



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



CODE OF PRACTICE

Mine safety management system





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WorkSafe
Western Australia

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Foreword

The *Code of practice: Mine safety management system* is an approved code of practice under section 274 of the *Work Health and Safety Act 2020* (WHS Act).

An approved code of practice is a practical guide to achieving the standards of health, safety and welfare required under the WHS Act and the Work Health and Safety (Mines) Regulations 2022 (WHS Mines Regulations) and the Work Health and Safety (General) Regulations 2022 (WHS General Regulations).

A code of practice applies to anyone who has a duty of care in the circumstances described in the code. In most cases, following an approved code of practice would achieve compliance with the health and safety duties in the WHS laws in relation to the subject matter of the code. Like regulations, codes of practice deal with particular issues and do not cover all hazards or risks that may arise. The health and safety duties require duty holders 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 under the WHS Act and WHS Regulations. Courts may regard a code of practice as evidence of what is known about a hazard, risk, risk assessment or risk control and may rely on the code in determining what is reasonably practicable in the circumstances to which the code of practice relates. For further information, see the [*Interpretive guideline: How to determine what is reasonably practicable to meet a health and safety duty*](#).

Compliance with the WHS laws may be achieved by following another method, such as a technical or an industry standard, if it provides an equivalent or higher standard of work health and safety than the code.

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

Scope and application

This Code provides guidance for mine operators on meeting the requirements of the WHS Mines Regulations and the WHS General Regulations in relation to establishing and implementing a mine safety management system for a mine.

The Code may also be a useful reference for persons conducting a business or undertaking (PCBU) at a mine or other persons interested in complying with the duties under the WHS legislation. For more information regarding PCBUs, see the [*Interpretive guideline: The meaning of 'person conducting a business or undertaking' \(PCBU\)*](#).

How to use this Code of practice

This Code includes references to the legal requirements under the WHS Act and WHS Regulations. These are included for convenience only and should not be relied on in place of the full text of the WHS Act or WHS Regulations. The words 'must', 'requires' or 'mandatory' indicate a legal requirement exists that must be complied with. The word 'should' is used in this Code to indicate a recommended course of action, while 'may' is used to indicate an optional course of action.

The development of this Code of practice

This Code of practice is issued by the Mining Industry Advisory Committee (MIAC) and the Work Health and Safety Commission (the Commission) under provisions of WHS Act. MIAC and the Commission comprise of representatives from employers, unions and government, as well as experts, and have the function of developing the work health and safety legislation and supporting guidance material, and making recommendations to the Minister for their implementation. To fulfil their functions, MIAC and the Commission are empowered to establish advisory inquiries and publish and disseminate information.

This Code of practice has been developed through a tripartite consultative process and the views of employers and unions, along with those of government and experts have been considered.

Acknowledgement

This Code draws upon the *Code of practice: Safety management systems in mines* and the *Guide: Preparing a principal mining hazard management plan* published by the New South Wales Department of Trade and Investment, Division of Resources and Energy.

The Department of Mines, Industry Regulation and Safety recognises the contributions received during public consultation and thanks respondents for their feedback. This feedback has been considered when finalising the structure and content of the Code.

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1 Introduction

1.1 What is a mine safety management system?

WHS Mines Regulations r. 5C

Meaning of mine operator

WHS Mines Regulations r. 7A

References to person conducting a business or undertaking includes references to mine operators

WHS Mines Regulations r. 621

Duty to establish and implement mine safety management system

WHS Mines Regulations r. 621A

General requirements for mine safety management system

The mine safety management system (MSMS) is the primary means of providing processes and methods to everyone involved at a mine to ensure the safe operation of a mine. It is a framework that brings together the mine's policies, systems, procedures and plans to enable a mine operator to follow a systematic approach to achieving, improving and monitoring a desired level of health and safety.

The mine operator is responsible for preparing the MSMS, which must be documented, comprehensive and integrated as the overall management system that is in place at the mine. The MSMS must be designed, established and implemented so that it ensures, so far as is reasonably practicable, that the health and safety of workers at the mine or other persons is not put at risk from the mine or work carried out during mining operations.

Therefore, the MSMS needs to manage all aspects of risk to health and safety in relation to the operation of the mine and this includes any documented contractor health and safety management plan that has been accepted by the mine operator. Ultimately, the MSMS is a tool that outlines the health and safety responsibilities of, and provides guidance to, everyone involved at the mine, and assists the mine operator to meet their duty of care.

The MSMS covers the entire lifecycle of a mine site, including planning, design, construction, commissioning, operation, maintenance and closure.

1.2 Why is a mine safety management system required?

WHS Act s. 19

Primary duty of care

WHS Act s. 20

Duty of persons conducting businesses or undertakings involving management or control of workplaces

WHS Mines Regulations r. 34

Duty to identify hazards

WHS Mines Regulations r. 35

Managing risks to health and safety

WHS Mines Regulations r. 621

Duty to establish and implement mine safety management system

Mining is an industry with a range of hazards and associated risks due to the dynamic and varied nature of the tasks and the environment in which they are carried out. These can range from industry specific hazards, such as principal mining hazards that have the potential to result in multiple fatalities, to other hazards such as moving parts of plant or those common in many work environments, such as lifting heavy objects and slips and trips.

The *Work Health and Safety Act 2020* (WHS Act) requires all persons conducting a business or undertaking (PCBU), including the mine operator, to ensure, so far as is reasonably practicable, that the health and safety of workers and other persons is not put at risk from any work carried out as part of the business or undertaking. This means eliminating or minimising risks to health and safety, so far as is reasonably practicable, and includes:

- provision and maintenance of safe and healthy work environment
- provision and maintenance of safe plant and structures
- provision and maintenance of safe systems of work
- safe use, handling and storage of plant, structures and substances
- methods for the identification of, and managing the impact from, psychosocial hazards
- provision of adequate facilities for the welfare of workers at work
- provision of any information, instruction, training and supervision necessary to protect all workers from risks to their health and safety
- monitoring, including proactive control, of workplace conditions and the effects on workers' health.

A mine operator also has duties under the Work Health and Safety (Mines) Regulations 2022 (WHS Mines Regulations) that include establishing and implementing the MSMS before commencing mining operations. The MSMS is the mine operator's principal means of ensuring the health and safety of workers and other persons at the mine, and must be in place before mining operations commence. The requirement to establish and implement the MSMS also applies to exploration operations.

Although there are specific regulations that outline the prescribed content of the MSMS, these are considered to be the minimum requirements that need to be addressed by the MSMS.

Furthermore, the MSMS does not remove the mine operator's duty to comply with the WHS Mines Regulations.

While most mines have health and safety related policies, plans and processes in place, the MSMS ties all these elements together into an integrated system to ensure there are no gaps in the management of all health and safety risks, and that all the elements work in a coordinated way. As well as improving work health and safety outcomes at the mine, the MSMS should avoid duplicating procedures and processes or those that are contradictory, and reduce paperwork.

1.3 Is a mine safety management system required for all mining operations?

WHS Mines Regulations r. 5B

Meaning of mining operation

WHS Mines Regulations r. 621

Duty to establish and implement a mine safety management system

The MSMS is required to be established and implemented for all mining operations, including exploration operations, whether they are new or existing.

The MSMS needs to reflect the size, nature, and type of mining operation being conducted, along with the associated risks of the operation that it is designed to cover. The above factors, along with the mine's location, will dictate the shape and structure of the MSMS.

1.3.1 New operations

The concept of the MSMS should be developed during the planning phase for the mine. Developing the MSMS at the planning phase can prove advantageous to the mine operator as risks are hypothetical at this stage and can therefore be readily managed in line with the hierarchy of control.

By developing a thorough MSMS before construction of the mine begins and implementing it during construction, considerable resources can be saved by reducing the likelihood of having to retroactively control risks.

1.3.2 Existing operations

Most existing mines will already have management systems in place. The MSMS should be developed as a controlling framework to regulate any existing safety management system, with its design having regard to any pre-existing safety management systems that are in use. Pre-existing systems will need to be reviewed to ensure that they meet the requirements of the MSMS.

The MSMS must be for the current mining operations.

2 Preparing a mine safety management system

2.1 Developing controls to manage risk

WHS Act s. 17

Management of risks

WHS Act s. 18

What is reasonably practicable in ensuring health and safety

WHS Mines Regulations Part 3.1

Managing risks to health and safety

WHS Mines Regulations r. 617

Managing risks to health and safety

At the core of the MSMS is the process or processes for managing risks, in particular those posed by principal mining hazards, and this is a key part of preparing the MSMS and controlling risks. The process selected must comply with the requirements of the WHS Act and WHS Mines Regulations and should be able to deliver the work health safety objectives defined by the mine's health and safety policy and planned outcomes there under.

Effective risk management starts with a commitment to health and safety from those who operate and manage the business or undertaking. It also needs the involvement and cooperation of workers. The mine operator should create a culture where workers will be more likely to actively contribute to health and safety performance improvement activities.

Thought must be given to what could go wrong in a workplace and the possible consequences. Then all steps must be taken that are reasonably practicable to eliminate or minimise health and safety risks arising from a business or undertaking at a mine.

