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

Emergency management audit – guide

Approved: December 2018

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Introduction

This document supersedes the *Emergency management audit* dated December 2017. The content of this audit has been trialled many times in 2018 after it was updated significantly in December 2017 coinciding with the drafting / development of the Emergency Management Code of Practice.

An effective emergency plan assists a mining operation to systematically identify, understand, and manage the hazards and risks associated with emergencies whilst ensuring compliance with the *Mines Safety and Inspection Act 1994* and *Mines Safety and Inspection Regulations 1995*.

This audit is intended to enable sites to assess the adequacy of their emergency planning, including how well the defined and documented practices have been implemented.

Where, in the intent, the word "verify" is used, this means that it is a regulatory requirement, which is mandatory and has to be complied with.

Where, in the intent, the word "ensure" is used, it is not a mandatory requirement, but it does set out a good practice.

List of abbreviations

AS   Australian Standard
DMIRS   Department of Mines, Industry Regulation and Safety
ECC   Emergency control centre
MSIA   *Mines Safety and Inspection Act 1994*
MSIR   Mines Safety and Inspection Regulations 1995
PPE   Personal protective equipment
r.   Regulation (of the MSIR)
rr.   Regulations (of the MSIR)
s.   Section (of the MSIA)
ss.   Sections (of the MSIA)
SDS   Safety data sheet(s)

Supporting documentation
Documentation referred to in this audit can be found via the following:

State Law Publisher, www.slp.wa.gov.au
 - *Mines Safety and Inspection Act 1994*
 - Mines Safety and Inspection Regulations 1995
 - *Emergency Management Act 2005,*
 - *Bushfires Act 1954,*

Department of Mines, Industry Regulation and Safety (DMIRS), mining safety publications, www.dmp.wa.gov.au/Safety/Mining-Safety-publications-16162.aspx
 - Mines safety bulletin No. 79 *Cyclone – emergency preparation, planning and preparedness*.
 - Mines safety bulletin No 82 – *Emergency Management Act 2005*
 - Significant incident report No. 111 *Mine rescue team members collapse during exercise*
 - Significant incident report No. 131 *Drill rig fire — self-rescuer failed*
 - Significant incident report No. 137 *Emergency response members struck by falling cylinder*
 - *Refuge chambers in underground mines – guideline*

Other Information

Other information that may be useful is included below:
AS 3745 – Planning for Emergencies in Facilities
AS 2444 – Portable fire extinguishers and fire blankets – Selection and location
National Emergency Risk Assessment Guideline

1   Risk assessment

Requirements and standards associated with risk assessment.

Point	Standard	Guideline
1.1	The operation has prepared an emergency plan.	**Intent:** To verify that the management of emergencies has been prepared for. **Personnel:** A senior manager. **Method:** View the emergency plan documentation. Refer to MSIR r. 4.30.
1.2	The emergency plan documentation identifies the types of foreseeable scenarios which may affect the enterprise.	**Intent:** To verify that significant hazards likely to cause an emergency have been identified. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation. Refer to MSIR rr. 4.30(2)(a) and 4.36(1).
1.3	Each foreseeable scenario is scaled for probability and consideration is given to the potential severity.	**Intent:** To verify that all the identified hazards have been assessed for likelihood and severity. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation. Refer to MSIR r. 4.30(2)(b).
1.4	Each foreseeable scenario is assessed with regard to prevention.	**Intent:** To verify that all the identified hazards have been risk assessed with regard to prevention (e.g. adequate separation of facilities in bushfire prone areas). **Personnel:** A senior manager. **Method:** Review the emergency plan documentation, including risk assessment. Refer to MSIA s. 9(1) and MSIR r. 4.30(2)(c).

Point	Standard	Guideline
1.5	The operation has prepared emergency response plans for each foreseeable scenario.	**Intent:** To verify that all the significant hazards have been assessed with regard to emergency management. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation. Refer to MSIR r. 4.30(2)(c).

2 Emergency plan preparation

Requirements and standards associated with emergency plan preparation.

