



**NSW
Resources
Regulator**

COMPETENCY FRAMEWORK

MINING ENGINEERING MANAGER

for underground mines other than coal mines

Work Health and Safety (Mines and Petroleum Sites Regulation) 2014



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1. Introduction

This document should be read in conjunction with the framework for competencies of statutory functions requiring practising certificates.


2. Legislation

Extract from the Work Health Safety (Mines and Petroleum Sites) Regulations 2014, Schedule 10, Part 2, clause 3:

'The statutory function of mining engineering manager is to develop, supervise, monitor and review the mining engineering standards and procedures forming part of mining operations at the mine.'

3. Competencies for mining engineering manager of underground mines other than coal mines

The competencies of statutory functions in the framework are generally described below and specific details for this function are found in the following sections.



Situational
Awareness and
Risk Assessment

This competency covers the practitioners' actions to identify and assess risks, hazards or other issues that may affect the safe functioning of the mine. It involves gathering information, analysing emerging issues and seeking objective evidence to draw conclusions, so as to eliminate or minimise undesirable consequences.

The mining engineering manager of underground mines other than coal mines is to apply a broad theoretical and technical knowledge and skills, in the assessment of hazards and potential risks, in a range of contexts, to demonstrate autonomy, judgement and defined responsibility when:

- developing mining engineering standards and procedures through investigation and analysis methods, to identify and manage risks with controls in the mine
- monitoring by obtaining data, information, and evaluating audit outcomes to verify compliance with standards and legislation
- participating in risk assessment processes
- verifying mining engineering standards and procedures in principal hazards management plans and principal control plans
- reviewing by measuring the effectiveness of the mining engineering standards and procedures.

Behavioural tendencies and skills to support the demonstration of Situational Awareness and Risk Assessment:

- Establish the mining engineering standards and procedures through investigation and analysis methods.
- Identify how to access various sources of information and evaluate its merit.
- Analyse and interpret reports and information available under the safety management system to identify how and why a hazard can be present in the mine, the likelihood and potential consequences of the risk eventuating.
- Plan how an event or process may occur after its parts or steps are moved or rearranged.
- Develop process and plans to manage risks.
- Monitor mining operations and verify compliance with legislation.
- Verify mining engineering standards and procedures in principal hazard management plans and principal control plans within the mine.
- Evaluate audit outcomes on the effectiveness of the SMS against its mining engineering performance standards and procedures.
- Undertake incident investigation based on objective evidence.
- Participate in management of risk, including risk assessment processes and particularly those involving principal hazards.



Effective
communication

This competency refers to the practitioners' responsibility in using appropriate, clear and effective communication to ensure instructions, hazards, risks, safety plans and other technical and non-technical issues are effectively communicated at all levels, taking into account the knowledge, expectations, requirements, interests and terminology of the intended audience. Methods of communication and ensuring the communication has been delivered and understood forms part of this competency.

The mining engineering manager of underground mines other than coal mines is expected to transfer complex information and communicate advice on implementation, to a variety of audiences within the mine. This includes:

- supporting the communication and documentation of the standards and procedures.
- explaining the results of their analysis of data, information, audit outcomes when verifying compliance with standards and legislation.
- providing supervision of the implementation of mining engineering standards and procedures.
- engaging in consultation processes when developing the mining engineering standards and procedures.

Behavioural tendencies and skills to support the demonstration of Effective Communication:

- Use appropriate verbal and non-verbal communication to explain technical information in an articulate and clear manner, and listen actively to others (i.e. when communicating information to technical and non-technical professionals within the mine).
- Support the implementation of appropriate communication channels.
- Instruct or advise others on implementation of risk assessments and consideration of controls based on the hierarchy of controls.
- Present as a credible source of information.
- Control barriers to communication by supporting others to understand and implement standards and procedures.
- Report information effectively, maintaining written and verbal reporting requirements.
- Report to the relevant personnel deviations from the SMS or deficiencies, where appropriate and through the appropriate channels.
- Seek to clarify information or reports by asking question and actively listening to others' input.
- Leverage own and others' knowledge, experience and credibility to confidently influence others in managing incidents.



Collaboration

This competency covers the practitioners' competency to collaborate, provide support and leadership, facilitate the gathering and dissemination of information and knowledge for mine compliance. It includes behaviours and mechanisms that support the supervision, training and support of workers.