The risk management process involves the following steps:

- identifying hazards – find out what could cause harm to health and safety
- assessing risks – understand the nature of the harm that could be caused by the hazard, how serious the harm could be and the likelihood of it happening
- managing risks – so far as is reasonably practicable, eliminate the hazard and associated risk or, minimise the risk through the implementation of effective risk control measures based upon the hierarchy of control
- reviewing – control measures to ensure they are working as planned.

The risk management process will differ for a new mine as opposed to an existing one given that there will not be a current safety framework that can be adapted to meet the requirements of the MSMS or workers to consult with.

2.2 Level of detail required in the mine safety management system

WHS Mines Regulations r. 621A

General requirements for mine safety management system

WHS Mines Regulations r. 622(2)

Level of detail for mine safety management system

The detail on each element of the MSMS will depend on the nature, complexity and stage of the mining operations and the associated risks. This means that the level of detail in the MSMS will vary from mine to mine and at the stage of the mine.

Complex, high-risk operations require more detail in the MSMS than smaller operations or those with fewer hazards with lower risk where the risk management process may involve only a few key workers.

Most operating mines would have many components of the MSMS as listed in Chapter 3 as part of their existing safety management system. The mine operator should carry out a gap analysis so that the existing health and safety management systems, plans and other documents can be used to develop a comprehensive MSMS as required under the WHS Mines Regulations.

For the purpose of developing a comprehensive MSMS with no gaps, the mine may be divided into sub-groups which can be based, for example, upon physical locations, processes or systems. It should be ensured that there is consistency in managing similar hazards and associated risks across the mine.

Consideration at the preparation stage should be given as to how the MSMS will be regularly monitored, reviewed, audited and tested in a structured way to ensure it remains effective. Opportunities for improvement should be continually identified (e.g. introduction of technology or changes in the workplace or activities) when reviewed.

The mine operator should also consider ensuring the people involved in preparing the MSMS have the relevant competencies, which should include an appropriate mix of technical and risk management skills. This may be partly achieved through consulting the appropriate persons.

A mine operator with more than one mine with similar operations may choose to deal with common hazards, tasks, things or circumstances for a group of mines but it should not result in an increased risk for any individual. The mine operator should also ensure that a system is developed for consultation with workers for this process. Any change due to site-specific hazards and factors should also be considered.

2.3 Identifying hazards

WHS Mines Regulations r. 34

Duty to identify hazards

Identifying hazards can be achieved by dividing operations or systems into groups or even sub-groups. These can be based on physical locations, type of activities or any other relevant criteria. All possible sources of information must be considered when identifying hazards and developing the MSMS, such as past experience, published information, engineering standards, worker consultation and any other source of information. Systems need to be developed to ensure that as the mine develops, consultation is continued.

During the process of identifying hazards, the following should be taken into account:

- workplaces, work processes, substances, plant and equipment
- how work is organised, managed, carried out and how changes may occur
- job and work design in consideration of management of health and fatigue of workers
- contracting and subcontracting services
- management and supervision
- competencies of persons who manage, supervise and work
- inspection, maintenance and testing of work environment, plant and equipment.

2.4 Risk assessment

A risk assessment involves considering the probability of an unplanned event occurring, as well as the likely consequences.

Note that hazards should be assessed separately and jointly with other hazards where there is a likelihood for some hazards to interact and increase the level of risk.

In assessing risks, the mine operator should consider the:

- nature of the hazard or risk
- likelihood of the hazard or risk causing harm
- possible severity of the harm
- state of knowledge (what the industry knows) about the hazard or risk and how to eliminate or minimise them.

Other matters that should be considered in assessing risks are:

- the effect of different operating conditions – normal or abnormal (e.g. shut down and start up, adverse weather and possible misuse of equipment due to human error)
- past incidents and potential emergency situations identified from internal and external sources and experiences
- past, current and planned activities
- the reliability and adequacy of existing technology used to control risk (i.e. engineering controls).

2.5 Managing risk and risk controls

WHS Mines Regulations r. 35

Managing risks to health and safety

WHS Mines Regulations r. 36

Hierarchy of control measures

WHS Mines Regulations r. 617

Managing risks to health and safety

WHS Mines Regulations r. 618

Review of control measures

Managing risk involves eliminating the risk, so far as is reasonably practicable. If this is not able to be done, the risk must be minimised, so far as is reasonably practicable, by the use of effective controls that are based upon the hierarchy of control.

Some hazards pose such high levels of risk that control measures are prescribed by the WHS Act and WHS Mines Regulations. As a minimum, these prescribed controls must always be used, and be supplemented by additional controls to assist in further minimising the risk. Emerging hazards need to be risk assessed and the effectiveness of existing risk assessments and implemented controls evaluated, with the MSMS being updated to reflect any operational changes.

The mine operator's arrangements for managing risk must include an ongoing process for the selection and use of suitable methods for hazard identification and risk assessment. The risk management process should also establish the tolerable risk.

A combination of controls may be used to minimise risks, so far as is practicable, if a single control is not sufficient for the purpose. In many instances, it is likely that a combination of control measures will be needed.

When selecting controls, a mine operator should prioritise the implementation of preventative controls, where practicable. Any controls that minimise or otherwise lessen (mitigate) the consequences of the incident are only supplementary to prevention.

Where practicable, a risk must be eliminated, otherwise, the mine operator, in minimising risks to health and safety, must implement effective risk control measures to minimise risks so far as is reasonably practicable, by:

- substituting, wholly or partly, the hazard that creates a risk with something that gives rise to a lesser risk
- isolating the hazard from any person exposed to it
- implementing engineering controls.

The MSMS should contain reference to any design principles, engineering standards and technical standards relied upon for control measures. If a residual risk remains, the mine operator must further minimise the remaining risk by:

- implementing administrative controls
- ensuring personal protective equipment (PPE) is provided and used.

With the implementation of these controls the risk should be, so far as is reasonably practicable, minimised, but it should not be higher than the tolerable risk.

When identified deficiencies cannot be easily remedied or risk control measures are disabled or bypassed, short-term risk control measures that provide an equivalent level of risk reduction should be implemented.

In assessing risk and selecting effective controls to implement, the reasons for adopting or rejecting controls to manage all hazards must also be documented. Risk controls for hazards must be documented in the MSMS.

To ensure that the selected controls remain effective, their performance should be actively monitored. Nearly all incidents occur because one or more existing controls failed. These failures can be caused because the control is poorly designed, understood, communicated, implemented or maintained. The performance of key controls should be regularly monitored to ensure the controls remain effective.

The Western Australian mining industry comprises of a large proportion of fly-in fly-out and drive-in drive-out workers staying in camp facilities. As a result, additional hazards may be introduced that require effective management, and these need to be covered within the MSMS.

2.5.1 Trigger action response plans

There may be instances where monitoring has been put in place to detect a slowly deteriorating trend. A trigger action response plan (TARP) is an example of a risk-management tool that triggers a planned early response in these instances.

TARPs are widely used in the mining industry to prevent 'normalisation', which means accepting slow deterioration as 'normal' because it is not much different from day to day. If there is no planned response in place for these particular hazards, a decision to put a risk control in place may be delayed until the hazard cannot be easily controlled.

TARPs summarise the overall monitoring arrangements and include planned actions ready to implement when certain trigger points are detected by monitoring. However, TARPs should be put in place only after a risk assessment has verified the selection of the most effective control measures.

Important factors to be considered when developing TARPs are:

- simplicity – triggers should be easily understood and designed for the people that are expected to identify and implement them
- clear linkage – the actions required are linked to, and appropriate to, the trigger that initiates the action
- clear accountability – the actions are assigned to a person who has the authority and is available to take the appropriate actions
- communication – there is clear communication between all affected people including operators, supervisors, engineers and between shifts
- escalation – there are escalating actions linked to deteriorating conditions (e.g. stopping mining and site evacuation at the higher trigger levels).

2.6 Consultation

WHS Act Part 5 Division 2

Consultation with workers

WHS Mines Regulations r. 622(1)(l)

Safety role for workers

WHS Mines Regulations r. 625A

Consultation requirement for mine safety management system

The mine operator must consult with workers on matters specific to a mine. This includes the preparation, implementation and review of the MSMS, and parts of it, such as risk assessments.

2.6.1 Consulting with workers

The WHS Act and WHS Mines Regulations prescribe the matters on which the mine operator and PCBUs must consult with workers.

As such, duties exist for the mine operator to consult with workers in relation to:

- the development, implementation and review of the MSMS for the mine
- conducting risk assessments for principal mining hazard management plans
- preparing, testing and reviewing the emergency plan for the mine
- the implementation of the workers' safety role
- developing and implementing strategies to protect workers and other persons at the mine from any risk to health and safety.

The MSMS should set out how this safety role for workers will be achieved at the mine in practice. This may involve the mine operator considering how to give workers the opportunity to contribute, given, for example, factors such as the different types of work undertaken at the mine or how to involve contractors and their workers.

3 Content of a mine safety management system

WHS Mines Regulations r. 622

Content of mine safety management system

The content of the MSMS must address the requirements prescribed in the WHS Mines Regulations and the risk and hazard controls identified during the risk assessment conducted in accordance with the requirements as outlined in Chapter 2.

The MSMS must provide a comprehensive and integrated framework for the mine operator to manage all aspects of known risks to health and safety at the mine and must include all applicable elements, listing all controls and not just the procedures used to undertake work.