Point	Standard	Guideline
2.1	The emergency plan documentation includes an evacuation procedure.	**Intent:** To verify that there are procedures to be used to evacuate the site or facility in the event of an emergency. **Personnel:** Employees and contractors. **Method:** Review the plan documentation and question personnel as to what the evacuation procedure entails. Refer to MSIR r. 4.30(2)(c)(iv).
2.2	The emergency plan documentation details the method for identifying and accounting for persons on site at all times.	**Intent:** To verify the existence of a system to account for all persons on site at any one time in the event of an emergency (e.g. tag board, accommodation log). **Personnel:** A senior manager. **Method:** Review the emergency plan documentation. Refer to MSIR r. 4.35. *Note: Good practice for surface operations.*
2.3	The emergency plan documentation includes a means of visitor control.	**Intent:** To verify the existence of a system to control the movement and the accounting of site visitors. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation. Refer to MSIR r. 4.35. *Note: Good practice for surface operations.*
2.4	The emergency plan documents emergency management organisation, structure and allocates responsibilities.	**Intent:** To ensure that the emergency plan describes the emergency management organisation, structure and allocates responsibilities to key personnel. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation.

Point	Standard	Guideline
2.5	The emergency plan documentation considers other relevant legislation.	**Intent:** The emergency plan documentation considers other relevant legislation and standards (e.g. *Emergency Management Act 2005, Bushfires Act 1954, AS 3745 – Planning for Emergencies in Facilities).* **Personnel:** A senior manager. **Method:** Review the emergency plan documentation.
2.6	The manager has allocated sufficient resources to enact the plan.	**Intent:** To verify that the emergency plan allocates adequate resources to implement the plan. **Personnel:** Registered manager. **Method:** Review the emergency plan documentation. Refer to MSIR r. 4.30(2)(c).
2.7	The emergency plan documentation specifies action details.	**Intent:** To verify that the emergency plan documentation details the procedures to be followed and the duties of key personnel in the case of each of the identified foreseeable emergencies. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation. Refer to MSIR r. 4.30(2)(c)(iv).
2.8	The emergency plan is communicated to all personnel who have role in enacting the plan.	**Intent:** To verify that key personnel are aware of their responsibilities and duties in all emergency scenarios. **Personnel:** A senior manager, emergency response co-ordinator and supervisors. **Method:** Question key personnel as to their responsibilities in an emergency, and the detail of the plan. Refer to MSIR r. 4.13.

Point	Standard	Guideline
2.9	Employees are trained and competent in the emergency plan.	**Intent:** To verify that employees are trained and competent in the emergency plan and competency is current. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation. Refer to MSIR rr. 4.13 and 4.30(2)(c)(v).
2.10	The emergency plan documentation is regularly reviewed, and updated as required, and at least annually.	**Intent:** To verify that the emergency plan is reviewed following major changes, and at least annually, to maintain currency. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation. Refer to MSIR r. 4.30(3).
2.11	After a revision of the emergency plan employees are informed and retrained accordingly.	**Intent:** To verify that a mechanism is in place to inform and retrain personnel after any changes in the emergency plan. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation. Refer to MSIR r. 4.13(3).
2.12	The emergency plan requires that emergency drills and exercises are held on a regular basis.	**Intent:** To verify that emergency exercises occur regularly for each crew and reflect the foreseeable scenarios. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation (e.g. check debrief records of recent drills/exercises; evacuation times for underground workings; if alarm systems activated during the exercise). Refer to MSIR r. 4.36(2)(g). *Note: Consider conducting emergency drills that include mutual aid partners.*

3   Emergency plan activation

Requirements and standards associated with emergency plan activation.

