

CODE OF PRACTICE

Emergency management for Western Australian mines



Government of Western Australia
Department of Mines, Industry Regulation and Safety

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Foreword

Basis for code of practice

This code of practice is issued by the Department of Mines, Industry Regulation and 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 occupational safety and health than the code.

Scope and application

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

It is designed to provide guidance on:

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

The code focuses on:

- identification of the unique risk profiles in relation to operating mines
- emergency management 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 management systems. The code of practice may also be useful for supervisors, operations personnel, and safety and health representatives who need to understand the responsibilities associated with emergency management.

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.



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1 Introduction

1.1 Aims

The potentially hazardous nature of mining operations, and their often remote locations, mean that being prepared for an emergency situation is critical to the safety and health of personnel. For the purposes of this code of practice, the term *emergency* means a serious, unexpected, and often dangerous situation, and encompasses an *emergency* as defined in section 3 of the *Emergency Management Act 2005*.

Emergency management involves understanding the likelihood of an emergency situation and its potential consequences, being prepared to mitigate its effects, responding appropriately, and recovering afterwards. Effective emergency management 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 a site's safety management system
- outline the broader occupational safety and health requirements for undertaking emergency response in accordance with the *Mines Safety and Inspection Act 1994* and *Mines Safety and Inspection Regulations 1995*.

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

Emergency management involves:

- risk assessment – identifying the hazards and analysing the risks associated with potential emergency scenarios and mines emergency response training exercises
- prevention – determining appropriate control measures to eliminate or reduce the impact of the identified risks
- preparedness – developing a safety management system, which includes preparation and training for emergencies
- response – implementing the emergency plan
- recovery – returning to normal operations and conducting a post-emergency review of the effectiveness of the emergency plan and emergency response activities so they can be revised as necessary.

Emergency management includes having the appropriate resources, rescue methods, training and competency of emergency response team (ERT) members, operation and maintenance of equipment, to achieve the desired safety and health outcomes.

The workforce needs to understand its role in the emergency plan.

1.2 Structure of this code of practice

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

Chapter 3 summarises the requirements for emergency management planning, including identifying 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 relevant to emergency management.

Appendix 2 lists relevant Australian and international standards, and other applicable guidance is provided in Appendix 3. Appendix 4 contains a glossary.

Appendix 5 lists emergency response equipment to consider.

Appendix 6 provides an example of a template for an emergency response team member application.

Appendix 7 provides an example table of contents of an emergency plan.

1.3 Stakeholder roles and responsibilities

The general duty of care to take reasonable care for worker safety applies to all stakeholders. There are four main groups involved in emergency management:

- principal employer
- site management – those who operate the mine (e.g. managers, operators, other employers, contractors, maintainers)
- emergency management team, including incident management and emergency response teams – 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.

Principal employer

The principal employer must make such financial and other provisions as are necessary to ensure, so far as is practicable, that the mine is planned, laid out, managed, and worked in accordance with legislation.

The principal employer must be able to demonstrate that hazards associated with mining operations and emergency response are controlled so far as practicable. This is done 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)
- provision and competency of operational and support personnel (e.g. assessment of knowledge and training needs)
- emergency response capability.

Site management

The responsibilities of managers should include:

- conducting an initial site risk assessment to determine mining risks
- understanding those risks and putting in place appropriate controls
- developing safe work procedures for the mine.

In relation to emergency management, managers are responsible for:

- developing an emergency plan
- providing emergency response resources
- including emergency response in mine design and change management processes
- evaluating and procuring suitable emergency response equipment
- training mine personnel about emergency response procedures (e.g. evacuation, fire suppression, first aid)
- conducting regular ERT training, including emergency simulations and post-incident analysis.

Emergency management team

The emergency management team needs to plan for foreseeable emergencies and respond to an emergency. The responsibilities of the emergency management team should include:

- conducting a risk assessment of foreseeable incident scenarios
- establishing an emergency response capability (e.g. facilities, equipment, personnel) to respond to foreseeable 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:

- designing and manufacturing emergency response equipment to relevant standards
- establishing performance specifications
- identifying hazards associated with the equipment and eliminating or reducing risks
- sharing residual risk information with the operator for inclusion in the operator's emergency plan
- providing information and instructions about
 - the operation, maintenance and servicing of equipment
 - trouble-shooting procedures
 - performance parameters
 - safety alerts
 - restrictions and limitations.