3.1 Current mining operations

WHS Mines Regulations r. 621A

General requirements for mine safety management system

WHS Mines Regulations r. 622(1)(b)

Description of the mining operation

WHS Mines Regulations r. 622(2)

Level of detail of mine safety management system

The MSMS must reflect or cover the current mining operations, which may begin with a simple activity, and needs to develop and be updated relative to the nature, size and complexity as the mining operations change.

The MSMS needs to include a description of the current mining operations, covering:

- the location of mining operations
- the nature and size of the mine (e.g. mineralogy, exploration, production or number of workers)
- its complexity (e.g. underground or open pit; any processing operations involved).

3.2 Health and safety policy

WHS Mines Regulations r. 622(1)(a)
Mine operator's health and safety policy

The mine operator's health and safety policy is a statement of the mine operator's commitment and approach to health and safety and the policy must include the broad aims in relation to the safe operation of the mine. This will vary considerably between mines, but common features of a good health and safety policy includes that it is an authoritative statement setting out matters of principle and the actions that are to be taken to support those matters.

The policy should:

- have objectives for meeting regulatory obligations, maintaining, and where possible, improving health and safety standards
- state the commitment of the mine operator for achieving the stated goals and objectives and providing necessary resources
- be documented and communicated to workers and others that may be affected (e.g. work groups, committee members, the regulator and community groups, if they are to be affected by the mining operations).

3.3 Managing risk by adopting appropriate controls

WHS Mines Regulations r. 36
Hierarchy of control measures

The risk management process following the hierarchy of control, as detailed in Chapter 2, will guide the appropriate controls that must be adopted by the mine operator and documented within the MSMS. These controls include, but are not limited to:

- steps taken to eliminate hazards in the design of the mine layout and operations
- engineering controls for processes, plant and equipment
- administrative controls in the form of procedures, training and supervision.

While the WHS Mines Regulations provides details of the minimum controls that form part of the MSMS, they may not all apply to every mine.

3.4 Systems, plans and procedures

WHS Mines Regulations r. 622(1)(d)

Systems, plans and procedures used to control risk to health and safety

This section will cover the systems, plans and procedures that will be used to control risks to health and safety at the mine.

The systems, procedures and plans used to manage the risks posed by hazards are important elements of the MSMS. Depending upon the nature of the mine and how the MSMS is structured, the systems, procedures and plans may exist in other documents and manuals that are referenced within the MSMS.

A mine may have many systems in place that are divided into sub-systems, such as those used for production, maintenance, training, communication or contractor management. When combined, the systems should cover all aspects of the whole mining operation under the MSMS, and there should be consistency between these systems, especially where certain procedures or plans are duplicated across different systems.

The mine operator must identify all of the applicable plans to the mine that will cover the requirements of the MSMS. However, the following plans that may be relevant or applicable must be included:

- principal mining hazard management plans
- a health management plan
- an emergency plan
- a radiation management plan
- a radioactive waste management plan
- an underground ventilation control plan.

Procedures are developed by analysing an activity into clearly understood steps, making a risk assessment and developing a method of carrying out the activity in a safe and desired manner. Procedures provide guidance to everyone who use them and help achieve consistent quality and a safe method of carrying out a task.

While developing procedures, consideration should be given to the following:

- consulting with persons who will use the procedure
- considering all available information, including documents from the designer, manufacturer, supplier and/or constructor of plant and equipment
- using language that is easy to understand.

3.5 Principal mining hazard management plans

WHS Mines Regulations r. 612

Meaning of principal mining hazard

WHS Mines Regulations r. 627

Identification of principal mining hazards and conduct of risk assessments

WHS Mines Regulations Schedule 19

Principal mining hazard management plans – matters to be considered

A principal mining hazard (PMH) is any activity, process, procedure, plant, structure, substance, situation or other circumstance relating to the carrying out of mining operations that has a reasonable potential to result in multiple fatalities. These may be in a single incident or a series of recurring incidents.

Based on the nature and size of the mining operation, the PMHs may include:

- instability of geotechnical structure
- inrush of any substance
- mine shafts and winding system
- roads or other areas where mobile plant operate
- fire or uncontrolled explosion
- gas outbursts in an underground coal mine
- spontaneous combustion in an underground coal mine
- any other hazard identified by the mine operator.

The WHS Mines Regulations list some of the factors that must be considered in developing the principal mining hazard management plan.

The PMHs at the mine may change depending upon the work being undertaken. Therefore, what constitutes a PMH at one point in time may not be relevant later, for example, different work practices or technology removing a hazard.

The management of PMHs is an important component of the MSMS, as they require special consideration due to the potential to create incidents with serious consequences.

The risks associated with PMHs are not always obvious and much like the overall hazard, what is a risk today may not be so in the future or new risks may be introduced. Therefore, PMHs must be identified and then assessed both separately and in combination in order to identify any interactions that may flow from one risk to another.

3.5.1 What is a principal mining hazard management plan?

A principal mining hazard management plan (PMHMP) is a document that sets out how the mine operator will manage risks to workers' health and safety associated with the PMH.

The mine operator must prepare a PMHMP for each PMH that has been identified at the mine. This not only includes the PMHs listed in Section 3.5 above, but also any hazards that the mine operator has identified, which have a potential to cause multiple fatalities in a single incident or a series or recurring incidents.

3.5.2 Content of a principal mining hazard management plan

Before preparing the PMHMP, the mine operator should consider how the PMHMP is to be established, implemented and integrated with other plans. The mine operator must ensure that the development, and review as necessary, of the PMHMP, is undertaken in consultation with relevant workers and representatives.

Before the PMHMP is prepared, the mine operator should consider:

- the relevant information required
- the size, nature, complexity and location of the operation
- identifying associated factors contributing to a PMH
- available engineering, operational and organisational control measures
- existing plans, procedures and other controls
- any legacy monitoring data
- the intended audience – the PMHMP should be written in plain language that is easy to understand.

The PMHMP must:

- identify and describe the hazard at the mining operation
- assess the risks of health and safety to workers from exposure to the hazard
- describe the control measures and implementation required to manage the risks associated with the hazard.

3.5.3 Risk assessment methods for an identified principal mining hazard

Once a PMH has been identified, the mine operator must use appropriate risk assessment methods to investigate and analyse each PMH identified before developing the PMHMP.

Each method and analysis process or technique has limitations and requires different levels of resources and detail. Some processes may be better suited to particular PMHs and types of mining operations than others.

Whatever the process chosen for a PMH, it should be logical, comprehensive, systematic and repeatable, if it is to be effective.

A process is 'comprehensive' and 'systematic' when it includes all operations, activities, areas or phases of operations and addresses all aspects of the hazard (e.g. likelihood and consequence) carefully, and applies the same process at each step.

Some questions to ask when selecting a risk assessment process are:

- Is it suitable for the type and complexity of the operation and the nature of all the hazards present?
- Is it workable and not overly complicated for the operation's needs?
- Is it adequate to differentiate between likelihood and consequence?
- Is it able to assist in understanding and selecting the risk control measures?
- Is it capable of assessing cumulative risk and the potential effect of risk reduction measures?
- Does it challenge the assumption that no new knowledge is required about the PMH?
- Does it provide information that can be understood by those exposed to the PMH?
- Does it ensure an appropriate group of workers is consulted about and actively involved in the assessment?

- Is it able to identify and address uncertainties and human factors?
- Is it consistent with the operation's safety policy and the MSMS?
- Can it document all methods, results, assumptions and data?
- Can it be used for continuous improvement?

The chosen process should deliver these outcomes:

- provide knowledge, awareness and understanding of the risk of the PMH and how to prevent incidents for inclusion in the PMHMP
- identify the major factors contributing to risk
- identify, evaluate, define and justify the selection, or rejection, of risk controls
- allow the adequacy of selected controls to be tested
- demonstrate that risk is eliminated or reduced so far as is reasonably practicable
- identify concerns to be addressed in community consultation where required.

3.5.4 Preparing a principal mining hazard management plan

WHS Mines Regulations r. 628

Preparation of principal mining hazard management plan

WHS Mines Regulations r. 629

Review

When preparing a PMHMP, it must:

- provide for the management of all aspects of the risk controls relevant to the PMH
- be set out and expressed in a way that is easily understandable and made readily accessible for management, supervision and workers who use the PMHMP.

With consideration to the above, the PMHMP must:

- describe the nature of the PMH to which the plan relates
- describe how the PMH relates to other hazards at the mine
- describe the analysis methods used in identifying the PMH to which the plan relates
- include a record of the risk assessment conducted in relation to the PMH
- describe the investigation and analysis methods used in determining the control methods to be implemented
- describe all control measures to be implemented to manage risks to health and safety associated with the PMH
- describe the arrangements in place for providing the information, training, instruction and supervision in relation to the nature of the PMH and the control measures implemented
- refer to any design principles, engineering standards and technical standards relied upon for control measures for the PMH
- set out the reasons for adopting or rejecting all control measures considered.

All PMHMPs must form part of the MSMS for a site or organisation. In practice, these plans can be integrated by:

- updating the risk management procedure to include all hazards
- referencing PMHMPs in other relevant procedures
- referencing relevant work instructions, policies and procedures.

