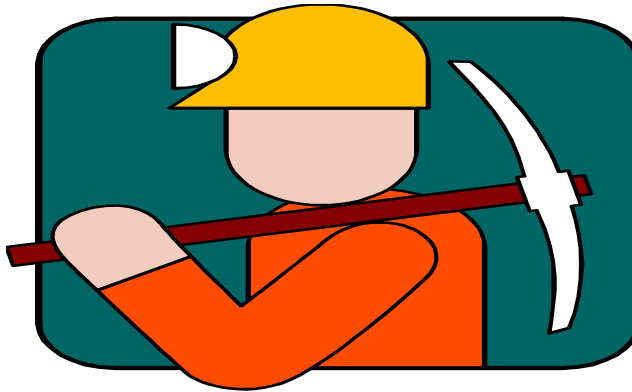


National Mining Industry Training Advisory Body

Black Coal Training Package MNC98 Version 2.00



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Published by:

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First Published: January, 1999

Revised : February 2000

Revised September 2000

STOCKCODE: 5500001STD

Printed by Mercury Printeam, MELBOURNE AUSTRALIA

Version 2.00 July 2003

# List of Qualifications

## Black Coal Training Package MNC98 V2

<b>Certificate II in Coal Operations</b>	<b>MNC20198</b>
<b>Certificate III in Coal Operations</b>	<b>MNC30198</b>
<b>Certificate IV in Coal Operational Management</b>	<b>MNC40198</b>
<b>Certificate IV in Surface Coal Mining (Open Cut Examiner)</b>	<b>MNC40202</b>
<b>Diploma of Coal Operational Management</b>	<b>MNC50198</b>
<b>Diploma of Mine Electrical Engineering (Surface)</b>	<b>MNC50202</b>
<b>Diploma of Mine Electrical Engineering (Underground)</b>	<b>MNC50302</b>
<b>Diploma of Mine Mechanical Engineering</b>	<b>MNC50402</b>
<b>Diploma of Surface Coal Mining</b>	<b>MNC50502</b>
<b>Diploma of Mine Surveying</b>	<b>MNC50602</b>
<b>Advanced Diploma of Coal Operational Management</b>	<b>MNC60198</b>
<b>Advanced Diploma of Surface Coal Mining</b>	<b>MNC60202</b>

## Important

Training Packages are living documents. Changes are periodically made to reflect the latest industry practices.

As a user of the Training Package, and before commencing any form of training or assessment, you must ensure delivery is from the **current version**.

Ensure you are complying with this requirement by:

- checking the version identifier code of the version you currently have (located on the imprint page, just below the copyright statement)
- accessing the Australian Training Products (ATP) website and comparing the version identifier. This information is displayed in the first few pages of the Training Package.

Where the ATP website shows a different version, the Modification History, again shown on the ATP website in the first few pages of the Training Package, will display the changes made in versions. ATP website for version comparison: <http://www.atpl.net.au>

The Modification History is also visible on the website of the developer of the Training Package: [www.miningitab.com.au](http://www.miningitab.com.au)

Changes in units of competency and packaging of qualifications are reflected on the **National Training Information Service** which displays only current information: <http://www.ntis.gov.au>

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<b>PRINT VERSION MODIFICATION HISTORY</b>			
Please refer to the National Training Information Service for the latest version of Units of Competency and Qualification information ( <a href="http://www.ntis.gov.au">http://www.ntis.gov.au</a> )			
<b>BLACK COAL TRAINING PACKAGE MNC98</b>			<b>Sheet 1 of 1</b>
<b>Version</b>	<b>Date of Release</b>	<b>Authorisation</b>	<b>Comments</b>
1.00	11 September 1998	NTFC	Primary release.
	15 January 1999	NTFC	Extension of Black Coal Training Package to include underground competencies and qualifications at Certificate IV, Diploma and Advanced Diploma levels.
	21 August 2000	NTFC	Amendments to incorporate the Brown Coal Sector
2.00	30 October 2002	NTQC	<p>1. Inclusion of Statutory Functions Qualifications and Units of Competency:</p> <ul style="list-style-type: none"> <li>• <b>7 new Qualifications</b> <ul style="list-style-type: none"> <li>• Certificate IV in Surface Coal Mining (Open Cut Examiner)</li> <li>• Diploma of Mine Electrical Engineering (Surface)</li> <li>• Diploma of Mine Electrical Engineering (Underground)</li> <li>• Diploma of Mine Mechanical Engineering</li> <li>• Diploma of Surface Coal Mining</li> <li>• Diploma of Mine Surveying</li> <li>• Advanced Diploma of Surface Coal Mining</li> </ul> </li> <li>• 11 new Units of Competency: MNCG10A, MNCG81A, MNCG82A, MNCG83A, MNCG84A, MNCG90A, MNCG91A, MNCO43A, MNCO44A, MNCO45A, MNCO46A</li> </ul> <p>2. Insertion of Review date in Footers</p>
2.00	26 May 2003	ANTA	Amendments to Advanced Diploma of Surface Coal Mining a detailed list of these amendments is on the following page.