2 Risk management

2.1 Introduction

Emergency events can introduce hazardous situations not normally encountered on a mine site. The site should conduct a comprehensive site-wide risk assessment to identify all major foreseeable emergency events that could impact on the mining operation and its personnel. This should be followed by an emergency response risk assessment to identify hazards associated with the response. This may require input and advice from operational groups and subject matter experts.

The risk management process should address the following questions.

- What foreseeable incidents may occur at the operation or during an emergency response to an incident?
- Have all major hazards been identified?
- What potential consequence and likelihood does each hazard pose?
- What controls are available and how effective are they?

The risk management process should be carried out prior to an operation commencing or when substantial changes are made to the operation.

2.2 The risk management process

Risk management involves:

- identifying the hazards
- assessing the risks
- making the changes necessary to eliminate the hazard or minimise the risk of injury or harm.

The steps involved in risk management are shown in Figure 1.

Planning

To start the risk management process, it is important to identify who should take part, the legislative requirements, and information that may assist with the process.

Hazard identification

The risk assessment should focus on identifying the foreseeable emergency events, associated hazards and their causes. A typical line of questioning is shown below.

- What could happen?
- How could it happen?
- When, where and why could it happen and to whom?

A variety of processes and tools can be used for the risk identification process, and should include:

- outcomes from other relevant risk assessments and employee hazard identification and reporting processes
- outcomes from incident investigations
- regulator communications such as safety alerts.

Some foreseeable emergency scenarios are listed in Section 3.2.

Note: When assessing the hazards and risks related to emergency scenarios, it is also important to consider how these might impact on emergency response personnel. The dynamics of these hazards and risks could be quite different from how they relate to the general workforce, and should therefore be given appropriate attention in the context of emergency response.

Risk analysis and assessment

The risk level for each scenario is then determined by the potential consequence of an event and the likelihood of that consequence occurring. It is important to assess the effectiveness of existing controls prior to estimating consequence and likelihood.

Those undertaking a risk assessment should 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
- risk assessment training.

Risk control

Control actions are implemented to reduce risk as far as is practicable. These actions typically aim to improve existing controls that are deficient, or implement new controls as required.

All foreseeable hazards and risks related to emergency response activities need to be identified and controlled. This is best achieved by applying the hierarchy of control measures (Figure 2). Higher-order control measures eliminate or reduce the risk more effectively than administrative controls or personal protective equipment. Some controls are critical, and need to be identified and included in the emergency plan.

The planned actions for all major emergency events identified by the risk assessment process should be included in the emergency plan.