The mine operator of a mine must ensure that each PMHMP is reviewed and where necessary revised if deficient or a risk control measure specified in the plan is revised. If a PMHMP is revised, the mine operator must record the revisions, including any revision of a risk assessment, in writing in the plan.

3.6 Other management plans

3.6.1 Health management plan

WHS Mines Regulations r. 622(1)(d)(v)

Health management plan prepared for the mine

WHS Mines Regulations r. 675EA

Duty to prepare and implement health management plan

The mine operator must prepare and implement a health management plan (HMP) for the mine, which identifies all health hazards that may have an adverse effect on the health of any worker or other person.

This includes a description of the arrangements that are in place for all monitoring, assessment and regular inspection of the working environment at the mine to ensure the health of workers is not adversely affected because of the mining operations, and provides details of controls that the mine operator will implement in order to manage the associated risks.

Therefore, the HMP needs to identify and consider all matters that may have an adverse effect on the health of workers from mining operations at the mine, including, but not limited to:

- heat
- humidity
- contaminants
- any other health hazard, for example:
 - noise
 - chronic exposure to musculoskeletal stressors
 - those affecting mental health.

The HMP should provide all applicable controls to minimise the exposure, so far as is reasonably practicable, to all identified hazards. A monitoring schedule based on risk should also be developed.

The mine operator must ensure that health monitoring is provided to workers if there is a risk of an adverse effect on the workers' health because of exposure to a hazard associated with mining (if the exposure can be detected), and this must be described in the HMP for the mine.

For example, exposure to silica in dust can cause silicosis, but the effect of exposure can be tested by periodic low dose CT scans.

The mine operator must also ensure that a worker who has experienced adverse health effects from an exposure to a hazard at the mine is removed from the hazard.

The HMP must consider suitable arrangements for the inclusion of contractors.

3.6.2 Emergency plan

WHS Mines Regulations r. 43

Duty to prepare, maintain and implement emergency plan

WHS Mines Regulation r. 622(1)(d)(iv)

Emergency plan prepared for the mine

WHS Mines Regulations Part 10.2 Division 5

Emergency management – Emergency plan

WHS Mines Regulation Schedule 22

Matters to be included in emergency plan for a mine

Mine operators must prepare an emergency plan (EP), as an element of the MSMS, and document it in a way that is understandable by those who may have to use it. The EP must include information on what has to be done to respond effectively to emergencies.

An EP must be prepared that provides for emergency procedures, including evacuation procedures, notifying emergency services and otherwise responding to the emergency. Emergency procedures need to make provision for providing medical treatment and assistance.

The EP should cover workers or persons working in remote areas, such as exploration or prospecting, by themselves or in small groups. A communication plan for such operations is important.

Emergency procedures must be tested and competent people must be trained and made responsible for the control of emergency situations. Emergency instructions, including the names and control details of key workers, must be clear and accessible to the workers who need them.

If the nature of the mining operation is such that the mine operator may require the services of a primary emergency service or a neighbouring mine to deal with an emergency, the mine operator must consult with and formalise any arrangements with those who may take part when a neighbouring mine is dealing with an emergency.

If there is a risk to the health and safety of people in the surrounding area from a mining hazard, the mine operator of a mine must also consult with the local authority about the possible impact.

Once the EP is prepared, the mine operator must:

- provide the resources and equipment listed in the EP (e.g. breathing apparatus, lifting gear, firefighting equipment)
- must ensure the resources and workers allocated are adequate for an emergency continuing for more than a single shift
- have a copy of the EP available to the emergency services that have been consulted with upon request
- test the EP at least at intervals no more than 12 months
- review the EP as required.

If the mining operation is underground, the WHS Mines Regulations specify a range of additional and specific measures required for an EP relating to:

- emergency exits
- safe escape and refuges
- signage for refuges
- self-rescuers
- PPE
- having trained and competent rescue people at the surface.

The EP requires assigning and training competent people to be responsible for the control of emergency situations. Emergency instructions, including the names and control details of key people, must be clear and accessible to the people who need them.

3.6.2.1 Withdrawal procedures and conditions

WHS Mines Regulations r. 622(1)(h)

Procedures and conditions for persons to be withdrawn

There may be occasions where a full emergency response is not necessary, but workers or others at a mine may need to be evacuated or withdrawn due to imminent danger, such as a cyclone, bushfire, adverse ground or atmospheric conditions.

Therefore, this section of the EP covers the documentation of procedures and conditions under which people at or around the mine are to be withdrawn.

Withdrawal to a place of safety may also be needed as a precautionary measure if it is warranted due to a health and safety risk, such as, raised contaminant levels or loss of major controls.

Risk management processes should be used to identify and assess scenarios likely to trigger the need for a withdrawal of people.

The withdrawal conditions should include:

- trigger for withdrawal
- actions to be taken when the trigger is activated
- communication of the withdrawal
- route and method of withdrawal, including the assembly point after the withdrawal
- checking the withdrawal has been carried out
- re-entry procedure.

The purpose of the withdrawal is to take planned action before the need for an emergency response. Limited activities may have to continue in the affected areas. Where limited operations are provided, the withdrawal conditions should specify the activities that may be performed and under what circumstances they are performed.

3.6.3 Radiation management

WHS Mines Regulations r. 622(1)(d)(ii)
Radiation management plan for the mine

WHS Mines Regulations r. 641N
Radiation management plan

A radiation management plan (RMP) is required where the activity concentration of naturally occurring radionuclides in the mining, processing or waste-producing activities and radiation doses to workers or members of the public exceed the criteria outlined in the WHS Mines Regulations.

The mine operator of a relevant mine must ensure that an approved RMP is in place for the mine before mining operations commence.

The content of the RMP is specified in the Australian Radiation Protection and Nuclear Safety Agency's *Radiation Protection Series No.9: Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing*.

3.6.4 Radioactive waste management plan

WHS Mines Regulations r. 622(1)(d)(ii)
Radioactive waste management plan for the mine

WHS Mines Regulations r. 641O
Radioactive waste management plan

The mine operator of a relevant mine must ensure that an approved radioactive waste management plan (RWMP) is in place for the mine before mining operations commence.

The RWMP should be developed in conjunction with the RMP and must include a description of the facility and its resources as well as the operating procedures and monitoring program.

As the facility progresses through the various stages of its operation, or as a result of significant change or as a result of monitoring programs, the RWMP should be updated so that it is able to cope with any foreseeable eventuality.

The RWMP must include information relating to the discharge of radioactive waste, including the authorised limit of waste that can be discharged under the plan.

The content of the RWMP is specified in the Australian Radiation Protection and Nuclear Safety Agency's *Radiation Protection Series No.9: Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing*.

3.6.5 Underground ventilation control plan

WHS Mines Regulations r. 622(1)(d)(iii)

Ventilation control plan for the mine

WHS Mines Regulations r. 654

Duty to prepare and implement underground ventilation control plan

The mine operator of an underground mine is required to prepare and implement an underground ventilation control plan (UVCP) for any underground mine to ensure the provision of a safe mine atmosphere. The UVCP is to be designed to verify that the ventilation system is performing as designed following installation or changes to the primary ventilation infrastructure (e.g. increase in fan size, addition of vent rises).

The UVCP must include a description of the following:

- the design, planning and operation of the ventilation system, including selection, maintenance, calibration and monitoring of equipment
- the standards applied relating to the placement, operation, maintenance and monitoring of fans
- factors that may affect the quantity and quality of air required for ventilation during normal operation and emergencies
- how the ventilation system integrates with mine development and production
- arrangements and procedures for inspecting, monitoring, maintaining and testing the ventilation system
- arrangements and procedures for managing auxiliary ventilation
- underground ventilation officers and other competent persons for managing ventilation
- arrangements for managing potential sudden increases of atmospheric contaminants
- procedures regarding loss of power to the main ventilation system or total or partial ventilation failure, including withdrawal in the case of unsafe atmospheric conditions
- arrangements for preventing entry to isolated or fenced-off areas
- modelling of significant change to ventilation processes
- maintenance of records, including design calculations and details of corrective actions.

Ventilation measurements should be taken under operating conditions to confirm the ventilation system's design capacity and design parameters are not exceeded by:

- changes in production and development scheduling
- confirming there is a ventilation design standard for each work area to account for the air requirement for the type of mining activity
- establishing a TARP outlining the minimum actions required by workers in response to a deviation in working conditions (e.g. contaminant levels, thermal conditions)
- providing adequate information, instruction and training for management, supervision and workers in the management of ventilation in their work areas, including taking ventilation measurements using appropriate instruments and reporting adverse ventilation conditions.

Training for underground supervisors can also include an understanding of legislation, basics of ventilation designs, and the management of ventilation controls (e.g. chokes, doors).

3.7 Management and supervisory structure

WHS Mines Regulations r. 622(1)(e)
Management and supervisory structure

WHS Mines Regulations Part 10.7A
Positions in relation to mines

The mine operator must document the management and supervisory structure of those responsible for the health and safety of workers and others at the mine. This must include the following information relating to the organisational structure:

- details and responsibilities of those persons appointed to or performing statutory, management or supervisory roles
- competency requirements, certification and assessment records for all positions
- the number of managerial and supervisory roles required based upon the size, nature, complexities and span of control of the operation
- requirements relating to acting positions
- arrangements for filling temporary and permanent vacancies.