Changes to the Advanced Diploma of Surface Coal Mining

1 The changes made to the Advanced Diploma of Surface Coal Mining are classified as Category changes. The correct codes and titles of units called up by this qualification are as follows:

OLD CODE & TITLES		NEW CODE & TITLES	
MNIC1A	Establish mine statutory/legal compliance system	MNIC01A	Establish the mine statutory/legal compliance system
MNIC2A	Establish mine risk management system	MNIC02A	Establish the mine risk assessment and control system
MNCG3A	Manage the risk control system	MNC.G3.A	Manage the risk control system
MNIC9A	Establish the mine safety management system	MNIC09A	Establish and manage the mine occupational health and safety system
MNIC10A	Establish the mine emergency preparedness systems	MNIC10A	Establish the mine emergency systems
MNIL9A	Manage major incidents and emergencies	MNIL09A	Manage major incidents and emergencies
MNIL2A	Establish and manage environmental management policies, plans and procedures	MNIL02A	Establish and manage environmental management policies, plans and procedures
MNQQM07A **	Implement and maintain operational performance systems **	MNQ.QM/07A **	Implement and maintain operational performance management system **
MNIC3A	Establish mine infrastructure	MNIC03A	Establish mine infrastructure and plant systems
MNIL1A	Establish and manage the occupational health and safety system	DELETED	
MNIS3A	Establish blasting/shot firing systems	DELETED	
MNIS4A	Establish slope stability management systems	DELETED	
MNIC6A	Establish mine water management system	MNIC06A	Establish the mine water management system
MNIL13A	Initiate, monitor and supervise contracts	MNIL13A	Initiate, monitor and supervise contracts
MNIC7A	Establish the stockpile management system	MNIC07A	Establish the stockpile management system
MNIC8A	Establish waste and by-product management systems	MNIC08A	Establish waste and by-product management system
MNIS2A	Establish product haulage and transport system	MNIS02A	Establish surface product haulage and transport systems
MNIS1A	Establish access to transport networks	MNIS01A	Establish ground control and slope stability systems
MNIC4A	Establish mine services system	MNIC04A	Establish mine services systems
MNQSM08A **	Design, implement maintain and evaluate a quality system **	MNQ.QM08A **	Design, implement maintain and evaluate a quality system **
MNIC5A	Establish plant and equipment maintenance systems	MNIC05A	Establish plant, equipment and infrastructure maintenance systems
MNQQM17A **	Develop, implement and maintain process control systems **	MNQ.QM/17A **	Develop, implement and maintain process control systems **
MNQQM18A **	Design and monitor dredging/barge operations (sluicing) sand and gravel **	MNQ.QM/18A **	Design and monitor dredging/barge operations (sluicing) sand and gravel **
MNQQM20A **	Conduct sales in an excavation extractive operation **	MNQ.QM/20A **	Conduct sales in an extractive operation **
MNIL6A	Provide leadership	MNIL06A	Provide leadership
MNIL5A	Facilitate decision making processes	MNIL05A	Manage the decision making process
MNIL8A	Manage group processes	MNIL08A	Manage group process
MNIC11A	Establish mine closure management system	MNIC11A	Establish a blasting system
		MNIC12A	Establish mine closure management systems





## THE BLACK COAL TRAINING PACKAGE OVERVIEW

In 1997 the National Mining ITAB commenced the development of the Black Coal Training Package to provide the framework for training, assessment and the issuing of qualifications in the Black Coal Industry.