Point	Standard	Guideline
3.1	The emergency plan details under what circumstances, by whom, and how, the plan is activated.	**Intent:** To ensure that there are procedures to activate the emergency plan. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation.
3.2	The emergency plan specifies a method for raising the alarm in the event of an emergency.	**Intent:** To verify that there is an alarm system(s) to be used in the event of an emergency and that it is regularly tested (e.g. air raid siren, two-way radio alert, stench gas). **Personnel:** Mine personnel. **Method:** Review the emergency plan and interview personnel. Check the procedure for calling out the emergency response team. Refer to MSIR rr. 4.30(2)(c)(ii), 4.30(2)(c)(iii) and 4.36(2)(a).
3.3	The emergency plan includes the location of muster points.	**Intent:** To verify that the plan identifies the location of muster points and when to evacuate to them. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation and inspect muster points. Refer to MSIR r. 4.36(2)(c).
3.4	The emergency plan provides for the securing of the scene of an emergency.	**Intent:** To verify that there are procedures to secure the scene of an emergency. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation. Refer to MSIA ss. 76(4) and 81.

Point	Standard	Guideline
3.5	The emergency plan includes the provision for escalating the response and calling in external assistance at the appropriate time.	**Intent:** To ensure that there is a procedure to be used to call in outside assistance (e.g. ambulance, fire brigade, police and mutual aid) and details provision for emergency medivac of injured personnel. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation and any Memorandum of Understanding(s).
3.6	The site has a process for notifying relevant authorities of the existence of an emergency.	**Intent:** To ensure that there are procedures to be used to notify external authorities and neighbouring operations. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation.
3.7	Responsibility to liaise with the media is allocated to an assigned person or position.	**Intent:** To ensure that there is a procedure in place to liaise with the media including making media statements. A system to control unauthorised information from site via electronic methods, social media, etc. should be considered. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation.
3.8	Nominated persons are authorised to officially notify relatives as to the status of injured person(s).	**Intent:** To ensure that there is a procedure for the notification of relatives as to the status of injured person(s). **Personnel:** A senior manager. **Method:** Review the emergency plan and/or crisis management plan documentation.
3.9	Provision is made for when, and by whom, employee assistance services are contacted.	**Intent:** To ensure that there is a procedure to be used to bring in counselling services. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation.

Point	Standard	Guideline
3.10	The emergency plan incorporates a communication plan.	**Intent:** To ensure that communication is maintained with internal and external stakeholders during an emergency event. This should include emergency communication equipment and procedures. **Personnel:** A senior manager. **Method:** View communications plan

4 Emergency control centre (ECC)

Requirements and standards associated with emergency control centres.

Point	Standard	Guideline
4.1	An emergency control centre (ECC) is available on site.	**Intent:** To ensure that an ECC can be established in the event of an emergency (ECC should not be threatened in the event of an emergency). A back-up ECC should be considered depending on the scale and nature of the operation. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation and check the location for suitability.
4.2	The ECC has copies of the most recent version of the emergency plan.	**Intent:** To ensure that the emergency plan is current and readily available in the ECC. Checklist and/or duty cards should be considered, to assist the emergency management team. **Personnel:** A senior manager. **Method:** Check copies of the emergency plan in the designated ECC.
4.3	The ECC has the most recent version of the site layout, location plans and maps.	**Intent:** To ensure that plans and maps are up-to-date and readily available in the ECC. **Personnel:** A senior manager. **Method:** Check for copies in the designated ECC.
4.4	The site plans contain diagrams of service facilities required in an emergency.	**Intent:** To ensure that site plans contain diagrams of service facilities required in an emergency (e.g. communications, fire hydrants, safety refuges, building emergency exits, muster points). **Personnel:** A senior manager. **Method:** Check copies of site plans in the designated ECC.

Point	Standard	Guideline
4.5	The ECC has relevant communication equipment.	**Intent:** To ensure that equipment for both internal and external communications is readily available and an allowance has been made for redundancy (e.g. telephones, satellite phones, two-way radios). **Personnel:** A senior manager. **Method:** Check the communication facilities located in the designated ECC.
4.6	A means of recording messages and communications in chronological order is readily available.	**Intent:** To ensure that information relating to the emergency is recorded accurately and chronologically. **Personnel:** A senior manager. **Method:** Inspect the recording system used to document communications in the designated ECC.
4.7	There is sufficient room to accommodate the emergency management team.	**Intent:** To ensure that the personnel involved in the different aspects of emergency management are provided with appropriate work space. **Personnel:** A senior manager. **Method:** Check the designated ECC and other allocated facilities.