Short absences of people in critical positions or key statutory positions should be addressed in this section. Absence of supervisory, statutory and/or management personnel due to rostering in fly-in fly-out or drive-in drive-out operations should also be considered.

The description of the management structure in the MSMS could also include:

- documentation of the structure such as roles, responsibilities and scheduling for actions in relation to implementing and ongoing operation of the MSMS
- how the overall MSMS is to be managed to ensure it is functioning and who is responsible for this
- an assessment of technical requirements of the position in the structure against actual competence to determine training requirements for them and any delegates for that role as well as for succession planning.

3.7.1 Supervision

WHS Mines Regulations r. 630
Communication on change of supervisors

WHS Mines Regulations r. 622(1)(k)
Arrangements for supervision

WHS Mines Regulations Part 10.7A
Positions in relation to mines

Supervision is essential to check that work instructions and procedures are being followed and tasks are completed as required.

Arrangements may be made for direct or indirect supervision or a mix of levels and this may be supplemented by real-time remote monitoring. What is appropriate to the mine, as well as the number of supervisors required and supervisory oversight needed (whether continuous or intermittent) will depend on factors including, the level of risk, the number of workers and work groups, the size of the work area, the mode of transport available, or remote location of work.

The WHS Mines Regulations specify that the following areas at a mine must be supervised by a statutory supervisor:

- a quarry
- a processing plant
- a workshop
- a laboratory.

The mine operator must also identify, based upon a risk assessment, if other non-specified areas should also be inspected by a statutory supervisor to reduce the risks to health and safety associated with the mining operation carried out at the mine.

3.8 Controls involving monitoring

WHS Mines Regulations r. 213

Maintenance and inspection of plant

WHS Mines Regulations Part 10.2, Division 3, Subdivision 2

Air quality and monitoring

WHS Mines Regulations r. 631B(2)(g)

Monitoring of geotechnical structures

WHS Mines Regulations r. 649

Air quality – monitoring (underground)

Some mandatory controls under the WHS Mines Regulations involve monitoring. For example, the WHS Mines Regulations require a mine operator to carry out monitoring in relation to, among other things:

- air quality (exposure to airborne dust must be monitored in all mines and additionally the air quality in underground mines must be monitored)
- ground movement
- plant and machinery.

It is likely that mine operators will need to carry out monitoring as part of their risk management processes. For example, monitoring is used to manage the risks associated with:

- excessive noise
- vibration
- poor visibility
- dark and confined working conditions
- exposure to hazardous chemicals or radiation
- worker fatigue
- consumption of alcohol by workers.

While carrying out monitoring, the following factors may need to be considered:

- How will the correct monitoring intervals be determined? (e.g. if a failure might take five minutes from first indications, then monitoring should be set for two minute intervals or whatever frequency has been determined by a risk assessment)
- Are parameters and limitations known and how can they be checked?
- How do you verify the effectiveness of the control?
- What level of maintenance is required to keep the control effective and is it on the maintenance schedule?
- What are the consequences if the control fails? (e.g. is an automatic shut off triggered)
- What training/re-training and assessment of competency is required for workers and others?
- How often does the control need reviewing?

3.8.1 Health monitoring

WHS Mines Regulations r. 58

Audiometric testing

WHS Mines Regulations Part 3.2, Division 2

General working environment

WHS Mines Regulations Part 7.1, Division 6

WHS Mines Regulations Part 7.2, Division 4

WHS Mines Regulations Part 8.5, Division 1

WHS Mines Regulations Part 10.3, Division 2

Health monitoring

The mine operator must provide health monitoring to workers if there is an identified risk of an adverse effect on the worker's health because of exposure to a hazard associated with the mining operations. For example, exposure to lead can cause lead poisoning, and exposure can be tested by periodic biological sampling.

Health monitoring is required to be carried out:

- for identified exposure to:
 - asbestos
 - hazardous chemicals, such as nickel, cobalt, arsenic, silica
 - lead
- where health is likely to be affected by mining operations
- where the regulator may request additional health monitoring be carried out.

Audiometric testing is required where a worker is frequently required by the PCBU to use PPE to protect them from the risk of hearing loss associated with noise that exceeds the exposure standard for noise.

If health monitoring is required at the mine, the MSMS must set out how the requirements for health monitoring will be implemented. The monitoring should be for the possible short and long-term adverse health effects on workers. Triggers should be established to ensure action is taken if monitoring identifies certain levels of adverse risks.

3.9 Consultation, representation and participation

3.9.1 Consultation and worker safety roles

WHS Act Part 5

Consultation, representation and participation

WHS Mines Regulations r. 622(1)(l)

Safety role for workers

The mine operator must implement processes for consultation with workers in accordance with the requirements of the WHS Act, including:

- if requested, the election of health and safety representatives (HSRs) and the provision of the support required for them to effectively conduct their functions
- mechanisms for worker consultation, such as the establishment of health and safety committees, and information-sharing meetings, such as pre-starts or shift handovers.

The mine operator must also implement measures to consult with workers to draw upon their relevant experience and enable them to contribute to identifying hazards including:

- identifying PMHs and other hazards
- providing input on the appropriate risk control measures for PMHs, other hazards, control plans and procedures
- providing input on the MSMS and its review.

3.9.2 Consultation, cooperation and coordination with and between PCBUs

WHS Act s. 46

Duty to consult with other duty holders

WHS Mines Regulations r. 622(1)(f)

Arrangements for consultation, cooperation and coordination between PCBUs

The mine operator should maintain necessary communication with PCBUs to ensure their work continues to be coordinated so as not to give rise to any WHS issues and that each is able to fulfil their duties under the WHS laws. The frequency and type of communication will depend on the nature of the work being done by the contractor and the associated risk.

Arrangements to allow for consultation, cooperation and coordination between PCBUs at mines may include:

- scheduled meetings between PCBUs, which the mine operator may facilitate
- procedures for how issues between PCBUs are to be raised and resolved.

Any individual, company, contractor or partnership that supplies services to the mine, other than as a direct employee, will be a PCBU and has the primary duty of care under the WHS Act as well as other duties and responsibilities under WHS laws.

The MSMS must set out the arrangements in place between the PCBUs working at the mine to ensure consultation, cooperation and coordination occurs with respect to their various activities and with a view to ensuring each PCBU can fully meet its WHS duties at the mine.

The mine operator must establish the mechanisms to be followed when multiple PCBUs operate at the mine and ensure that the arrangements are in place to guide how PCBUs will interact.

3.10 Contractor management

WHS Mines Regulations r. 608A

Meaning of contractor for Chapter 10

WHS Mines Regulations 608B

Regulator may determine who is not contractor for Chapter

WHS Mines Regulations r. 622(1)(g)

Contractor management

WHS Mines Regulations r. 625B

Duty of mine operator to provide information to contractor

WHS Mines Regulations r. 625C

Duty of contractor to provide information to mine operator

WHS Mines Regulations r. 625D

Contractor to be covered health and safety management plan or mine safety management system

If a contractor is working at a mine, or is likely to work at a mine, the mine operator must include in the MSMS control measures that will be used to control risks to health and safety associated with the contractor's work.

The mine operator must also document the process used for assessing health and safety policies and procedures, and provide a description of the arrangements for monitoring and evaluating the contractor's compliance with health and safety processes.

A contractor may operate at a mine under the MSMS of the mine operator or under the contractor's own health and safety management plan. If the contractor finds its arrangements are consistent with the mine's MSMS, then the contractor must notify the mine operator in writing of this to indicate they will use the MSMS when working at the mine.

The contractor may operate under its own health and safety management plan if accepted by the mine operator.

The mine operator must assess whether the contractor has resources and capabilities to implement the relevant parts of the MSMS or its own health and safety management plan.

Adopting the MSMS of the mine operator does not reduce the contractor's duty under the WHS Act.

Where a mine has contractors and/or sub-contractors, the mine operator must develop a system so their operations ensure contractor management systems are aligned to the MSMS of the mine. The mine operator should clearly define how contractor's work will be overseen and coordinated and this may include a process for accepting how a sub-contractor of a contractor will carry out work.

For this purpose, the term contractor is defined in the WHS Mines Regulations and does not include a PCBU involving the occasional delivery to or from the mine or where the regulator determines that a person, or a person of a class, is not a contractor.

3.10.1 Contractor health and safety management plan

WHS Mines Regulations r. 625D(1)(a)

Contractor to prepare health and safety management plan

Where a contractor requests to operate under its own health and safety management plan, then the mine operator must review it and notify the contractor in writing whether the plan is adequate before the contractor commences work.

When reviewing a contractor's health and safety management plan, the mine operator should consider:

- how each contractor's plan will be assessed, and against what criteria, to determine areas of consistency and/or differences with the mine's MSMS
- how any differences in plans may be resolved so they are integrated (e.g. work permits for hot work, detection devices are calibrated for consistency and communication systems use the same frequency)
- induction of each contractor's workers to the mine and checking licences and requirements for PPE
- procedures to ensure ongoing communication and consultation with contractors and their workers
- responsibilities for the day-to-day supervision and inspection of contractor work for risks and implementation of risk controls
- inspecting and auditing contractors according to a schedule of risks to be managed, which may be based on the past performance of the contractor
- how sub-contractors of a contractor will be managed.