The Training Package concept:

- places greater emphasis on the application of skill and knowledge in a work environment
- assessment is applied against competency standards
- links the qualification to the competency standards rather than curriculum or courses
- recognises that there are many ways of achieving competency
- supports the industry demand for relevant and meaningful training
- provides greater flexibility to enterprises in the way training is delivered and assessed
- provides for national recognition of skills and knowledge (assessment/ training outcomes) and to enhance portability.

The Black Coal Training Package provides the national procedures and guidance to underpin the development of training and assessment activities within the Black Coal industry. In an industry where traditionally a lot of training takes place (but no formal recognition of operator skills and stringent statutory licensing arrangements for management positions), the Training Package provides a range of delivery options and assessment pathways for the recognition of skills within all operational functions of the industry. These include:

- traineeships
- apprenticeships
- cadetships
- new employees wishing to enter the industry
- current employees seeking a qualification
- current employees seeking a promotion
- current employees seeking recognition of their skills and knowledge.

In 1993 the Black Coal Industry developed competency standards for most sectors of the industry. Training Packages work was completed for all production levels (Certificate II - Diploma), with additional materials at Advanced Diploma to be completed in 1999.

Wide industry consultation was undertaken to ensure the approach to the Black Coal Training Package would meet the training needs of all clients: large, medium and small operations as well as those employees wishing to enter the industry and the providers of training and assessment services. The input from industry allowed the Training Package to build on existing practices and structures within the industry to provide a flexible approach for training delivery and assessment. This approach also encourages partnerships between enterprises and Registered Training Organisations (RTOs) such as TAFE to facilitate the recognition of employee competencies.

To support the industry demand for competency based training and to meet the regulatory requirements for statutory positions, the Black Coal Training Package has been developed in 2 phases.

- Black Coal Training Package for the New Apprenticeship System providing the competency standards, assessment guidelines and qualifications for production employees at Certificates II and III.

- Black Coal Training Package which incorporates the New Apprenticeships (Certificate II to III), with Assessment Guidelines and qualifications for statutory positions at Certificate IV to Advanced Diploma.

## Characteristics of the Coal Industry

Black coal production is dominated by New South Wales and Queensland with small amounts mined in Western Australia and Tasmania. Lower energy (brown coal) is mainly produced in Victoria where some 60 million tonnes per annum is converted to electricity and energy products. South Australia (Leigh Creek) produces 2.8 million tonnes per annum of coal. The coal industry is largely decentralised and accounts for 23 percent of the employment in the Mining Industry with the majority of employees in New South Wales (ABS Labour Force estimates, August 1996). The number of persons directly employed in the coal mining industry has significantly decreased in the 1990's and there is a prediction of non growth employment. Capital expenditure is still quite high.

The coal industry is acquiring a wide range of advanced technologies, particularly in the areas of engineering and environmental technologies including:

- development of longwall operations in underground coal mining to provide safety and higher coal recovery than other methods, particularly at greater depths
- automation of longwall faces, draglines, underground drilling, conditions monitoring, dump trucks and roof bolting
- upgrading of mine washplants to handle the increased throughput, produce high-grade coking coal etc
- more advanced communication systems, such as state-of-the-art verbal and data communication systems, including optical fibre installation and global positioning
- technological improvements to increase energy efficiency, such as utilising methane extracted from coal seams for on-site power generation
- introduction of new technologies in rehabilitation of existing and new mine sites.

Personnel within the coal mining industry are employed in a number of functional groupings. These include:

- Group Managers
- Mine Managers
- Middle Managers, Technical Specialists and Maintenance
- Front-line Managers and Technical Specialists
- Operators, Maintenance Personnel and Support Personnel
- Maintenance Personnel, Support Personnel and Production Operatives.

In the past, recognition of employee skills was only available for tradespersons and statutory positions such as Deputy Open Cut Examiner, Undermanager, Manager. Until the introduction of Training Packages, large number of employees at production operator level had no access to a formal qualifications. Over the years, mine accidents have resulted in changes to legislation for the recognition of statutory positions and issues surrounding these changes are resolved on an ongoing basis.