The mining engineering manager of underground mines other than coal mines is expected to support the collaboration and supervision of others, supporting the safe and compliant operation of the mine. This includes:

- providing supervision on implementation of standards, processes and systems
- providing advice on implementation of standards, processes and systems, and verifying implementation and compliance, and on how risks should be managed
- identifying key internal and external stakeholders, and collaborating through participation in consultation
- supporting training and instruction.

Behavioural tendencies and skills to support the demonstration of Collaboration:

- Cooperate with others to ensure mining and other technical disciplines have compatible and effective standards and procedures for mining operations.

- Participate in consultation and training, ensuring that others have access to information about WHS policies, and appropriate and timely access to specialised advice and guidance on implementation of standards, processes and systems.
- Support the assessment of skills and knowledge, and facilitate tools, information or training.
- Manage conflict within work areas by mediating conflict in a high-risk situation to minimise negative impacts, as appropriate.
- Support a shared understanding of purpose, roles and safety responsibilities within the statutory function requirements.
- Verify and provide advice on implementation when required.
- Provide general supervision and to a lesser extent direct supervision, as required.
- Support others to remain focused during stressful situations.

Operational
decision making
and initiative

This competency covers the practitioners' operational decision-making ability to initiate, plan, lead or manage the resolution of hazards and risks that have been identified to support safe mining operations. It includes the ability to respond to issues in a decisive manner, applying their knowledge and using their experience from previous situations.

The mining engineering manager of underground mines other than coal mines is to apply a broad theoretical and technical knowledge and skills to make decisions and respond to hazards and potential risks in a variety of contexts, demonstrating autonomy, judgement and defined responsibility in the decision-making process. This includes:

- referring to evidence and objective information when establishing standards and procedures
- taking actions prescribed under WHS laws when safety concerns or risks have been identified
- considering available evidence and objective information when monitoring and evaluating standards and procedures, as well as audit results, health and safety performance outcomes and remedial actions
- supporting the implementation of controls and management of risks
- supporting the management of complex issues within changing parameters.

Behavioural tendencies and skills to support the demonstration of Operational Decision Making and Initiative:

- Demonstrate autonomy, judgement and responsibility when making decisions and defining courses of action.
- Incorporate required changes in standards, processes and plans as per risk assessment results and auditing outcomes and recommendations.
- Use an objective evidence-based approach to decision-making around safety matters.
- Support others in the implementation of operational decisions-making within the mine.

- Take the initiative to incorporate improvements to maintain a safe and healthy workplace.
- Integrate and combine different set of information, from different sources, to form general conclusions.

Organised and
disciplined

This competency covers the practitioners' abilities in planning and organising their work and the work of others, to support processes being followed, tasks prioritised, and inspections and checks are completed in a systematic manner as per legislation. It includes supporting systems, plans and procedures that are implemented, maintained and updated as required.

The mining engineering manager of underground mines other than coal mines is to apply a broad theoretical and technical knowledge and skills to manage WHS issues in an organised and systematic manner. This includes:

- planning and organising activities, as prescribed by relevant regulation and the SMS, when developing and amending mining standards and procedures
- monitoring and reviewing compliance in a systematic, organised and timely manner
- supporting others to implement activities in a systematic and consistent manner as per standards and processes.

Behavioural tendencies to support the demonstration of Organised and Disciplined:

- Work in a systematic manner when developing, supervising, monitoring and reviewing mining standards, and procedures.
- Plan and schedule actions to be implemented in compliance with legislation, mining standards and procedures.
- Support the implementation of standards by defining step-by-step actions, monitoring and inspecting requirements, and expected performance outcomes.
- Ensure systems and standards are implemented appropriately for control of risk.
- Verify adequate resources are allocated without compromising resourcing in other areas of the mine.
- Arrange activities or resources in a certain order in accordance with a rule or set of rules when developing standards and procedures.
- Prioritise their activities and the activities of others as per risk level and legislation.
- Apply the legislative requirements for gathering, recording, evaluating, monitoring or reviewing data and information.
- Use planning tools and systems as appropriate.
- Ensure that mining engineering standards and procedures used in any plans are relevant and timely, such as trigger action response plans (TARPs).