The mine operator should also consider how the contractor's health and safety management plan is to be accepted. This may be achieved by:

- developing a process for accepting the contractor's health and safety management plan, which may be appropriate where it has specialised technical processes and expertise that the mine does not possess
- managing differences through formal processes such as scheduled communication meetings, joint workplace inspections and notification procedures to reduce risk
- either accepting the contractor's plan in part or in full. The contractor's plan would need to operate alongside the mine's MSMS to ensure overall risks are controlled, such as when contractors are in separate locations or involved in distinct mining operations.

The contractor's health and safety management plan is included in the MSMS for the mine even in instances where the contractor has prepared it.

3.11 Training and communication

3.11.1 Information, training and instruction

WHS Mines Regulation r. 39

Provision of information, training and instruction

WHS Mines Regulations r. 622(1)(i)

Arrangements for provision of information, training and instruction

WHS Mines Regulations Part 10.2, Division 6

Information, training and instructions

The mine operator must document the arrangements for the provision of information, training and instructions regarding the nature of the work, the risks associated with the work and the required control measures.

Training should take into account the make-up of the workforce (e.g. level of education, literacy and the language spoken), work responsibilities, complexity of hazards and severity of risks. The delivery of information, training and instruction should consider:

- the amount of information and training that is delivered to workers over a period of time so that it is readily understood
- the information or instructions should be set out in a way that best communicates with the potential reader or learner.

Training is essential to managing health and safety and must be documented to ensure consistency, minimise possible gaps and to verify competency was achieved. Having training and verification of competency that includes a documented theoretical and practical assessment component can help ensure workers are aware of the key safety requirements of each work procedure.

Where there are changes to processes or equipment, the requirements for additional training should be assessed as part of the change management process.

Where the mine operator and other PCBUs at the mine both have duties to provide information, training and instruction to certain workers, they must consult, coordinate and cooperate with those PCBUs. Essential safety information and instruction must also be provided to anybody visiting the site.

Under the WHS Mines Regulations, the mine operator must give workers a summary of the MSMS and, if requested, the relevant documented part of the MSMS that details any revision to the MSMS that is relevant to their work.

If a worker is likely to be exposed to a risk, then they must be informed of the likely exposure and the right to request to be provided with:

- a summary of each PMHMP if the worker is, or may be exposed to, the risks to which the plan relates
- access to the MSMS and any PMHMP.

3.11.2 Induction procedures

WHS Mines Regulations r. 622(1)(j)

Induction procedures

WHS Mines Regulations r. 675BA

Site induction for new workers

Induction procedures for workers should ensure that the induction process (general and site-specific) is appropriate to the tasks that the worker will perform. The procedure should address:

- how the content of any induction supports the implementation of the MSMS (e.g. introduction to company processes, safe operating procedures and use of PPE)
- how often workers must be refreshed in any part of the induction (e.g. changes have occurred at the mine)
- keeping records of induction
- regular review and, if required, the process for revising induction content and procedures.

The initial induction should be supplemented by field-demonstrations and practical sessions to ensure understanding of procedures and the implementation of effective controls.

3.11.3 Communication across shifts and rosters

WHS Mines Regulations r. 622(1)(q)

Arrangements for effective communication across shifts

The MSMS should specify how health and safety information is communicated across shifts, rosters or at the time of handover between workers, supervisors and other relevant persons.

If the mine employs workers on different shifts, the mine operator should arrange for the exchange of information between shifts and with other relevant people. This will include how recording or reporting of such information will be documented, for example, in shift reports, logbooks or other methods. For mines operating on rosters, similar information should be communicated at the time of changeover.

In deciding on these arrangements, the mine operator should consider:

- any specific controls that apply, for example, in relation to emergencies, remote or isolated work, and contact with people working underground
- alternative methods of communication in the event of power failure or interruption to communication.

At handover, the statutory supervisor must provide a written report, which can be electronic, to the incoming statutory supervisor.

3.12 Notifiable and reportable incidents, response and investigation

WHS Act s. 35

What is a notifiable incident

WHS Act s. 38

Duty to notify of notifiable incidents

WHS Mines Regulations r. 622(1)(m)

Procedures for responding to, and investigating notifiable incidents and reportable incidents

WHS Mines Regulations r. 675V

Duty to notify regulator of reportable incidents

WHS Mines Regulations r. 675X

Duty to notify mine operator of incidents

The mine operator must develop procedures for notifiable and reportable incident reporting, response and investigation to address the following:

- what incidents are notifiable or reportable
- serious illness and adverse health effects that are notifiable or reportable
- by what means the regulator is immediately notified in the event of a reportable or notifiable incident and what details are needed for the notification
- how a written notification is to be provided to the regulator, if requested, and how it is to be kept
- actions that may be necessary as a result of the incident (e.g. preserving the site, isolating the areas and ceasing work if required for a site)
- notification of the incident to HSRs
- in the instance of an inspector attending, assistance to be provided to the inspector and responses to directions from them, such as seizure of items.

It may be helpful to develop a procedure that documents the process used to investigate any incidents, serious illnesses or adverse health effects. The basic elements of the procedure should be to:

- engage with workers or HSRs to assist with conducting the investigation
- identify factors that contributed to the incident
- identify necessary corrective action(s) to prevent it or a more serious incident happening again
- implement or modify controls to at least further minimise the risks
- review and, if required, revise the MSMS or the relevant parts.

All incidents, including near misses, serious illnesses and adverse health effects should be investigated. The investigations should be carried out by persons competent in the matter being investigated. If corrective actions are required to prevent a similar or a more serious incident in the future, they should be documented in the results of the investigation.

Where possible, workers who were affected by the incident should be involved in the investigation and where appropriate.

The MSMS needs to set out in detail the procedures that will be used in the event of a notifiable incident occurring.

3.13 Document and records management

WHS Mines Regulations r. 622(1)(n)
Procedures for records management

WHS Mines Regulations Part 10.7
Mine record

The MSMS must set out how documents, including the mine record, will be kept as well as arrangements for the management of those records and documents to ensure compliance with the various duties under the WHS legislation. This might involve, for example, consideration of whether records are to be stored electronically or in hard copy; what arrangements need to be in place to limit access to personal information such as health records; and how access to other documents will be provided.

The mine operator must develop procedures for the management of all the records needed to comply with the WHS Act and WHS Mines Regulations. These procedures should address matters such as:

- all records that the WHS laws require the mine operator to have including details of how long they have to be kept
- where records are to be kept so that they are available as required by legislation (e.g. inspection)
- the provision of records to the regulator as provided for under legislation
- the auditing and reviewing of records management as part of requirements for the MSMS
- where and how the mine record is to be maintained
- how people can access the mine record.

Procedures to manage records also should ensure that access to MSMS documentation is 'controlled'. This means:

- only the current version is available and any supporting documentation, or data, is up-to-date
- versions are identified and dated for periodic review
- documents are approved for use by the PCBU or other responsible person
- documents are accessible and kept in good condition
- obsolete documents are removed and archived for reference and to satisfy legal requirements.

However, document control should not restrict access to information necessary for implementing the MSMS.

3.14 Managing change

WHS Mines Regulations r. 622(1)(c)(v)
Arrangements for managing change

The MSMS must be designed to be used by the mine operator as the primary means of discharging their duty towards ensuring the health and safety of workers and other persons. As the mine operator's duty is an ongoing duty, it is implicit that the MSMS should be designed to address the management of change within the mining operations.

There are two types of change that should be considered and included in the MSMS:

- introduced change
- reactive change.

These changes can be gradual or sudden and include a change in operations, conditions, systems, environment or resources. Both types of change involve similar issues, but it may be helpful for the mine operator to address these changes by:

- managing the introduction of changes rather than just respond to issues
- monitoring conditions to look for any change in hazards or risks.

Managing change should involve implementing methods to identify material changes in working conditions, systems of work and resources that may pose a risk to workers. It would also include considering changes to controls. Many serious and fatal accidents have occurred because conditions changed when a task was being completed, and these changed conditions were not adequately controlled.

Methods of identifying and managing changes may include:

- consultation with people involved in the work
- assessment of the scope of change included in the approval process for plans or procedures
- assessment of the scope of change included in the approval process for recruiting people
- ensuring all workers do a field risk assessment before starting work on a task, particularly identifying any changed conditions before work starts
- procedures/practices requiring risk identification for any changed conditions to ensure they are controlled adequately.

3.15 Mine safety management system performance management

WHS Mines Regulations r. 623
Performance standards and audit

The MSMS for a mine needs to be current and maintained through a review process. To assist with this process, the MSMS must include details on the following:

- the performance standards for measuring the effectiveness of all aspects of the MSMS that:
 - are sufficiently detailed to show how the mine operator will ensure the effectiveness of the MSMS
 - include the steps to be taken to continually improve the MSMS
- the way in which the performance standards are to be met
- a system for auditing the effectiveness of the MSMS for the mine against the performance standards, including the methods, frequency and results of the audit process.

It also requires a mine operator to plan for the continual improvement of the MSMS, for example, in response to changes in conditions, requirements and expectations.

3.16 Resources for the mine safety management system

WHS Mines Regulations r. 622(1)(r)
Resources for effective implementation and use of mine safety management system

The mine operator must demonstrate in the MSMS that adequate resources are applied to the development, effective implementation, use and improvement of the MSMS.