## Factors Influencing Change

Structural and economic changes are occurring within Australian Black Coal Industry. Factors which influence these changes include:

- fluctuations in the price of coal
- national recognition that we (Australians) need to improve our level of competitiveness
- impact of health and safety and environmental legislation and Duty of Care
- widespread introduction of quality systems
- increased use of technology and more automated equipment
- changes in work organisations and practices and the accompanying need for skilled personnel
- an increase in the use of contractors (a trend that may continue) as new mines are developed and enter production
- a continued trend to outsource non core activities such as engineering, and maintenance, overburden removal etc.

One result of these changes is that enterprises have more responsibility to ensure that those working for them, such as operators, contractors, supervisors and managers:

- possess the necessary skills and knowledge and competence for their tasks;
- have been adequately trained
- perform their duties
- are accountable.

## New Apprenticeships

To date no new apprenticeships and few traineeships for production employees were available within the Black Coal Industry. The identification of New Apprenticeships at Certificates II and III and links to qualifications at Certificate IV, Diploma and Advanced Diploma will map a recognised career path for all employees. This will encourage new entrants to the industry and will assist in overcoming future skill shortages to satisfy an industry upturn or when experienced employees retire or leave the industry.

Progressive uptake of the new qualifications is expected as employment opportunities are marketed to and recognised by school leavers and others wishing to join the industry. It is expected that industry will actively recruit young people to the industry and recognise the skills of existing employees as they become aware of the advantages associated with the New Apprenticeships System.

Flexibility has been included in all qualifications to meet the needs of employers and employees. There is flexibility in:

- the range of electives available in each qualification to meet site specific and individual requirements
- approaches to delivery of training and assessment
- attainment of a qualification and/or statement of attainment
- suites of units of competency to meet site needs.

## Structure Of The Black Coal Training Package

The Black Coal Training Package consists of three (3) endorsed components and two (2) non endorsed components.

### Endorsed Components

#### *Competency Standards*

These were originally endorsed in 1994 and revised in 1997 against the Standards Best Practice Manual and the Guidelines for Training Package Developers to meet Training Package development criteria.

#### *Qualifications*

The competency standards have been packaged to achieve qualifications under the Australian Qualification Framework (AQF) and meet the needs of industry.

#### *Assessment Guidelines*

These have been developed to provide assessment procedures and guidance in using the competency standards as the benchmarks for assessment.

#### *Support Materials*

##### *Competency Unit Learning Packages (CULPs)*

CULPs are generic competency based learning and assessment strategies, which should be customised for use at a mine site.

CULPs contain:

- instructions for use
- the Unit of Competency and guidance for customisation to mine site requirements
- a Competency Training map
- assessment materials
- learning materials.

Each CULP sets out which sections will be useful to trainers, assessors and learners.

#### *Professional Development Materials*

The kit, “*Using the Black Coal Training Package*” provides assistance to those wishing to use any component of the Black Coal Training Package – trainers, assessors and registered training organisations. It provides assistance to those who are undertaking new roles in facilitating, supporting and validating skills through flexible approaches to training delivery and assessment. This relates particularly to the formation of partnerships with enterprises to meet the industry requirements for assessment in the workplace or in a simulated situation and a qualification system based on competency recognition.

## Methodology

In 1994 Black Coal Competency Standards were developed and endorsed in the following areas:

- Underground
- Open Cut Production.

As a result of consultations in 1996 the following actions were agreed:

- revision/rewriting of a limited number of existing competency standards
- a major review of the Mechanical engineering standards required in the coal industry to provide alignment to National Metals and Engineering standards
- writing of additional Black Coal Units of Competency for AQF. VI – Advances Diploma.

In early 1997 the National Mining ITAB commenced the development of the Black Coal Training Package. It was agreed to incorporate the revision/development of the Black Coal Competency Standards as part of the Training Package development.

## Steering Committee

A Black Coal Training Package Project Steering Committee was established comprising representatives from:

- employers
- mine managers
- unions
- regulatory authorities
- State Training Agency.

Observers invited to attend the Steering Committee meetings included:

- representatives of interested mines
- NSW Coal Mines Qualifications Board
- Queensland Board of Examiners
- NSW Minerals Council
- Queensland Mining Council
- Queensland Underground Taskforce
- State Mining ITABs
- TAFE representative
- ANTA personnel.