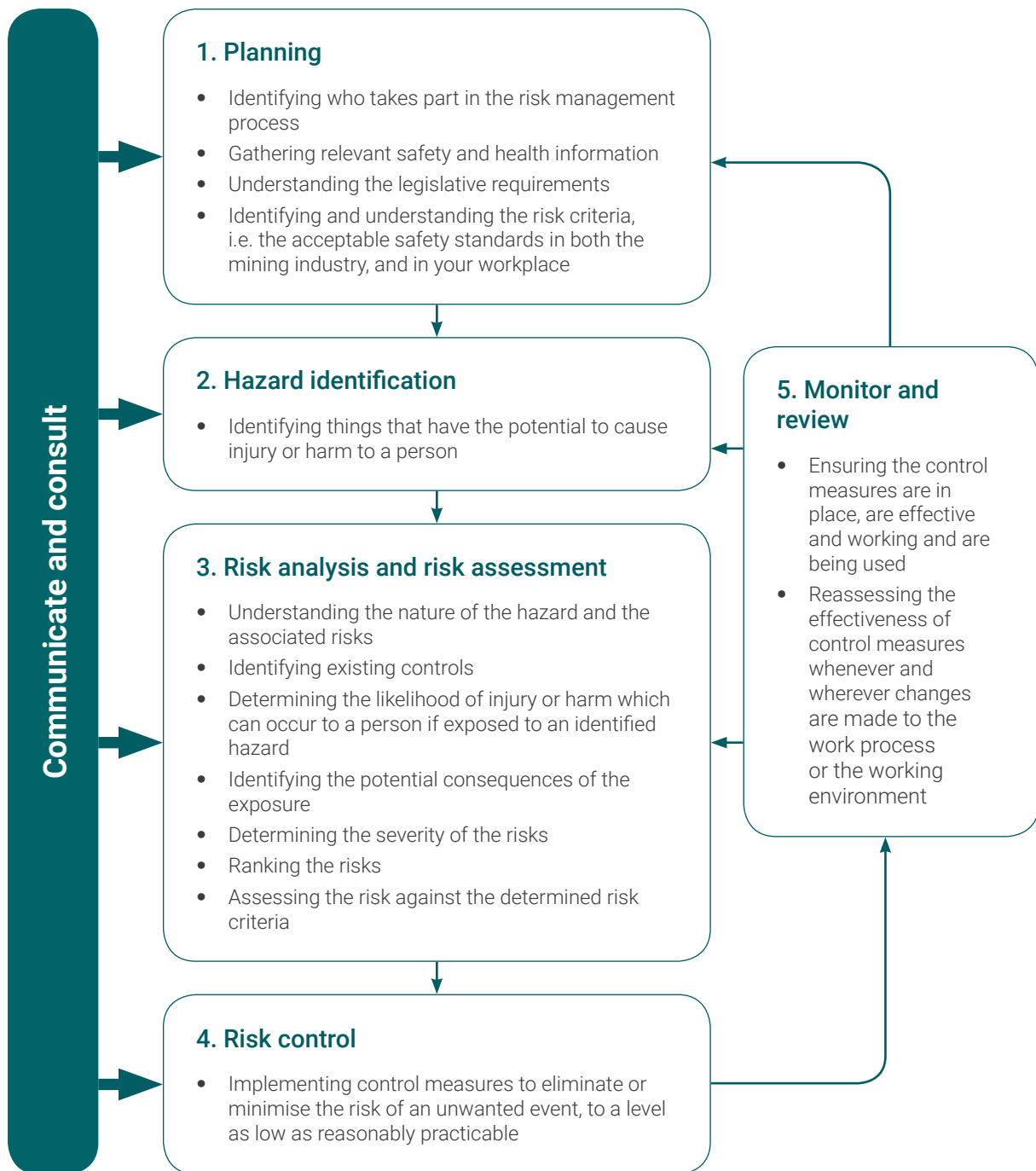


Figure 1 The risk management process (based on the international risk management standard AS/NZS ISO 31000 Risk management – Principles and guidelines)



Figure 2 Hierarchy of control

The following is an example of the application of the hierarchy of control to address risks associated with chlorine on site:

- elimination – remove the chlorine from site
- substitution – replace the chlorine with a less hazardous chemical
- isolation or segregation – store chlorine in dedicated areas with controlled access
- engineering – use fit-for-purpose containers for chlorine
- administrative – develop a procedure for handling chlorine
- personal protective equipment – provide face mask and protective eyewear.

Emergency response activities performed by trained and competent emergency response teams have a higher level of risk acceptability compared to the general workforce due to the unforeseen and unknown aspects of emergency scenarios, and the conditions and environment an emergency response team has to operate in. However, control measures still need to be identified and implemented to mitigate the risk of injury to as low as is practicable.

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).

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. This should cover the effectiveness and limitations of on-site emergency response equipment and the availability of additional or specialised equipment (external).

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

- confirm the recommendations of previous reviews were actioned
- confirm responses were appropriate for any incidents or issues that arose
- verify compliance with specifications (e.g. inspection, monitoring, quality control)
- confirm site practices comply with the emergency plan.

If significant gaps are identified, this should prompt a review of the risk assessment process.

Communication and consultation

Throughout the risk management process, it is vital to ensure that key stakeholders and subject matter experts are consulted where appropriate.