5   Emergency resources

Requirements and standards associated with emergency resources.

Point	Standard	Guideline
5.1	The resources required in the event of an emergency are based on the risk assessment.	**Intent:** To verify that resources required in the event of an emergency are based on foreseeable scenarios identified by the risk assessment. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation. Refer to MSIR r. 4.30(2).
5.2	The resource and service requirements take into account geographic factors (e.g. location, access and communications).	**Intent:** To ensure that the location of the site has been considered in respect to the availability of on-site resources (e.g. emergency pumps, medical supplies, expertise). **Personnel:** A senior manager. **Method:** Confirm stand-alone provisions are in place to deal with the remoteness of the site.
5.3	The resources required in the event of an emergency are regularly reviewed.	**Intent:** To verify that the emergency plan requires the review of those resources required in an emergency. The review should be at least annually and at any time when significant changes occur at the operation. **Personnel:** A senior manager. **Method:** Review the emergency plan documentation. Refer to MSIR r. 4.30(3).
5.4	The resource and service requirements consider the external availability of mutual aid.	**Intent:** To ensure that mutual aid agreements are in place with other sites and other organisations, or that the site is able to stand alone in its emergency response. **Personnel:** A senior manager. **Method:** View any mutual aid agreements in place.

Point	Standard	Guideline
5.5	On-site first aid services and facilities are available and sized based on the risk assessment of foreseeable scenarios.	**Intent:** To verify that immediate first aid is available to stabilise accident victims prior to the arrival of off-site resources. **Personnel:** First aid personnel. **Method:** View first aid facilities and equipment. Check the training records. Refer to MSIR rr. 4.24, 4.25 and 4.26.
5.6	A vehicle, suitable for the transport of injured persons, is available on site at all times.	**Intent:** To verify that a vehicle capable of transporting an injured person is available, equipped and in sound condition, based on the size and nature of the operation. **Personnel:** First aid personnel. **Method:** Inspect nominated vehicle for suitability. Refer to MSIR r. 4.27. *Note: Where a vehicle other than an ambulance is used, a means of locking a stretcher in place should be available.*
5.7	Equipment for fire-fighting is readily available.	**Intent:** To verify that fixed location fire-fighting equipment (e.g. extinguishers, hose reels) is installed across the operation based on the risk assessment and in accordance with AS 2444. **Personnel:** A senior manager. **Method:** View plans showing the locations of fire-fighting equipment. Refer to MSIR rr. 4.10 and 5.15.
5.8	Fire-fighting equipment is ready for use at all times.	**Intent:** To ensure that fixed location fire-fighting equipment (e.g. extinguishers, hose reels) is maintained in accordance with manufacturer's instructions. **Personnel:** A senior manager. **Method:** View the equipment maintenance records.

Point	Standard	Guideline
5.9	Site personnel are trained in the use of fixed location fire-fighting equipment.	**Intent:** To verify that site personnel are trained and competent to use the available firefighting equipment. **Personnel:** A senior manager. **Method:** View fire-fighting equipment training records. Refer to MSIR rr. 4.13 and 4.30(2)(c)(vi).
5.10	On-site communication systems are present at all times.	**Intent:** To ensure the presence of adequate communications including backup (e.g. telephones, satellite phones, two-way radio). **Personnel:** A senior manager. **Method:** View the site communication systems available, noting location and stand-alone capacity (i.e. does it rely on mains power).
5.11	There is an effective warning system available and utilised on site that detects and identifies severe weather threats.	**Intent:** To ensure the provision of advance warnings of inclement or severe weather likely to affect the site. **Personnel:** A senior manager. **Method:** View the site's early warning system.
5.12	The site has provision for emergency supplies of essential services (e.g. power, water).	**Intent:** To ensure that critical resources have emergency back-up available. **Personnel:** A senior manager. **Method:** View methods used for the provision of essential services.
5.13	Emergency resources are maintained in accordance with the manufacturer's recommendations.	**Intent:** To ensure that resources are maintained according to their duty and are serviceable at all times **Personnel:** A senior manager. **Method:** View equipment maintenance records.