## Framework for the Development of the Training Package

A series of documents developed by ANTA underpinned the development of the Black Coal Training Package. These include:

- Standards Best Practice Manual for Competency Standards development
- Guidelines for Training Package Developers
- Australian Qualifications Framework
- National Assessment Principles
- Australian Recognition Framework.

## Consultation Process

There was extensive consultation throughout the Black Coal Industry during the development of the Training Package. This included briefing sessions, workshops, electronic and postal consultation with feedback sheets and validation of revised documents by key stakeholders.

The majority of Black Coal mines are located in New South Wales and Queensland with a few mines located in Western Australia and Tasmania. Because of this concentration there was an emphasis on consultation in New South Wales and Queensland. Briefing sessions and workshops were held with:

- State ITABs
- State ITAB Regional Network Meetings
- special workshops in Queensland and NSW comprising representatives from peak employer/employee bodies, mine management, employee nominees, subject matter experts from operational mines and training providers to the coal industry
- participants at national mining conferences
- individual employees at mine sites and training providers
- Statutory Authorities in New South Wales and Queensland
- Inspectors of Mines in New South Wales and Queensland.

## Outcomes

A key feature of the Training Package is the flexibility to accommodate the nature of the workforce and work requirements. Flexibility is provided through:

- multiple entry to qualifications
- the range of electives in each qualification to provide choices for career path development as well as specialisation to meet individual and mine site needs
- emphasis on the recognition of prior learning (RPL) and/or recognition of current competencies (RCC) to recognise the skills of the existing workforce
- the establishment of qualifications at operator level to provide career path options
- options to customise competency outcomes for industry sector and mine site requirements
- the provision of learning strategies and assessment materials in the CULPs to support flexible delivery.

# COMPETENCY STANDARDS BLACK COAL INDUSTRY

## Introduction

Competency standards for production and engineering functions in the Black Coal Industry were developed and endorsed by the then National Training Board during 1994. The standards comprised four parts, namely:

- Open Cut Production, including core and production units to ASF 4
- Underground Production, including core and production units to ASF 4
- Electrical Engineering which were, in effect, overlays to the relevant Electrical Contractors standards; and
- Mechanical Engineering which covered Metals, Building and Construction and Water competencies required in the industry.

## Review of Competency Standards 1996/97

The review of the Black Coal Industry competencies took place as a two stage exercise:

- Stage 1 (August - September 1996). To review the standards and recommend changes in structure and content.
- Stage 2 (June - September 1997). To action the changes recommended from Stage 1 and subsequently approved by the National Mining ITAB.

Stage 1 involved the mail out of a questionnaire to all operational mines, to Corporate Management, to the peak Employer / employee bodies and to a range of interested parties including training providers. Stage 1 also involved the conduct of focused workshops in NSW (Singleton and Penrith) and Queensland (Emerald). The workshops were attended by some 170 industry representatives from 30 mines together with management and employee nominees.

The result of Stage 1 was a comprehensive report which dealt in detail with policy, structure and content recommendations. The recommendations contained in the report were, with minor modifications, accepted by the National Working Party.

Stage 2 of the review also involved workshops in both NSW and Queensland which were attended by some 112 subject matter experts from operational mines and from expert training providers. The function of these workshops was to provide the detail required to give effect to the recommendations from Stage 1.



## Structure and Streams

All units of competency were subject to editorial changes, however, changes of a substantive nature involved the overall structure and specified units. The existing four part structure was replaced with a more focused seven (7) part structure as outlined in the following sub-paragraphs:

- **Core.** The core, being applicable to all operational functions of the industry was created as a separate part and enhanced by the addition of mine communication systems (transferred unit), basic risk control processes (new unit) and environmental functions (expansion within an existing unit).
- **General.** A general part was created to recognise that certain units of competency, although not universally required and therefore not core, were applicable across the industry. The general part contains some 41 units of competency which were, in the main, transferred from pre-existing groupings. Some new units of competency for risk management and computer operations were developed and included here.
- **Open Cut Production.** This part contains 22 units of competency. Excavator / Hydraulic Shovel Operations was separated from Rope / Shovel Operations because of the wide differences in actual competencies.
- **Underground Production.** This part contains 72 units of competency. The major changes from the original involved the inclusion of a unit of competency related to spontaneous combustion. There have also been some structural changes that recognise workplace realities in relation to divisions within strata control and ventilation device construction.
- **Coal Preparation / Treatment.** This part contains 9 units of competency. The structure and content now more realistically reflect the functions including stockpiling, rail despatch operations and plant control and monitoring.
- **General Management.** This part contains 21 units of competency and covers the functions of managing a business in terms of human, fiscal, information and community/ environmental resources and issues.
- **Technical Management.** Part contains 39 units of competency and covers the industry specific technical requirements such as mining operations, mining safety and related functions and systems.

