



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **RIIMEX404B Apply and monitor systems for stable mining**

**Release: 1**

## RIIMEX404B Apply and monitor systems for stable mining

### Modification History

Not applicable.

### Unit Descriptor

This unit covers applying and monitoring of systems for stable mining in the metalliferous mining industry. It includes: planning and preparing for and applying the design system, and applying monitoring and maintenance procedures.

### Application of the Unit

This unit is appropriate for those working in supervisory or technical specialist roles, within:

- Metalliferous mining

### Licensing/Regulatory Information

Refer to Unit Descriptor.

### Pre-Requisites

Not applicable.

### Employability Skills Information

This unit contains employability skills.

### Elements and Performance Criteria Pre-Content

<p>Elements describe the essential outcomes of a unit of competency.</p>	<p>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</p>
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the application of the design system	1.1. Access, interpret and apply <b>compliance documentation</b> relevant to the stable mining 1.2. Communicate and clarify work group and individual responsibilities and tasks 1.3. Identify, obtain and allocate <b>resources</b> required for the application of the <b>design</b> system 1.4. Identify and satisfy individual training needs through accessing the established design systems, programs and plans 1.5. Access and interpret safe operating procedures 1.6. Identify and interpret the <b>risks</b> associated with unstable mining structures
2. Apply the design system	2.1. Communicate, apply and monitor approved design system 2.2. Communicate and apply primary, secondary and other support <b>systems</b> 2.3. Identify and assess mining constraints impacting on the maintenance of a <b>stable mining</b> structure in accordance with the design system 2.4. Install, monitor and assess ground support systems 2.5. Identify and assess system failures 2.6. Apply and monitor mining sequences in accordance with the design system 2.7. Identify and assess virgin and induced <b>stress</b> control methods 2.8. Apply emergency response and evacuation plans and procedures throughout the work and report, where appropriate 2.9. Apply and monitor <b>safe operating procedures</b> throughout the work and report, where appropriate 2.10. Contribute to systems <b>audit</b> and review requirements
3. Apply monitoring and maintenance procedures	3.1. Schedule and carry out inspection, repair and maintenance activities in accordance

	with design systems 3.2. Record, report and review maintenance and monitoring requirements and activities
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## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to apply and monitor systems for stable mining:

- apply legislative, organisation and site requirements and procedures
- access, interpret and apply technical information
- access and analyse archival and historical mine management information related to the mine and failure mode of mine structures
- interpret and apply design criteria for mine management
- communicate effectively in the workplace
- apply operational procedures relating to mine management
- conduct and report on audits
- identify and evaluate geological and geotechnical information
- propose practical recommendations for identified key issues

### Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to apply and monitor systems for stable mining:

- legislative and statutory requirements for mining structures including mine plans, ventilation, gas monitoring, strata support and safety management plans
- the systems of mining including tunnels, drives, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage
- stress including mining induced stress, vertical and horizontal stress tectonics
- sedimentology including subsidence, water bearing strata, permeability of seam and strata, hydrology, physical property testing, caving characteristics, gas content, and over and underlying and adjacent rock formations
- systems of work including bord and pillar, place changing, rock casing, auger mining, pillar extraction, partial extension and punch mining
- mining structure failure modes
- exploration techniques
- geology and gas characteristics
- mining engineering principles
- ground support systems
- audit methodologies
- historical information
- identifying and clearly communicating key issues



## Evidence Guide

<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<p><b>Overview of assessment</b></p>	
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<p>The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:</p> <ul style="list-style-type: none"> <li>• knowledge of the requirements, procedures and instructions for applying and monitoring systems for stable mining</li> <li>• implementation of appropriate procedures and techniques for the safe, effective and efficient application and monitoring of systems for stable mining</li> <li>• working with others to plan, prepare, apply and monitor systems for stable mining</li> <li>• provision of clear and timely instruction and supervision by the individual of those involved in applying and monitoring systems for stable mining</li> <li>• evidence of the consistent successful application and monitoring of systems for stable mining</li> </ul>
<p><b>Context of and specific resources for assessment</b></p>	<ul style="list-style-type: none"> <li>• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.</li> <li>• The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.</li> <li>• Customisation of assessment and delivery environment to sensitively accommodate</li> </ul>