6   Emergency response

Requirements and standards associated with emergency response.

Point	Standard	Guideline
6.1	A sufficiently resourced emergency response team is available or on call at all times.	**Intent:** To verify a trained and competent emergency response team is available or on call to respond to foreseeable scenarios identified in the emergency plan. *Note: The emergency response capability is dependent on the size and nature of the operation. The number of emergency response volunteers should be regularly monitored based on the risk.* **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the mine rescue training records. Refer to MSIR rr. 4.30(2)(c)(vi) and 4.33(1)(b).
6.2	Facilities are available on site to store and maintain mine rescue equipment.	**Intent:** To verify that mine rescue equipment is available and ready for use. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the mine rescue facility. Refer to MSIR r. 4.30(2)(c)(i).
6.3	Breathing apparatus is available on site to meet emergency requirements.	**Intent:** To verify that breathing apparatus is available ready for use by emergency response personnel. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the breathing apparatus. Refer to MSIR rr. 4.30(2)(c)(i) and 4.33(1)(a).

Point	Standard	Guideline
6.4	Emergency response personnel, trained and competent in the use of breathing apparatus, are available or on call.	**Intent:** To verify that emergency response personnel, trained and competent in the use of breathing apparatus, are available or on call. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the training records. Refer to MSIR rr. 4.30(2)(c)(vi) and 4.33(1)(b).
6.5	Breathing apparatus is maintained in accordance with the manufacturer's recommendations.	**Intent:** To verify that breathing apparatus is being maintained ready for use. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the breathing apparatus maintenance records. Refer to MSIA s. 9(1)(a).
6.6	In the event of a hazardous chemical emergency, a person or position is responsible to urgently facilitate provision of technical information.	**Intent:** To ensure that a procedure is in place to provide safety data sheet (SDS) information to the emergency management team and emergency responders dealing with a hazardous chemical emergency. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** Review the emergency plan documentation. Refer to MSIR Part 7, Division 3 Hazardous substances.
6.7	Equipment is available on site to deal with hazardous chemical spills.	**Intent:** To verify that breathing apparatus, chemical suits and spill containment equipment is available. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the equipment. Refer to MSIR rr. 4.30(2)(c)(i) and 7.28.

Point	Standard	Guideline
6.8	Emergency response personnel, trained and competent in the use of the equipment used for hazardous chemical spills, are available or on call.	**Intent:** To verify that emergency response personnel trained in the use of the spill equipment are available or on call. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the training records. Refer to MSIR rr. 4.13 and 4.30(2)(c)(vi).
6.9	Hazardous chemical spill equipment is maintained in accordance with the manufacturer's recommendations.	**Intent:** To ensure that chemical spill equipment is being maintained ready for use. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the equipment maintenance records.
6.10	Mobile fire-fighting equipment is available on site.	**Intent:** To verify that mobile fire-fighting equipment is available in the event of a fire. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the equipment. Refer to MSIR r. 4.30(2)(c)(i).
6.11	Emergency response personnel, trained and competent in the use of mobile fire-fighting equipment, are available or on call.	**Intent:** To verify that emergency response personnel trained in the use of mobile fire-fighting equipment are available or on call. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the training records. Refer to MSIR r. 4.30(2)(c)(vi).