## Review against Best Practice Guidelines

The overall review process was conducted against the Standards Best Practice Manual and National Competency Standards – Policy and Guidelines. The review covered the quality of the content, technical aspects and process of development to ensure that the outcomes and general applicability in the workplace met industry requirements.

The review confirmed:

- the specification of and application of the knowledge and skills was to the level of performance required in the workplace.
- the competency standards covered the range of functions that are meaningful to the workplace.

- the competency standards provided a basis for skill formation now and in the future.
- the technical quality met the requirements of Best Practice.
- the competency standards were sufficiently clear and detailed to allow unambiguous and consistent interpretation of industry requirements for training and assessment including assessment at job or in a simulated situation.
- the competency standards could be customised, within industry guidelines, to meet specific enterprise needs.
- there was clear indication of the interdependence of units of competency to the extent relevant to and required by the industry.
- there was a clear indication of the relationship between each unit of competency and the Mayer Key Competencies.

The following Tables provide an outline listing of the units of competency for production operators, and managers working within the Black Coal Industry.

## Inter-dependence of Units of Competency

### Inter-dependent Assessment:

- (a) **Core Units.** The core units of competency provide an underpinning to the range of production units at AQF II and III. Production units of competency therefore have a requirement in the Evidence Guide that Assessment should include those aspects of the core competencies which are consistent with the work environment of the unit.
- (b) **Production Units.** For work organisation and industrial reasons it is an express requirement of the industry that these units of competency be treated as stand-alone. For example, the industry has expressly avoided pre-requisites and co-requisites. This policy was obviously a major factor in the framing and focus of the units of competency which are functional in nature with the majority being restricted in scope to specific systems/ equipment related activities. Additionally, the framing and focus, together with statutory separation of duties means that there is little advantage in treating them as suites for holistic assessment purposes.

Over time it may be possible to encourage a broader approach to assessment but it is very important that this evolution comes from increased confidence in the system rather than from any perceived external imposition which would, at this stage, be counter productive.

### Physical Resources.

The physical resources required for each production unit are covered to the extent needed and possible in the Range of Variables.

Further elaboration is not supported by the industry because, in nearly all cases, there is a wide and diverse range of equipment solutions in terms of both main technologies and associated equipment.

### Materials.

A single list could not cover these options and may itself be unnecessarily inhibitive to potential providers.

It should also be remembered that we are dealing with a relatively small training market. Equipment intensive training is quite expensive and generally conducted under specialised arrangements by contractors or site trainers. The larger training providers, particularly the public sector, are seldom keen for involvement due to the overall unit costs. Decisions on what needs to be covered and therefore the equipment needed to be available from the training provider will most likely be negotiated on a site by site basis.

### **General Management Competencies: Adoption of Standards**

As indicated above, the general management competencies are those which cover the functions of managing or supervising the business aspects of coal operations in terms of human, fiscal, information and community / environmental systems, resources and issues.

The Industry recognises that there is an evolving and expanding range of competency based solutions for the general management discipline. User - choice rather than prescription is favoured and therefore, the adoption of competency standards from one of the following, or their equivalents, are supported:

- National Frontline Management Initiative (FMI)

Unit of competency lists for National Frontline Management (FMI) are contained in the Qualifications.

### **Technical Management Competencies: Standards Development Process**

In July 1997, the National Mining Industry Training Advisory Body network commenced the project to develop technical management units of competency for the Black Coal Sector (Underground).

The project involved three steps, namely:

- Development of draft competency standards.
- Validation of the draft competency standards.
- An approval process to gain industry agreement for the inclusion of the units of competency in the National Training Package.