Driven by
safety and
integrity

This competency refers to the practitioners' capability to act so as to comply with legislation, as well as supporting others to adhere to legislation. It includes their ability to persist with challenging tasks through sustained commitment and effort whilst maintaining standards, and their ability to model high standards of behaviours for others through own behaviour.

The mining engineering manager of underground mines other than coal mines is to apply a broad theoretical and technical knowledge and skills to act consistently in accordance to legislation, standards and procedures, and support others to adhere to those principles consistent with existing legislation. This includes:

- supporting others to behave in accordance with legislation, standards and procedures
- acting in a way that does not contravene existing legislation, standards and procedures even in situations of considerable internal or external pressure
- identifying situations where legislation and safety standards are contravened
- providing instruction and guidance to others on how to comply with legislation, standards and procedures in the mine
- setting, upholding and monitoring the health and safety expectations by developing, supervising and following the safety management system.

Behavioural tendencies to support the demonstration of Driven by Safety and Integrity:

- Act and support others to act in accordance with legislation, processes and standards at all times.
- Identify and act on non-compliance, by challenging situations and leadership to ensure safety and compliance.
- Verify compliance requirements and remain objective in its execution.
- Fulfil responsibilities to the highest professional and ethical standards.
- Evaluate the effectiveness of the safety management system against mining standards and procedures.
- Verify and evaluate audit results, health and safety performance outcomes, and remedial actions.
- Verify risk assessments and controls to ensure they refer to the appropriate standards, where applicable, and control the risks from hazards.
- Consider relevant external information sources such as original equipment manufacturer, regulator and other safety and health type alerts.
- Challenge areas of concern and communicate these internally and to appropriate agency if necessary to meet the required standard.
- Record and review inspections, as required in the inspection plan.

- Put the safety and health of people at the forefront of decision making to make a 'correct safety' decision, in the face of other challenges and priorities

Responsiveness to change

This competency refers to the practitioners' capability to use and apply their relevant knowledge of legislation and standards, previous experience and skills to respond to changing circumstances in the mine they operate in.

The mining engineering manager of underground mines other than coal mines is to apply a broad theoretical and technical knowledge, skills and experience to consider and incorporate contingencies plans to accommodate change. This includes:

- reviewing standards, processes and the SMS to institute change where necessary to reflect prevailing or future conditions
- updating and realigning standards to changing or emerging circumstances, without compromising compliance
- supporting others to respond effectively during stressful situations
- supporting others to implement changes as required.

Behavioural tendencies to support the demonstration of Responsiveness to Change:

- Support change management to accommodate changing conditions.
- Navigate uncertain, novel situations or ill-defined problems to identify when changes are required to accommodate changing conditions.
- Use available evidence, information, and expertise to reassess decisions based on new information.
- Amend standards and processes while ensuring safety is not compromised.
- Consult, advise and support the implementation of the most optimal course of action.

Technical knowledge and skills

This refers to the practitioners' capability to demonstrate technical skills and specific knowledge to be able to act or apply the requirements of legislation, standards, systems, procedures and processes.

The mining engineering manager of underground mines other than coal mines is expected to demonstrate a broad theoretical and technical knowledge and skills, in a range of contexts, to demonstrate autonomy, judgement and defined responsibility within the scope of their statutory function. The technical skills and knowledge include:

- mining and WHS systems
- legislation

- emergency management
- general WHS topics
- general knowledge to support the demonstration of technical skills incorporating associated non-technical skills.

Technical knowledge and skills required

Mining and WHS systems

Safety management system (SMS)

- Understand their obligations in reviewing and monitoring relevant standards and the SMS.
- Develop standards and evaluate its compatibility to the SMS for the mine.
- Theoretical and technical knowledge and skills in Mining engineering standards, including:
 - design principles for mining
 - principles for the management of human factors
 - engineering design standards
 - fire protection
 - maintenance standards
- Demonstrate broad knowledge of engineering standards and disciplines (e.g. electrical, mechanical), including:
 - commissioning
 - decommissioning
 - procedures and instructions for the safe operation of plant
 - mechanical integrity of plant
 - control of abnormal operations and emergency shut down or decommissioning
- Operational planning:
 - Operational planning, including the scope, boundaries and performance objectives of mining standards, as well as monitoring and reviewing the SMS effectiveness.
 - Critical systems and devices relevant to the mine.
 - Inspection and maintenance requirements relevant to the mine.
 - Ability to identify gaps relevant for the SMS for the mine.