2.3 Documentation

The principal employer should be able to demonstrate that hazards associated with mining operations and emergency response are controlled so far as is practicable, with the risk assessment and management process formally documented in the operation's hazard and risk registers. The documentation of this information forms the basis of the site's emergency plan and safety management system.

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 completed under distinct category headings:

- emergency plan
- crisis management plan
- emergency response plans.

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

The plans should be clearly documented to manage any given emergency and provide instruction to all stakeholders. They should:

- be written in plain English
- be compiled and laid out to facilitate quick access to important information
- include a site profile (e.g. open cut, underground)
- include appropriate use of illustrations, such as up-to-date maps and diagrams
- provide the location of all relevant emergency response facilities and equipment
- identify external resources that are available (e.g. emergency agencies, mutual aid agreements, informal arrangements with neighbours)
- identify site-specific hazards and risks
- be available to all personnel on site.

Emergency plan

The emergency plan is a document prepared to address the requirements of regulation 4.30 of the Mines Safety and Inspection Regulations 1995. The plan covers the matters to be managed during an emergency at site level, and should reflect size and nature of the operation, nature of the risks, and availability of external resources.

The purpose of the emergency plan is to:

- identify hazards that might cause an emergency at a mine
- 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 minimise the risk
- provide training and guidance for all employees on what to do in emergencies, including evacuation
- provide information for dealing with external authorities and stakeholders (e.g. Department of Mines, Industry Regulation and Safety; WA Police Force; Environmental Protection Authority; media).

The person responsible for coordinating the response is generally 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 development and implementation of the emergency plan should be undertaken in consultation with the workforce, external agencies, emergency services and neighbouring mutual aid sites. The response may require the partial or total evacuation of site personnel to designated safe points (e.g. emergency muster points, refuge chambers, fresh air bases).

The emergency plan should include:

- how to raise the alarm
- who will activate the plan
- duties of the person responsible for implementing the emergency 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 duties
- internal and external communication systems
- procedures and protocols for dealing with external authorities and stakeholders
- arranging external services such as counselling and notifying next of kin
- provision of training in implementing the plan
- provision for evacuation of injured personnel
- provision for site evacuation (including identification of muster points)
- the location of potential transfer sites for emergency transport vehicles
- provision of first-responder training for employees (e.g. first aid training, basic fire-fighting).

Guidance on developing a site emergency plan is available on the Department's website, and a sample table of contents is given in Appendix 7.

Note: For small mines (e.g. prospector workings, small sand or gravel pits), the emergency plan could include communication, emergency beacon, and access to first aid and emergency equipment.

Crisis management plan

The crisis management plan provides a system for the overall management of an emergency, and contains identified responsibilities for key personnel to protect the company's employees, operations, business continuity and reputation. The document is aimed at managing external stakeholders in an emergency – not the provision of guidance for managing the site of the emergency. As such, the crisis management plan is best overseen at a corporate level. Activation of the plan depends on the nature and extent of the emergency.

Items addressed in a crisis management plan should include:

- procedures and protocols for dealing with external authorities and stakeholders at a corporate level (e.g. Department of Mines, Industry Regulation and Safety; WA Police Force; Environmental Protection Authority; media)
- arranging external services such as counselling, notification of next of kin, and 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 or 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 response plans

A critical element of emergency preparedness is the development of response plans for identified emergency scenarios. Emergency response plans assign responsibilities and procedures in the event of an emergency. These are determined by the risk assessment process, site-specific circumstances, and size and nature of the operation.

Emergency response plans should be developed for foreseeable scenarios (surface or underground) applicable to the operation, such as:

- fire (e.g. vegetation, structural, vehicular)
- ground failure
- vehicle accident
- aircraft accident
- rail accident
- medical event
- falls from height or to depth
- confined space incident

- engulfment
- chemical or fuel release (e.g. failure of containment)
- natural event (e.g. cyclone, earthquake, flooding)
- failure of tailing storage facility
- lost person(s)
- explosives incident
- fixed or mobile plant catastrophic failure
- electrical incident
- gas release or explosion
- loss of ventilation
- man-made events (e.g. bomb threats, armed hold-ups).