The Technical Management competencies have been developed by industry - based workshop groups comprising representatives of management, unions, regulatory authorities, acknowledged technical experts, training / education providers and mines rescue services. The drafts have been advertised and made available for consideration by all interested parties. The processes have therefore been open, transparent and accessible. Details of the development processes are included in the following paragraphs.

## Development Processes

The standards development process included the following:

- **Development Workshops.** Groups of interested parties and subject matter experts participated in two workshop series. Series I Workshops produced initial draft competencies which were circulated widely for comment. The Series II Workshops considered feedback and finalised the initial draft standards.
- **Additional Input.** Using the initial draft standards, the consultants were directed to liaise with acknowledged subject - matter experts on a range of issues and questions. The views of these experts including Mines Rescue Services, education / training providers, Mines Department Officials and Statutory Safety Inspectors were sought and the draft standards were upgraded as a result of these inputs.

The draft technical management competency standards contained a total of 33 units of competency. These were structured across five streams / fields and were set at three competency levels ie. AQF IV - VI. The structure was influenced by the definitive requirements which emerged from the joint Queensland / NSW model established in the Moura Task Group 3 recommendations.

## Validation Process

The validation of the draft technical management units of competency involved two strategies:

- **State Based.** Under the auspices of the State ITABs, the draft units of competency were made available to the industry (including operational mines and other relevant parties) for consideration and comment. Suggestions and proposals received through this process were actioned. Comments and feedback were positive.
- **National (Joint State).** The technical management competency standards, for the purpose of this package, are to satisfy Vocational Education and Training (VET) requirements. They are also required to provide a basis for Government Regulatory requirements. It was therefore important to seek the acceptance of the units of competency by Regulatory Authorities.

A Reference Group consisting of representatives of the Regulatory Authorities, Mines Rescue Officials and the Education / Training providers (from each of the major States) participated in facilitated workshops to review and validate the units of competency.

The validation processes resulted in some refinement of the original drafts but beyond this, the Workshop Groups agreed that the final drafts satisfied both the vocational education and training (VET) and the regulatory requirements. This agreement was naturally subject to the provision that the standards may be added to or modified to maintain their currency and relevance to the industry.

The following pages provide a listing of the Black Coal Units of Competency for AQF levels II - VI.

## Black Coal Competency Standards AQF II - VI

### CORE (C)

Unit Identifier	Title
MNC.C1.A	Work Safely
MNC.C2.A	Work Co-operatively with Others
MNC.C3.A	Solve Individual Work Problems
MNC.C4.A	Plan and Organise Individual Work
MNC.C5.A	Contribute to Quality Work Outcomes
MNC.C6.A	Apply Local Risk Control Processes
MNC.C7.A	Apply Mine Communication Systems

### COAL PREPARATION AND TREATMENT (P)

Unit Identifier	Title
MNC.P1.A	Handle Raw Coal
MNC.P2.A	Monitor Coal Preparation Plant Operations
MNC.P3.A	Control Coal Preparation Plant Operations
MNC.P4.A	Treat and Dispose of Rejects and Tailings
MNC.P5.A	Conduct Sampling Operations
MNC.P6.A	Conduct Stockpile Dozer Operations
MNC.P7.A	Conduct Stockpile Reclaimer Operations
MNC.P8.A	Conduct Coal Rail Despatch Operations
MNC.P9.A	Perform Coal Plant Minor Maintenance

### GENERAL (G)

Unit Identifier	Title
MNC.G2.A	Facilitate the Risk Management Process
MNC.G4.A	Respond to Local Emergencies and Incidents
MNC.G5.A	Conduct Fire Team Operations
MNC.G6.A	Incorporate Health and Hygiene Factors into Mine Management
MNC.G7.A	Implement and Apply Health and Hygiene Management Measures
MNC.G8.A – MNC.G9.A	(Reserved)
MNC.G10.A	Conduct Mine Surveying
MNC.G11.A – MNC.G24.A	(Reserved)
MNC.G25.A	Access, Update and Retrieve Simple Computerised Information
MNC.G26.A	Operate a Computer to Produce Documents
MNC.G27.A	Use Keyboard Skills and Advanced Functions of Software to Produce Complex Documents
MNC.G28.A	Use Advanced Functions of Software Packages to Produce Documents, Reports and Worksheets
MNC.G29.A	Transfer Information Through a Computer
MNC.G30.A	Conduct Purchasing