Point	Standard	Guideline
6.12	Mobile fire-fighting equipment is maintained in accordance with the manufacturer's recommendations.	**Intent:** To ensure that mobile fire-fighting equipment is being maintained ready for use. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the equipment maintenance records.
6.13	Rope rescue equipment is available on site to effectively conduct rescue at height or depth.	**Intent:** To verify that rope rescue equipment is available in the event of an emergency. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the equipment. Refer to MSIR r. 4.30(2)(c)(i).
6.14	Emergency response personnel, trained and competent in the use of rope rescue equipment, are available or on call.	**Intent:** To verify that emergency response personnel trained in the use of rope rescue equipment are available or on call. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the training records. Refer to MSIR r. 4.30(2)(c)(vi).
6.15	Rope rescue equipment is maintained in accordance with the manufacturer's recommendations.	**Intent:** To ensure that rope rescue equipment is being maintained ready for use. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the equipment maintenance records.

Point	Standard	Guideline
6.16	Extrication equipment is available on site.	**Intent:** To verify that extrication equipment is available in the event of an emergency. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the equipment. Refer to MSIR r. 4.30(2)(c)(i).
6.17	Emergency response personnel, trained and competent in the use of extrication equipment, are available or on call.	**Intent:** To verify that emergency response personnel trained in the use of extrication equipment are available or on call. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the training records. Refer to MSIR r. 4.30(2)(c)(vi).
6.18	Extrication equipment is maintained in accordance with the manufacturer's recommendations.	**Intent:** To ensure that extrication equipment is being maintained ready for use. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the equipment maintenance records.
6.19	Emergency response teams are equipped with first aid equipment.	**Intent:** To verify that emergency response teams have the necessary first aid equipment to treat injured persons. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the equipment. Refer to MSIR rr. 4.24, 4.25, 4.27, 4.29 and 4.30(2)(c)(i).

Point	Standard	Guideline
6.20	Emergency response personnel, trained and competent in first aid, are available or on call.	**Intent:** To verify that emergency response personnel are trained to a suitable standard to treat injured persons and available or on call. **Personnel:** Emergency response co-ordinator or a senior manager. **Method:** View the training records. Refer to MSIR rr. 4.26 and 4.30(2)(c)(vi).
6.21	Emergency response team members participate in mutual aid response exercises and mine emergency response competitions.	**Intent:** To ensure that emergency response team members test their skills in scenarios that are as close to real life as possible to improve currency and competency. **Personnel:** Mine emergency response co-ordinator or a senior manager. **Method:** View debriefing notes and marking sheets from competitions.

7 Other considerations

Other considerations

Point	Standard	Guideline
7.1	Emergency exits are available where required.	**Intent:** To verify that emergency exits, clearly identified and unobstructed, are provided in treatment plants and surface buildings with plans of these evacuation routes prominently displayed at strategic locations. **Personnel:** A senior manager. **Method:** Identify and inspect potentially hazardous work locations for compliant emergency exits and evacuation route plans. View the emergency plan. Refer to MSIR rr. 4.10(1)(d) and 4.31.
7.2	Emergency lighting is available where required.	**Intent:** To verify that emergency lighting, which is automatic, independent of the regular lighting system and regularly maintained and tested, is provided in work locations that could be hazardous in the event of a sudden lighting failure. **Personnel:** A senior manager. **Method:** Inspect work places for emergency lighting installations (e.g. crusher vaults, enclosed conveyor runs, tunnels, gold rooms, buildings). View test records of emergency lighting. Refer to MSIR r. 4.32.
7.3	Operable emergency equipment (e.g. emergency showers and eyewashes) is provided in areas where hazardous substances are present or in use.	**Intent:** To verify that emergency showers and eyewashes are readily available at those locations where there is the potential for an employee to be injured by a hazardous substance. *Note: Precautions should be taken to reduce the risk of burns due to the heating of inlet pipes in hot climatic conditions. Consideration should be given to periodic flushing of lines.* **Personnel:** A senior manager. **Method:** Identify and inspect likely hazardous work locations for operable emergency showers and eyewashes (e.g. reagent, chemical mixing and dosing areas). View system test records. Refer to MSIR r. 4.24.