This list is not exhaustive and foreseeable scenarios should be identified from a risk assessment of the operation. Further useful information based on real-life emergencies may be obtained from industry safety alerts.

Emergency response plans should include the following information:

- how to raise the alarm
- duties of the person responsible for implementing the emergency response plan
- duties of site personnel during an emergency
- details for persons or agencies that may need to be contacted during an emergency
- assignment of emergency response duties
- procedures for how to respond to specific scenarios
- contact details for personnel trained in first aid, communications systems and other specialist fields (e.g. fire fighting, rope rescue)
- communication systems so all personnel are kept informed during an emergency, and relevant external agencies are promptly informed and updated as the emergency response unfolds
- equipment and facilities identified in the risk assessment as being necessary to deal with an emergency (e.g. first aid, fire fighting and rescue equipment), including equipment and services from external sources for remote sites.

Document review and control procedures should ensure that emergency response plans are maintained and current.

4 Emergency resources and equipment

4.1 Introduction

Based on the risk assessment, sites need to demonstrate their commitment to the emergency plan by obtaining the resources and equipment necessary to carry out the plan. Each 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 should consider the minimum resources and capability required to provide immediate response, given the external agencies may have other priorities. Equipment should be appropriately stored in a building that allows for its easy access, storage and maintenance.

4.2 Resources

Resources for emergency management should be determined based on the risk assessment, site-specific circumstances, and size and nature of the operation.

Internal personnel

Personnel should be allocated for emergency planning and response. Systems and structures should be developed with key personnel and assistance from subject matter experts where appropriate (see Chapter 5). This may include:

- full-time emergency services staff
- ERT members.

Facilities

Fit-for-purpose facilities should be established near the operations, with appropriate access and egress. Consider the following features:

- a facility to provide first aid to injured persons
- adequate space to store, clean and maintain emergency response equipment
- shower and toilet facilities
- areas for skills-based training
- parking or garaging for emergency vehicles
- an incident management room.

Equipment

Sufficient equipment should be available and kept operationally ready to deliver the objectives of the emergency response plan. The type of equipment required is determined by the risk assessment process, and size and nature of the operation. Equipment considerations are listed in Appendix 5. Equipment should comply with the relevant Australian Standards (see Appendix 2).

Vehicles

Suitable vehicles need to be available to transport patients, fight fires and respond to emergencies when workers are on site. These vehicles should be ready for use at all times, and may include:

- a vehicle capable of transporting patients (e.g. ambulance)
- fire-fighting unit(s)
- dedicated emergency or rescue vehicles
- specialised vehicles (e.g. watercarts, loaders, dozers, cranes).

Matters to consider include:

- need for four-wheel drive
- need for diesel engines (e.g. underground)
- height clearance
- visibility
- storage accessibility
- scheduled maintenance and inspection processes.

External support

Relationships and links with neighbouring sites and external support agencies should be established, particularly when developing a new site, and regularly reviewed. The following should be considered:

- availability of external resources
 - access
 - equipment compatibility
 - response time
 - operator requirements
- memoranda of understanding
- contractual arrangements (e.g. aircraft support).

External support may include:

- mutual aid with neighbouring sites
- Royal Flying Doctor Service (RFDS) or similar services
- local police
- local hospitals and nursing posts
- medical provider
- Department of Fire and Emergency Services (DFES)
- Department of Mines, Industry Regulation and Safety (DMIRS)
- Bureau of Meteorology (BOM)
- local government
- Local Emergency Management Committee (LEMC)
- State Emergency Services (SES)
- Department of Health
- Civil Aviation Safety Authority (CASA)
- Department of Biodiversity, Conservation and Attractions (DBCAs)
- environmental agencies
- other external personnel.

Maintenance

To achieve the desired safety and health 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 where required
- cleaning, sterilisation (where required) and storage
- training to maintain equipment
- inspections by competent persons (e.g. qualified technicians) to meet OEM's testing and servicing requirements
- inspection and maintenance checklists, logs, repairs and servicing records
- access to OEM's manuals and safety data sheets (SDSs) for chemicals.

