliary equipment for:
  - communication
  - fans
  - gas detection
  - lighting
  - route marking
  - transport
- PPE for team (e.g. adequate turnouts, gloves, boots, overalls, hard hats).

Appendix 5 – Example template for emergency response team (ERT) application

Name of applicant:	Shift:
Company:	Position:
Supervisor:	Supervisor's phone number:

Why do you wish to join the ERT?

Skills and experience:

Relevant certificates/qualifications:

Please attach photocopies of any relevant certifications or qualifications to the application form.

Is there any reason why you may not be able to participate in any of the following? *(Please tick)*

Physical exertion or activity: Yes ☐ No ☐

Working in a confined space: Yes ☐ No ☐

Working at height: Yes ☐ No ☐

Fire fighting (incl. wearing a breathing apparatus):   Yes ☐ No ☐

If you answered "yes" to any of the above, please give details:

ERT membership expectations

ERT members need to be prepared to:

- attend emergency situations, as directed
- be clean shaven at all times (in accordance with AS/NZS 1715 Appendix B).
- train and work as a team
- attend regular on-site skills maintenance training sessions
- attend a minimum of 75% of training programs in the year
- attend appropriate nationally accredited on-site and/or off-site training to give them the skills required to become an effective team member (this may include a five-day block release training or daily sessions)
- maintain an appropriate level of physical fitness for your role
- undergo a medical assessment (this may be assessed on an annual basis)
- be vaccinated as required (e.g. hepatitis).

While on site, ERT members should:

- be easily identifiable as a team member at all times

- be on call at all times, including participating in an after hour's roster (this may include carrying a hand-held radio or mobile phone)

- comply with the fitness-for-work policy, including while on call

- take responsibility for the site rescue equipment and their personal protective equipment, ensuring all equipment is fully operational, clean and in a state of readiness at all times.

Team member's commitment

As an active member, I hereby commit to the overall success of the ERT. I will perform all my duties in a safe manner and commit to the following:

- spending personal time maintaining my fitness

- familiarising myself with site procedures and emergency response equipment

- following the instructions of the emergency response coordinator

- complying with the roles and responsibilities of an ERT member.

Our commitment to you

Management will ensure the following to yourself and other team members:

- provide clear, organised and structured training

- provide all essential equipment and personal protective equipment

- promote open and honest communications

- offer required vaccinations.

Declaration of compliance

As an ERT member, I understand my roles and responsibilities and hereby agree to abide by all conditions as mentioned above.

Applicant's signature:	**Date:**

Supervisor's and manager's approval

I hereby approve the above-named person's application to join the ERT. I understand and acknowledge that the demands of training necessitate periodic absences from the workplace, and I fully support this person's involvement in meeting the necessary requirements to establish and maintain a functional ERT.

Supervisor's signature:	**Date:**
Manager's signature:	**Date:**

Emergency management advisor approval

The above candidate has completed the ERT medical and fitness review and is deemed suitable / not suitable to join the ERT.

Coordinator's signature:	Date:

Appendix 6 – Example emergency plan

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