Point	Standard	Guideline
7.4	At sites where hazardous substances are produced, used or stored, suitable resuscitation equipment and persons trained in its use are available or on call.	**Intent:** To verify that resuscitation equipment is available to stabilise accident victims prior to the arrival of off-site resources. **Personnel:** First aid personnel. **Method:** View the first aid facilities and equipment. Check the training records. Refer to MSIR r. 4.25.
7.5	Sites in areas that could be affected by the severe weather conditions (e.g. cyclones) are prepared for such conditions.	**Intent:** To ensure that sites with the potential to be affected by cyclonic conditions or severe storms have specific procedures included in the emergency plan. **Personnel:** A senior manager. **Method:** View the emergency plan documentation for procedures that are in accordance with the recommendations of Mines Safety Bulletin No. 79 *Cyclone – emergency preparation, planning and preparedness*.
7.6	The risk of flooding has been evaluated and adequate precautions taken to prevent danger to employees.	**Intent:** To verify that the potential for flooding by both natural and man-made sources of water of any part of a mine site has been rigorously investigated and precautions taken to prevent danger to employees. **Personnel:** A senior manager. **Method:** Review the risk assessment and inspect the locations of water courses, tailings impoundments and water storage ponds in respect to surface buildings, openings to underground workings, underground crown pillars and residential camps. Refer to MSIR rr. 4.11 and 4.36.

Point	Standard	Guideline
7.7	The risks associated with processing operations which cannot be rapidly shut down have been evaluated and adequate precautions taken to prevent danger to employees and the environment.	**Intent:** To ensure that the hazards associated with processing operations have been rigorously investigated and precautions taken to prevent danger to employees and the environment, including in circumstances where processes cannot be rapidly shut down. *Note: Consideration should be given to monitoring and/or controlling processes from a remote location in the event that personnel need to be evacuated.* *Also if personnel are likely to remain in the area (e.g. in a control room) in an emergency the facility should be capable of being self-contained for an appropriate period.* **Personnel:** A senior manager. **Method:** Review the risk assessment and inspect the locations for suitability and adequacy.

8 Underground mines

Additional requirements and standards that apply to all mines with underground operations.

Point	Standard	Guideline
8.1	An independent second means of egress is provided from the lowest level of production from the mine.	**Intent:** To verify an escape route has been provided in an underground mine that is: • readily available • maintained in a safe condition • fully signposted having regard for the potential for reduced visibility • sized for emergency response team use • not the normal means of access • diligently and concurrently developed with the general development of the mine, in order that the escape route will be completed before production from stoping operations. *Note: It is good practice to locate the escape route in fresh air.* **Personnel:** A senior manager. **Method:** View the mine plans and inspect the installations underground. Check ground conditions, signage, condition of any ladders, fresh air ventilation and the records of inspection. Refer to MSIR r. 10.10.
8.2	Each person proceeding underground is furnished with a self-contained self-rescuer.	**Intent:** To verify that a self-contained self-rescuer is provided to each person going underground. **Personnel:** Underground personnel. **Method:** Inspect the equipment of personnel underground. Refer to MSIR r. 4.34(1)(a).
8.3	Each person going underground is trained in the use of a self-contained self-rescuer.	**Intent:** To verify that each person going underground has been trained in the use and limitations of a self-contained self-rescuer. **Personnel:** Underground personnel. **Method:** View the training records, including visitor records. Refer to MSIR r. 4.34(1)(b).

Point	Standard	Guideline
8.4	A management system has been implemented to monitor and maintain self-contained self-rescuers such that they are ready for use.	**Intent:** To verify that self-rescuers are maintained in accordance with manufacturer's recommendations. **Personnel:** A senior manager. **Method:** View the management system in place to monitor and maintain self-rescuers. Refer to MSIR r. 4.1(2)(b).
8.5	Self-contained self-rescuers are discarded when out of date or damaged.	**Intent:** To ensure that discard criteria is in place for the removal of out of date or damaged self-rescuers, and that the criteria is adhered to. **Personnel:** A senior manager. **Method:** View a sample of the self-rescuers. Refer to Significant incident report No. 131 *Drill rig fire — self-rescuer failed*.
8.6	Fresh air bases or refuge chambers are provided and strategically located.	**Intent:** To verify that fresh air bases or refuge chamber have been provided. A risk assessment should be undertaken prior to their establishment. The risk assessment should include the location in regard to accessibility, surrounding hazards (e.g. blasting, ground conditions, water accumulation) and provision of services. *Note: Consider controls to ensure that the number of employees working in an area does not exceed the capacity of the nearest refuge chamber or fresh air base. Also that refuge chambers are located to prevent single entry entrapment.* **Personnel:** A senior manager. **Method:** View the mine plans and the risk assessments undertaken. Refer to MSIR r. 4.36(2)(d) and *Refuge chambers in underground mines – guideline*.