5 Emergency response personnel

5.1 Introduction

Competent emergency leaders supported by first aid and emergency response personnel are fundamental to effective emergency management. A site's operations or high risk activities may need to be adjusted depending on the availability of emergency response personnel.

The personnel required is determined by the risk assessment process, site-specific circumstances, and size and nature of the operation.

5.2 Roles and responsibilities

Responsibilities should be clearly documented for all key roles specified by the site's emergency plan. It is essential to establish structures and protocols to implement the emergency plan.

5.3 Selection of emergency response team

When selecting an ERT member, the application process should include:

- a medical assessment
- a psychological assessment
- a physical assessment.

Appendix 6 provides 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 fitness requirements
- use of on-site nurses, paramedics and rehabilitation coordinators to assess the fitness of emergency response team personnel
- use of personal trainers or gyms to improve and maintain fitness levels
- an 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 through accredited courses
- undertaken on site while being supervised or mentored by trainers and assessors, competent in the subject matter
- a combination of these approaches.

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

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, ERT members and the general workforce by:

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

This may involve:

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

A training matrix assists in identifying training needs to be addressed and the currency of training delivered.

Training records

A formal record must be kept of training conducted, which may be accredited or non-accredited. Records to be kept should include:

- name of person who received the training
- dates and times when training was provided (including refresher training)
- specific details of what was covered
- duration of the training session or course
- how the training outcomes (competency) were assessed.

Emergency response and other relevant training

Based on the site's emergency plan, personnel responding to an emergency must be trained and competent. Emergency response training may include:

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

Nationally accredited training topics to consider for ERT personnel include:

- provide first aid
- use of open-circuit breathing apparatus
- handling hazardous materials (HAZMAT)
- road crash rescue
- fire fighting
- vertical rescue
- confined space rescue.

For underground operations, the following topics should be considered:

- use of closed-circuit breathing apparatus
- underground search and rescue
- underground fire-fighting
- use of refuge chambers.

The risk assessment for each operation determines the need for additional training (e.g. 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.

Note: Information about this standard is available on the Australian Quality Training Framework (AQTF) website.

Vocational and professional courses are available for coordinators and trainers and may lead to a qualification at Certificate IV or Diploma level.

6.3 First aid

The number and competency of workers trained in first aid is determined by the risk assessment process, site-specific circumstances, and size and nature of the operation. The size of the workforce may vary over time, and first aid requirements should be reviewed regularly and as circumstances change.

Medical assistance should be commensurate with the likely medical emergencies. First aid personnel must be trained and competent to use the equipment and resources available.

6.4 Emergency training, drills and exercises

Emergency training should be conducted regularly so emergency response personnel are sufficiently competent to respond to foreseeable incidents, based on standard operating procedures. This is undertaken by:

- conducting a risk assessment of foreseeable incident scenarios
- establishing an emergency response capability (e.g. facilities, equipment, personnel) for each scenario
- developing safe work procedures for emergency response (including training exercises)
- conducting emergency response training and assessing competency
- maintaining equipment to the OEM's recommendations.

Emergency response plans should be regularly tested to confirm their effectiveness. 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 for 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 using the employee assistance program.

6.5 Emergency response competitions

Emergency response competitions provide an opportunity for ERTs and incident managers to test their skills in scenarios that are as close as possible to real-life. It is recommended that mining operations use these competitions as an opportunity to enhance and evaluate their skills.

Feedback generated by the competition can provide direction for future training and an opportunity for improvement.

7 Incident management

7.1 Introduction

The management of an emergency is determined by the risk assessment process, and size and nature of the operation. During emergency incidents, quick but considered decisions are needed.

It is important that sites develop a system of response to aid the available personnel in dealing with the emergency. Typically, this would include establishing a location (e.g. emergency or incident control centre) that contains the resources required to manage the emergency.

To minimise confusion, it should be clear who is in charge and who is responsible for key actions in the:

- emergency plan
- crisis management plan
- emergency response plans.