Resources include both adequate financial resources and the correct number of people with appropriate skills, time and level of authority.

The mine operator must have a system to develop, maintain and monitor the MSMS. The mine operator may require persons who will manage these functions.

4 Implementing the mine safety management system

WHS Mines Regulations r. 621(2)

Mine operator to implement mine safety management system

The objective of successfully implementing the MSMS is the systematic and coordinated management of hazards: identifying them, assessing associated risks, selecting suitable and effective control measures and applying those control measures at the mine. Maintaining controls and regularly reviewing their effectiveness is essential to ensure health and safety at a mine.

The obligations of a mine operator to consult with workers and any HSRs also apply to implementing the MSMS.

4.1 How to implement the mine safety management system

In order to implement the MSMS, the mine operator needs to ensure that what is set out in the MSMS is followed in practice. Senior managers and those responsible for the implementation of the MSMS are an integral part of the management system for the mine, and they should form part of the general management process of the MSMS.

The mine operator may develop their own strategies to assist with implementation of the MSMS, but consideration should be given to the following:

- the MSMS is an integral part of other integrated management systems and practices
- adequate resources need to be provided for implementation of the MSMS
- senior management should lead and ensure that others follow, understand and implement what is in the MSMS
- if there are issues or difficulties in implementing the MSMS, this must be brought to the attention of senior management and the mine operator.

4.2 Monitoring implementation of mine safety management system

Monitoring of mining operations is necessary to ensure that what is planned in the MSMS is implemented in practice, and this may include designating specific duties and checks to workers. Feedback from ongoing assessment and regular inspections should be provided to the mine operator so that steps can be taken to correct any issues that are impeding implementation, and to provide a closure loop to ensure the MSMS is implemented in the way that it was planned.

These arrangements must be described in the MSMS and should include:

- specific and general control measures needed for the workplace such as monitoring of plant, workings and air quality
- monitoring strategies to verify the effectiveness of critical controls
- information detailing who will do the monitoring, assessment and inspections, and how often

- details of who will assess results of any monitoring and take any required action
- the competency of workers undertaking inspections or monitoring and any training needs they may have
- procedures for carrying out monitoring, assessments and inspections to ensure they are effective and accurate
- the scope for inspections and the tools needed (e.g. checklists)
- the reporting of results and outcomes and ensuring the actions necessary to deal with any issues are identified, actioned and completed
- auditing and reviewing the activities.

4.3 Adequate resources provided for implementation of the mine safety management system

The mine operator must have the necessary resources to establish and implement the MSMS, which include:

- workers
- equipment
- finances.

Moreover, the mine operator must set out in the MSMS the resources needed to implement, maintain and improve the MSMS, and to achieve the objectives of the health and safety policy and planned outcomes.

The performance standards set for effective operation of the MSMS, including auditing and review, will also help determine the types and levels of resourcing required to implement the MSMS. Once the level of resources is determined, procedures may need to be developed to coordinate their use and to schedule and allocate responsibility for them.

Complex mining operations require more resources for implementation of the MSMS compared to a simple operation. Coordination of resources may be simpler at smaller mining operations, but it is still important to ensure that everyone understands who has responsibilities for safety related tasks and that these tasks are fulfilled. This should include routine matters such as housekeeping and maintenance and less routine matters such as identifying hazards or making changes to workings, plant and equipment or work practices.

5 Ensuring the mine safety management system is current and effective

WHS Mines Regulations r. 38

Review of control measures

WHS Mines Regulations r. 618

Review of control measures

WHS Mines Regulations r. 625

Review

5.1 Triggers for review

It is the mine operator's responsibility to ensure that the MSMS is current.

Once the MSMS is in place, it must be reviewed under certain circumstances. These include:

- if it is a new mine, it must be reviewed within 12 months of operations commencing
- at least once every three years for an established operation – this can be carried out internally or by an external organisation and the outcome needs to be recorded
- as necessary to ensure the MSMS remains effective.

Furthermore, a PCBU at a mine, including the mine operator, must review and as necessary revise control measures implemented within the MSMS in the following circumstances:

- an audit of the effectiveness of the MSMS for the mine indicates a deficiency in a control measure
- there is significant change in the mining operation
- a worker is moved from exposure to a hazard or assigned to different work in response to a recommendation contained in a health monitoring report
- a notifiable incident, reportable incident or illness occurs that is required to be notified to the regulator under the WHS laws, or any other incident that has the potential to cause harm
- an inspector or HSR requests a review
- external health and safety information and alerts containing advice or legislative changes or recommendations issued arising out of fatal or serious accidents or product recalls arise.

A PCBU at the mine must notify the mine operator immediately of a request for a review by an HSR. The mine operator must ensure that a control measure that is the subject of a request by an HSR is reviewed and as necessary revised, whether the request is made to the mine operator or notified to the mine operator by another PCBU at the mine.

An HSR may also request that a control measure be reviewed if they hold a reasonable belief that a control measure has not been adequately addressed and that:

- the control measure does not control a risk it was implemented to control
- that a change to the workplace is going to occur that necessitates a change to the control measure
- a new hazard or risk has arisen
- the results of consultation under the WHS laws indicates that a review is necessary.

A review could involve measuring against performance standards to identify any deficiencies in control measures (e.g. an incident or deficiencies found during an audit). Effective review of a control measure may require recording and documentation (i.e. explaining why a review was needed and any corrective changes to controls).

5.2 Details of review

Any event having the potential for injury, ill health, damage or other loss is an indication that the selected controls are not adequately controlling the risk. These events trigger the need to review them and the MSMS.

The mandatory review of control measures after an incident is required to be documented including details about:

- the incident
- the identified hazards and how the exposure occurred
- any failures in controls
- the review undertaken
- the recommendations
- whether any control measure or part of the MSMS needs to be changed.

The review may also include consideration of:

- results from inspections and audits
- health and safety performance reports
- the extent to which performance standards have been met
- industry events relevant to the elements being reviewed
- incident reports
- hazard identification reports
- the continuing suitability of the controls in the MSMS (including procedures and administrative arrangements in relation to changing conditions)
- technological changes relevant to the element/s being reviewed
- corrective action reports
- changes in regulatory requirements
- changes to community expectations
- concerns of relevant interested parties.

5.3 Review process

In undertaking the review, workers and their HSRs, if applicable, must be consulted in accordance with the WHS laws. The person(s) carrying out the review must have the appropriate skills, knowledge and competence to be able to assess compliance with all the elements of the MSMS being reviewed.

Where a review identifies that a revision to the MSMS, or part of the MSMS, is needed, those changes should be made in accordance with the consultation and document control requirements of the MSMS.

If the MSMS is revised, the mine operator must record the revisions, including any revision of a risk assessment, in writing in the plan.

5.4 Ensuring the mine safety management system is effective

For the MSMS to be effective it must be current and fit for purpose. A mine operator must have a procedure for measuring how the mine's MSMS is performing against set performance standards and a system for auditing to ensure the MSMS remains effective. The procedures should be documented and must be described in the MSMS.

The MSMS for a mine must include the following:

- performance standards for measuring the effectiveness of all aspects of the MSMS that:
 - are sufficiently detailed to show how the mine operator will ensure the effectiveness of the MSMS
 - include steps to be taken to continually improve the MSMS
- a system for auditing the effectiveness of the MSMS for the mine against the performance standards, including the methods, frequency and results of the audit process.

5.5 Selecting performance standards

WHS Mines Regulations r. 622(1)(p)

Performance standards

WHS Mines Regulations r. 623

Performance standards and audit

A 'performance standard' may be defined as a target or required level of performance for a particular safety matter and the measurement to determine whether it is achieved. If the selected standards are not being met, it is an indication of deficiencies requiring investigation and corrective actions. It may also indicate that it is time for a review of the MSMS or how it is being implemented.

The performance standards may be designed to either measure sections of, or the entire, MSMS to ensure that it is achieving the objectives set out in the mine's health and safety policy and its objectives. Performance standards need to have a meaningful measure and be sufficiently detailed and clear in what they are measuring.

In particular performance standards need to measure if:

- risk controls are effective
- the application of the MSMS has been consistent
- the content and implementation of the MSMS comply with WHS laws.

The matters to consider when developing suitable performance standards include:

- measures to identify and implement continuous improvement
- methods for measuring or verifying performance standards
- performance standards for measuring at different levels of the MSMS (e.g. at a high level for the system as a whole, and at a lower level for individual elements of the system)
- measures for meeting overall targets within specified timeframes
- a combination of performance standards (e.g. proactive standards – ones that measure the activities or inputs for managing safety and reactive standards – ones that measure the outputs or actual performance achieved).

Examples of performance standards to help measure the effectiveness of the MSMS in part or whole include, but are not limited to:

- number of higher order control measures (elimination, substitution and engineering) adopted and implemented
- percentage compliance with availability of planned managerial, supervisory and other competent persons
- completion of site inspections and audits, and all defects arising controlled, actioned and rectified within a measurable and defined timeframe
- ventilation airflow maintained at no more than 1% outside the set airflow range
- completion of work orders related to the MSMS, or level of compliance with audit and review requirements of the MSMS
- number of alarms generated
- reliability of safety critical equipment
- reporting and investigating all incidents
- implementation of corrective actions identified by an investigation.