- Identify non-compliance to processes and high risks activities within their assigned area of mining operations.
- Inspection and maintenance requirements within the scope of statutory function.
- Monitor work practices, regarding their compliance to standards and processes.
- Monitor and review the performance of the SMS against mining standards and procedures.
- Understand the scope of other functions and their statutory requirements and manage their interdependencies.

Principal hazards (fatal hazards) as listed in schedule 1 - Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 under the *Work Health and Safety (Mines) Act 2013*

- Support the development and implementation of the principal hazard management plans for all applicable prescribed principal hazards in WHS (M&P) Reg 2014, clause 5 and any other.
- Set the mining engineering standards for principal mining hazard management plans .
- High level understanding of the nature of harm that could be caused by a hazard in the mine, how serious the harm could be and the likelihood of it happening.
- Mine ventilation principles, atmospheric gases and contaminants.
- Verification that mining engineering standards have been met.
- Verifying mining engineering standards and procedures in principal hazard management plans and principal control plans.

Principal control plans as listed in schedule 1 - Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 under the *Work Health and Safety (Mines and Petroleum Sites) Act 2013*

- Support others to implement relevant control plans, including setting the mining engineering standards, as instructed.

Specific control measures in Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 under the *Work Health and Safety (Mines and Petroleum Sites) Act 2013*

- Ensure that each mining engineering control measure is adequately supported by relevant systems within the SMS and standards.
- Support the implementation of specific control measures.

	<ul style="list-style-type: none"> • Advanced contingency planning within the mine. • Emerging health and safety issues in mines. • System for monitoring the performance of control measures. • Performance indicators to identify effectiveness and failure of control measures. • Corrective actions in the event of failure of controls and in the event of the indicators not meeting performance targets. • Establish follow-up action items to close any gaps. • Relevant equipment to be used in the I mine, such as firefighting and portable gas detector, where applicable.
<p>Legislation</p>	<p>Apply a broad theoretical and technical knowledge of acts, regulations, approved codes of practice, standards, and guidelines relevant to the execution of their function, such as:</p> <ul style="list-style-type: none"> • <i>Work Health and Safety Act 2011</i> and Work Health and Safety Regulations 2017. • <i>Work Health and Safety (Mines and Petroleum Sites) Act 2013</i> and Work Health and Safety (Mines and Petroleum Sites) Regulations 2014. • <i>Explosives Act 2003</i> and Explosives Regulation 2013. • Approved codes of practice under the <i>Work Health and Safety Act 2011</i>. • International and Australian/New Zealand Standards.
<p>Emergency management</p>	<ul style="list-style-type: none"> • Establish and monitor emergency plans and supervise the implementation of emergency plans. • Emergency preparedness and response systems, evacuation, withdrawal, notification and response. • Health and safety issues. • Think quickly and flexibly when required in the face of new events. • Prevention of mine incidents. • Investigation of incidents, reporting and tracking remedial actions. • Considering the potential emotional effects of emergencies on rescuers and mine personnel involved in developing and reviewing the plan. • Design criteria for emergency preparedness and response systems and plans.

General WHS topics

- Demonstrate an ability to apply knowledge of relevant topics included in the guide to the maintenance of competence scheme for statutory functions requiring practising certificates.

General knowledge to support the demonstration of technical skills incorporating associated non-technical skills

- Advanced risk management processes and tools relevant to the mine.
- Advanced analytical processes and tools.
- Types of adverse environmental conditions that may exist across the mining operation.
- Audit and review processes and techniques.
- Communication channels, systems, conventions and requirements for written or verbal communications, including means of communication between different teams.
- Document controls and procedures for documenting relevant communications within the SMS or engineering standards.
- Conflict resolution processes.
- Planning tools and resources within in the mine.
- Processes, techniques and examples of continuous improvement for WHS.
- Required resources to operate a mine.
- Contingency planning.
- Changes in workplace conditions that may impact safety and health.
- Change management strategies to implement new or revised standards or procedures.
- Design criteria for emergency preparedness and response systems and plans.
- Complex interactions of different tasks to achieve the best outcome for WHS.
- Understanding of the implication of new information for both current and future problem-solving and decision-making, within their area of statutory responsibility.