Point	Standard	Guideline
8.7	In underground mines fresh air bases or refuge chambers are available within 750 metres of all workplaces.	**Intent:** To ensure that fresh air bases or refuge chambers are available near all workplaces, such that employees can travel to one with a self-contained self-rescuer. **Personnel:** A senior manager. **Method:** View the mine plans and inspect the underground facilities. Refer to *Refuge chambers in underground mines – guideline*
8.8	Fresh air bases and refuge chambers are properly identified, serviced and equipped.	**Intent:** To verify that fresh air bases and refuge chambers are clearly sign-posted, have communications with the surface, a supply of potable water and basic first aid supplies. **Personnel:** A senior manager. **Method:** Inspect the underground facilities. Refer to MSIR rr. 4.10,10.15 and *Refuge chambers in underground mines – guideline*.
8.9	Fresh air bases have an assured supply of fresh air.	**Intent:** To ensure the adequacy of the air supply, including during power failure events when the natural ventilation pressure may change the airflow direction. **Personnel:** Ventilation officer. **Method:** View the mine plans and inspect the underground fresh air bases.

Point	Standard	Guideline
8.10	Refuge chambers have an assured supply of air for at least 36 hours.	**Intent:** To ensure that, for stand-alone refuge chambers, with a power supply separate from regular mine services, there is sufficient supply of air for the number of employees the refuge chamber is rated for, and for a period of at least 36 hours. For externally supported refuge chambers, ensure that supply of oil-free compressed air, (ideally via a dedicated line from the surface), provides enough air for the number of employees the refuge chamber is rated for. **Personnel:** Ventilation officer. **Method:** View the mine plans, inspect the underground refuge chambers and view the risk assessment to demonstrate adequacy. Refer to *Refuge chambers in underground mines – guideline.*
8.11	The required refuge chamber size, lighting and cooling requirements have been assessed.	**Intent:** To ensure that due consideration has been given to size, lighting, temperature requirements and personnel psychological issues (e.g. being in a confined space). **Personnel:** Ventilation officer. **Method:** Inspect the underground refuge chambers. Refer to *Refuge chambers in underground mines – guideline.*
8.12	Refuge chambers and fresh air bases are regularly inspected.	**Intent:** To ensure that an inspection and audit schedule is in place and used to ensure refuge chambers and fresh air bases are ready for use at all times. **Personnel:** A senior manager. **Method:** View the audit and inspection records. Refer to *Refuge chambers in underground mines – guideline.*

Point	Standard	Guideline
8.13	Refuge chambers and fresh air bases are maintained as required.	**Intent:** To ensure that the electrical and mechanical checks are conducted and maintenance is carried out. **Personnel:** Maintenance manager. **Method:** View the inspection and maintenance records.
8.14	In underground mines, suitable resuscitation equipment and persons trained in its use are available or on call.	**Intent:** To verify that resuscitation equipment is available to stabilise accident victims prior to the arrival of off-site resources. **Personnel:** First aid personnel. **Method:** View the first aid facilities and equipment. Check the training records. Refer to MSIR r. 4.25.
8.15	No flammable materials or explosives are stored within 50 metres of an opening to an underground mine.	**Intent:** To verify there is no potential for smoke to enter underground workings. **Personnel:** A senior manager. **Method:** Identify and inspect the surface proximity of underground openings (e.g. ventilation shafts, adits, escape ways, declines, access shafts). Refer to MSIR r. 4.37.