A more complex MSMS will usually need performance standards in a range of areas. This is needed to adequately identify the effectiveness of individual elements of the MSMS as well as the overall effectiveness of the MSMS. This is important to identify improvement opportunities as well as identifying the requirement for corrective actions.

Information on the MSMS performance should be reported to, and reviewed by, the appropriate people identified in the MSMS. Any consequent improvement in aspects of the MSMS, such as changing a control measure or training, will provide evidence of meeting the requirement for the performance standards to be linked to continuous improvement. Reviewing activities against the performance measures should include taking actions to improve the adherence to the performance standards and the review of the standards to check they are representative of the MSMS.

Once the selected control measures are in place they must be verified. Note that a review of a control measure also triggers a review of the MSMS.

5.6 Audits

The primary purpose of an audit is to determine whether all arrangements set out in the MSMS are being implemented effectively. The mine operator must carry out audits of the MSMS to ensure it includes a system for auditing the effectiveness of the MSMS for the mine against performance standards, including the methods, frequency and results of the audit process.

There are several types of auditing systems suitable for mining operations including:

- adequacy audit – determines if procedures meet the requirements of an applicable minimum standard (e.g. company or Australian Standards)
- compliance audit – establishes the extent the documented system has been implemented and followed by the workforce (may be undertaken internally or by external parties)
- internal audit – where a mine operator looks at whether the mine's systems, procedures and activities are adequate and being complied with
- external audit – where an external body undertakes an audit against the performance measures or more commonly against a defined external standard, such as an Australian Standard or International Standard.

Mine operators would normally undertake a compliance or internal audit. The methods used in audits may include:

- interviews
- physical verification
- statistical methods
- document review including records and reports
- checklists
- observations of the work area.

The methods selected will depend on a number of factors including the nature of what is being audited and the risks associated with the element of the MSMS being audited.

5.6.1 Scope of audit

The activities of the audit, the areas to cover and the performance standards to be audited against must be documented, and will define the scope of the audit.

A typical mine audit would involve looking at whether:

- systems are in place for controlling the work processes, for example, PMHMPs and other plans as well as subsidiary documentation (procedures and technical documents)
- workers understand their responsibilities
- training has been delivered
- required equipment is available and working properly
- inspections specified in the MSMS have been undertaken
- responses were activated if triggers were initiated
- required reports have been completed
- identified defects have been actioned and identified.

5.6.2 Conducting an audit

The MSMS should specify who is responsible for conducting the audit. These responsibilities may include:

- applying due diligence to select an auditor
- identifying resources required for the audit
- preparing the audit documents
- maintaining the audit records
- verification by observing operations
- interviewing workers and HSRs
- checking audits are carried out in the specified time frame and frequency
- ensuring results and corrective actions identified are acted upon in a timely manner.

The mine operator may select people within the organisation or external persons to carry out the audit. In either case, the person carrying out the audit should do so competently, impartially and objectively. Where possible, the auditor should be independent of the process being audited.

5.6.3 Frequency

An audit's frequency should be determined by an assessment of how critical each MSMS element is to maintaining work health and safety and what may be necessary based on the results of previous audits.

Audits may have to be done at different times, depending on the work processes being audited. Consideration should be given to:

- pre-commencement audits - carried out before a work process begins to determine that all specified work arrangements are in place
- implementation audits - carried out after the work process has commenced to determine the effectiveness of the implementation of the specified work arrangements
- routine audits - regular audits aimed at checking ongoing compliance with the specified work arrangements. The frequency should be at least half the time frame for routine reviews of the MSMS so that there is at least one audit during the life of the MSMS
- pre-review audits - an audit carried out near the due date for a review of the system so that the findings can be considered in the review process.

A large, complex mine may have individually documented plans for specific areas existing under the umbrella of an overarching MSMS. Due to the scale of this type of MSMS, it may be necessary to divide the audit program along the lines of the structure of that MSMS.

5.6.4 Follow-up action

If the result of the audit shows deficiencies in the performance of the MSMS, the result needs to be considered and acted upon. Where possible, results should be ranked in order of priority for attention.

The audit results should be reviewed by a person who has sufficient authority to take action on the non-conformances.

Where the audit identifies that an amendment to the MSMS (or part of the MSMS) is required, then those changes should be made in accordance with the consultation and document control requirements of the MSMS.

The mine operator should maintain an action register and carry out a regular ongoing review of their rectification in an acceptable timeframe. The risk priority for each defect should also have a time based escalation process to ensure that the defects are reprioritised and rectified in a timely manner.

Appendix 1 Glossary

Term	Description
Competent person	A person who has acquired through training, qualification or experience, the knowledge and skills to carry out the task.
Control measure	In relation to a risk to health and safety, a measure to eliminate or minimise the risk.
Duty holder	Any person who owes a work health and safety duty under the WHS Act including a person conducting a business or undertaking, a designer, manufacturer, importer, supplier, installer of products or plant used at work (upstream), officer, WHS service provider or a worker.
EP	Emergency plan.
Hazard	A situation or thing that has the potential to harm a person. Hazards at work may include: noisy machinery, a moving forklift, chemicals, electricity, working at heights, a repetitive job, bullying and violence at the workplace.
Health and safety committee	A consultative body established under the WHS Act. The committee's functions include facilitating cooperation between workers and the person conducting a business or undertaking to ensure workers' health and safety at work, and assisting to develop work health and safety standards, rules and procedures for the workplace.
Health and safety representative (HSR)	A worker who has been elected by their work group under the WHS Act to represent them on health and safety matters.
HMP	Health management plan.
Health monitoring	Monitoring the person to identify changes in the person's health status because of exposure to certain substances.
Key statutory positions	Means, where applicable: <ul style="list-style-type: none"> • a site senior executive • an exploration manager • an underground manager (non-coal or coal) • a quarry manager.
May	'May' indicates an optional course of action.
Mine	A place at which mining operations are carried out.
Mining operations	Any method of working by which the earth or any rock structure, coal seam, stone, fluid, or mineral bearing substance is disturbed, removed, washed, sifted, crushed, leached, roasted, floated, distilled, evaporated, smelted, refined, sintered, pelletised, or dealt with for the purpose of obtaining any mineral or rock from it for commercial purposes or for subsequent use in industry, whether it has been previously disturbed or not; and includes exploration operations and developmental and construction work associated with opening up or operating a mine – see WHS Mines Regulations r. 5B for full definition and exclusions.

Term	Description
Mine operator	<p>A person (including a partnership, syndicate or other association of persons) who:</p> <ul style="list-style-type: none"> • in relation to a mine where only exploration operations are being carried out, has overall control and supervision of the exploration operations at the mine and the exploration manager appointed for those operations • otherwise is the proprietor, lessee, or occupier of a mine and who has overall control and supervision of the mine and mining operations at the mine.
MSMS	Mine safety management system.
Must	'Must' indicates a legal requirement exists that must be complied with.
Person conducting a business or undertaking (PCBU)	<p>A PCBU is an umbrella concept, which intends to capture all types of working arrangements or relationships. A PCBU includes a:</p> <ul style="list-style-type: none"> • company • unincorporated body or association • WHS service provider • sole trader or self-employed person. <p>A reference to a PCBU in the WHS Regulations is deemed to be a reference to a mine operator where it is relevant.</p> <p>Individuals who are in a partnership that is conducting a business will individually and collectively be a PCBU.</p> <p>A volunteer association (defined under the WHS Act) or elected members of a local authority will not be a PCBU.</p>
Personal protective equipment (PPE)	Anything that is used or worn by a person to minimise risk to the person's health and safety, including air supplied respiratory equipment.
PMH	Principal mining hazard.
PMHMP	Principal mining hazard management plan.
RMP	Radiation management plan.
RWMP	Radioactive waste management plan.
Risk	The possibility harm (death, injury or illness) might occur when exposed to a hazard.
Should	'Should' indicates a recommended course of action.

Term	Description
Statutory positions	<p>Schedule 26 of the WHS Mines Regulations provides the requirement for the following statutory positions, where applicable:</p> <ul style="list-style-type: none"> • radiation safety officers • noise officers • statutory supervisors • mine air quality officers • electrical supervisors • high voltage operators • underground managers • underground supervisors • underground ventilation officers • authorised mine surveyors (underground & quarry operation) • winding engine drivers • quarry managers.
TARP	Trigger action response plan.
UVCP	Underground ventilation control plan.
Work group	<p>A group of workers established to facilitate the representation of workers by one or more HSR. A work group may be all workers at a workplace but it may also be appropriate to split a workplace into multiple work groups where workers share similar work conditions or are exposed to similar risks and hazards. For example, all workers on night shift.</p>
Worker	<p>Any person who carries out work for a person conducting a business or undertaking, including work as an employee, contractor or subcontractor (or their employee), self-employed person, outworker, apprentice or trainee, work experience student, employee of a labour hire company placed with a 'host employer' or a volunteer.</p>
Workplace	<p>Any place where work is carried out for a business or undertaking and includes any place where a worker goes, or is likely to be, while at work. This may include offices, factories, shops, construction sites, vehicles, ships, aircraft or other mobile structures on land or water.</p>

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