7.2 Incident and emergency management teams – duty cards

The roles played by and 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, is important for accurately documenting the record of events as the emergency develops and unfolds. This is not only essential for managing and reviewing the incident, but the information 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, is responsible for accessing the resources required to manage the incident.
- Emergency response controller – facilitates communication between the incident controller and the ERT.
- Ventilation officer – the mine ventilation officer should be used 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 – may be known as the muster warden or tag board coordinator, 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.

Note: On small sites, a person may have more than one role.

7.3 Communication

Access to reliable communications during an emergency is essential to effectively manage the incident. 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. Dead spots in either phone or radio networks should be identified and covered by an alternate method of communication.

All communications during an incident should be timely, succinct and, as far as possible, in plain language. It is recommended ERTs have a dedicated secure radio frequency.

7.4 Other considerations

In larger organisations where sites have significant risk profiles, trigger action response plans (TARPs) can be a useful tool for monitoring and responding to deviations from normal conditions. A typical TARP sets out a certain set of conditions (or triggers) and a set of actions that workers, mine managers and supervisors should follow when those trigger events occur.

A TARP usually comprises a number of trigger levels related to indicators of the level of risk posed by the hazard. Techniques for measuring the indicator should be reliable, and the trigger levels easily obtained, in a short timeframe, to enable prompt action.

TARPs can be used to demonstrate the relationship between conditions in:

- a normal environment
- an abnormal environment (e.g. wall movement, severe weather events)
- an emergency situation.

They define the required actions for each situation.

TARPs should:

- be simple and robust
- be adequately resourced in terms of personnel and equipment, including monitoring systems
- focus on prevention and control through early detection
- set triggers through detailed knowledge of what is normal
- be regularly reviewed and revised as necessary
- be based on the best available on-site and off-site advice.

7.5 External agency systems

Under the auspices of the Office of Emergency Management (see Appendix 3), the Government of Western Australia 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. It is important for mining companies to liaise with their local emergency management committee.

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 activities by all parties involved. AIIMS is also used by some mining companies. Further information is available from the Australian and New Zealand National Council for Fire, Emergency Services and Land Management (see Appendix 3).

APPENDICES

Appendix 1 Legislative provisions

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

Mines Safety and Inspection Act 1994

Part 1 – Preliminary

s. 4 Terms used

Part 2, Division 2 – General duties

s. 9 Employers, duties of

s. 10 Employees, duties of

s. 11 Duty to report some occurrences and situations

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

s. 12 Employers and self-employed persons, duties of

s. 13 Principal employers and managers, duties of

s. 14 Plant designers etc., duties of

Part 7, Division 2 – Accidents and occurrences

s. 76 Accidents involving disabling injury to be notified

s. 78 Some occurrences at mines to be notified and recorded

s. 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 management 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 planning

AS 3745 *Planning for emergencies in facilities*

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 4143.5 *Methods of test for fibre ropes – Resistance to flexion and surface abrasion*

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 2675	Portable first aid kits for use by consumers
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/NZS 1801	<i>Occupational protective helmets</i>
AS/NZS 2210.1	<i>Safety, protective and occupational footwear – Guide to selection, care and use</i>
AS/NZS 2210.2	<i>Occupational protective footwear – Test methods (ISO 20344:2004, MOD)</i>
AS/NZS 2210.3	<i>Occupational protective footwear – Specification for safety footwear (ISO 20345:2004, MOD)</i>
AS/NZS 2210.4	<i>Occupational protective footwear – Specification for safety footwear (ISO 20346:2004, MOD)</i>
AS/NZS 2210.5	<i>Occupational protective footwear – Specification for safety footwear (ISO 20347:2004, MOD)</i>
AS/NZS 4501	<i>Occupational protective clothing – Set</i>

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 spaces*
- *Emergency response at Australian mines*
- *First aid in the workplace*
- *Managing risks of hazardous chemicals in the workplace*
- *Managing the risk of falls at workplaces*

Department of Mines, Industry Regulation and Safety

The Department of Mines, Industry Regulation and Safety (www.dmirs.wa.gov.au) has codes of practice, guidelines, significant incident reports and safety bulletins that may be useful, including:

- *Emergency preparedness – audit guide and template*
- *Fitness for mine rescue personnel – guideline*
- *Prevention of fires in underground mines – guideline*
- *Refuge chambers in underground mines – guideline*
- *Working at height in underground mines – guideline*
- Mines Safety Significant Incident Report No. 011 *Emu mine disaster*
- Mines Safety Significant Incident Report No. 111 *Mine rescue team member collapse during exercise underground*
- Mines Safety Significant Incident Report No. 131 *Drill rig fire – self-rescuer failed*
- Mines Safety Significant Incident Report No. 137 *Emergency response team members struck by falling oxygen cylinder*
- Mines Safety Significant Incident Report No. 148 *Tropical Cyclone George*
- Mines Safety Significant Incident Report No. 173 *Employee burnt while setting up fire scenario for emergency response training*
- Mines Safety Bulletin No. 79 *Cyclone – emergency preparation, planning and preparedness*
- Mines Safety Bulletin No. 82 *Emergency Management Act 2005*
- Mines Safety Bulletin No. 90 *Total fire bans and implications for mining operations*

Office of Emergency Management

Emergency management arrangements in Western Australia are established through a legislative and policy framework available, with supporting documents, at www.oem.wa.gov.au/resources/legislation-and-policy-framework

Other guidance

Australian Quality Training Framework (AQTF)
www.training.gov.au

Australian and New Zealand National Council for Fire, Emergency Services and Land Management
www.afac.com.au

Australian Institute for Disaster Resilience
www.aidr.org.au

Appendix 4 Glossary

To reduce confusion and ambiguity, it is recommended that standard terminology is applied. For the purposes of this document, the following terms are defined.

AIIMS – Australasian Inter-service Incident Management System

Crisis management plan – a plan to enable an organisation to deal with a disruptive and unexpected event that threatens to harm the organisation, its stakeholders, or the general public

Emergency – a serious, unexpected, and often dangerous situation requiring immediate action

Emergency management – the management of all aspects of an emergency including prevention, preparedness, response and recovery

Emergency plan – a plan for dealing with emergencies at a mine as required by the legislation (Mines Safety and Inspection Regulations 1995, r. 4.30)

Emergency response plan – a plan developed for a specific scenario containing a course of action to prevent harm to people and mitigate damage

Hazard – in relation to a person, anything that may result in injury to the person or harm to the health of the person

Incident controller – lead position in an incident management team

Practicable – means reasonably practicable, having regard to the severity, degree of risk and state of knowledge of any potential injury or harm to health, and the availability, suitability, and cost of removing or mitigating the potential injury or harm to health (*Mines Safety and Inspection Act 1994* s.4)

Risk – in relation to any injury or harm, the probability of that injury or harm occurring

Appendix 5 Emergency response equipment

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

- adequate first aid and medical equipment and information (e.g. RFDS box for remote sites, poisons permit, schedule of drugs)
- emergency response equipment
 - 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
- back-up power and water
- training of personnel.

The following communications equipment should be available:

- alarm systems (e.g. fixed, portable)
- telephone communications (e.g. land lines, mobile phones, satellite phones)
- two-way radios, including VHF, UHF and CB frequencies.
- computers with internet and email capabilities.

Other equipment may include:

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

Appendix 6 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)

- | | | |
|--|------------------------------|-----------------------------|
| 1. Physical exertion or activity | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 2. Working in a confined space | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 3. Working at height | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 4. Fire fighting (including wearing a breathing apparatus) | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

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

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 the 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 (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 personal protective equipment, ensuring all equipment is fully operational, clean and in a state of readiness at all times.

ERT members' commitment

ERT members contribute to the overall success of the ERT. They perform their duties in a safe manner and commit to the following:

- spending personal time maintaining their fitness
- familiarising themselves with site procedures and emergency response equipment
- following the instructions of the emergency response coordinator
- fulfilling the roles and responsibilities of an ERT member.

Management's commitment to ERT members

- provides clear, organised and structured training
- provides all essential equipment and personal protective equipment
- promotes open and honest communications
- offers required vaccinations.

Declaration of compliance

I understand the roles and responsibilities of an ERT member and, if appointed, 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 for appointment to the ERT.

Coordinator's signature

Date

Appendix 7 Example emergency plan

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