	<p>cultural diversity.</p> <ul style="list-style-type: none"> <li>• Aboriginal people and other people from a non English speaking background may have second language issues.</li> <li>• Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances.</li> <li>• Where applicable, physical resources should include equipment modified for people with disabilities.</li> <li>• Access must be provided to appropriate learning and/or assessment support when required.</li> </ul>
<b>Method of assessment</b>	<p>This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:</p> <ul style="list-style-type: none"> <li>• written and/or oral assessment of the candidate's required knowledge</li> <li>• observed, documented and/or first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> <li>• implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes</li> <li>• consistently achieving the required outcomes</li> </ul> </li> <li>• first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> <li>• working with others to plan, prepare, apply and monitor systems for stable mining</li> <li>• provision of clear and timely instruction and supervision by the individual of those involved in applying and monitoring systems for stable mining</li> </ul> </li> </ul>
<b>Guidance information for assessment</b>	<p>Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.</p>



## Range Statement

<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><b>Relevant compliance documentation</b> may include:</p>	<ul style="list-style-type: none"> <li>• legislative, organisation and site requirements and procedures</li> <li>• manufacturer's guidelines and specifications</li> <li>• Australian standards</li> <li>• codes of practice</li> <li>• Employment and Workplace Relations legislation</li> <li>• Equal Employment Opportunity and Disability Discrimination legislation</li> </ul>
<p><b>Resources</b> may include:</p>	<ul style="list-style-type: none"> <li>• skilled personnel</li> <li>• rock mechanics underground supports and equipment</li> <li>• power water/gas drainage systems</li> <li>• budgetary requirements</li> </ul>
<p>Mine <b>design</b> is the process of engineering analysis applied to the systems and sequences involved in mining and may include:</p>	<ul style="list-style-type: none"> <li>• requirements relating to footwall and hanging wall competency</li> <li>• mine plant</li> <li>• mining induced stress</li> <li>• ventilation, tunnels</li> <li>• sequencing</li> <li>• drives</li> <li>• shaft sinking</li> <li>• pillar extraction</li> <li>• partial extraction</li> <li>• punch mining</li> <li>• modelling</li> <li>• ore grades</li> <li>• geology</li> <li>• fault management</li> <li>• multi-seams</li> <li>• fault drivage</li> <li>• roof and floor technical data</li> <li>• over and underlying strata</li> <li>• footwall and longwall subsidence</li> <li>• legislative and statutory requirements</li> </ul>

	<ul style="list-style-type: none"> <li>• thickness</li> <li>• multiple and rider ore bodies</li> <li>• ore body dip and depth of cover</li> </ul>
<b>Risk</b> is defined as:	<ul style="list-style-type: none"> <li>• the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood</li> </ul>
Mining <b>systems</b> may include:	<ul style="list-style-type: none"> <li>• bord and pillar</li> <li>• rock casing</li> <li>• outfill</li> <li>• overhand</li> <li>• underhand</li> <li>• place changing</li> <li>• auger mining</li> <li>• pillar extraction and extraction</li> <li>• partial extraction</li> <li>• punch mining</li> <li>• systems of entry</li> </ul>
<b>Stable mining</b> structure controls may include:	<ul style="list-style-type: none"> <li>• drive size</li> <li>• pillar sizes</li> <li>• depth of cover</li> <li>• underlying/overlying and adjacent rock formations</li> <li>• stress regimes</li> <li>• strata characteristics</li> <li>• water ingression</li> <li>• systems of mining</li> <li>• direction</li> </ul>
<b>Stress</b> includes:	<ul style="list-style-type: none"> <li>• horizontal and vertical tectonic induced stress and mining induced stress</li> </ul>
<b>Standard operating procedures</b> (SOP) are also known as:	<ul style="list-style-type: none"> <li>• safe working procedures, safe operating procedures and standard working procedures</li> </ul>
<b>Audit</b> is:	<ul style="list-style-type: none"> <li>• the validation process to ensure the system, procedures and processes meet the established objectives and are implemented</li> </ul>

## Unit Sector(s)

Materials Extraction

## **Competency field**

Refer to Unit Sector(s).

## **Co-requisite units**

Not applicable.