**GENERAL (G)** (cont.../)

Unit Identifier	Title
MNC.G31.A – MNC.G34.A	(Reserved)
MNC.G35.A	Apply Operational Maintenance Skills
MNC.G36.A MNC.G37.A	Provide Electrical Support (To Tradesperson) Service Mine Plant and Equipment
MNC.G38.A	Perform Basic Cutting and Welding
MNC.G39.A	Fit and Maintain Tyres and Wheels
MNC.G40.A	Operate Gantry Crane
MNC.G41.A	Conduct Non-Slewing Crane Operations
MNC.G42.A	Conduct Slewing Crane Operations
MNC.G43.A	Conduct Dogging Operations
MNC.G44.A	Conduct Basic Rigging Operations
MNC.G45.A	Conduct Intermediate Rigging Operations
MNC.G46.A	Conduct Basic Scaffolding Operations
MNC.G47.A	Conduct Intermediate Scaffolding Operations
MNC.G48.A	Conduct Forklift Operations
MNC.G49.A	Operate Elevating Work Platform
MNC.G50.A	Operate Vehicle Loading Crane
MNC.G51.A – MNC.G54.A	(Reserved)
MNC.G55.A	Extend, Retract and Maintain Conveyor Componentry
MNC.G56.A	Install, Commission and Maintain Major Conveyor Equipment and Systems
MNC.G57.A	Repair and Splice Conveyor Belting
MNC.G58.A- MNC.G59.A	(Reserved)
MNC.G60.A	Operate Support Equipment
MNC.G61.A	Operate Light Vehicle
MNC.G62.A	Operate Medium Vehicle
MNC.G63.A	Operate Heavy Rigid Vehicles
MNC.G64.A	Operate Articulated Vehicle
MNC.G65.A	Operate Double Vehicle
MNC.G66.A	Operate Road Train Vehicle
MNC.G67.A	Transport Dangerous Goods
MNC.G68.A	Load and Unload Vehicle
MNC.G69.A	Test Operational Functions of Production Vehicles and Equipment
MNC.G70.A	Test Operational Function of Support Vehicles and Ancillary Equipment
MNC.G71.A- MNC.G80.A	(Reserved)
MNC.G81.A	Implement, monitor, rectify and report on contracts
MNC.G82.A	Implement, monitor, rectify and report on inventory control system
MNC.G83.A	Implement, monitor, rectify and report on maintenance management systems
MNC.G84.A	Implement, monitor, rectify and report on mobile plant and equipment systems
MNC.G85.A- MNC.G89.A	(Reserved)
MNC.G90.A	Establish and maintain the mine electrical reticulation and protection system
MNC.G91.A	Implement, monitor, rectify and report on interfaces between electrical and mechanical componentry

**UNDERGROUND PRODUCTION (U)**

Unit Identifier	Title
MNC.U01.A - MNC.U010.A	(Reserved)
MNC.U011.A	Conduct Forklift Operations
MNC.U012.A	Operate Power Tram
MNC.U013.A	Conduct Rail Vehicle Operations
MNC.U014.A	Conduct Tracked Vehicle / Plant Operations
MNC.U015.A	Conduct Wheeled Vehicle Operations
MNC.U016.A	Conduct Wheeled Grader Operations

**UNDERGROUND PRODUCTION (U) (cont.../)**

Unit Identifier	Title
MNC.U017 - MNC.U025	(Reserved)
MNC.U026.A	Conduct Environmental Monitoring
MNC.U027 - MNC.U039	(Reserved)
MNC.U040.A	Install, Maintain and Recover Gas Drainage Systems
MNC.U041.A	Install, Maintain and Recover Electrical Services
MNC.U042.A	Install, Maintain and Recover Water and Air Systems
MNC.U043.A	(Reserved)
MNC.U044.A	Conduct Special Roadway Operations
MNC.U045.A	Recover Equipment
MNC.U046.A	Conduct Winding Operations
MNC.U047.A	(Reserved)
MNC.U048.A	Conduct Shotfiring
MNC.U049.A	Support Shotfiring Operations
MNC.U050.A	Conduct Rotational Drilling
MNC.U051.A	Conduct Directional Drilling
MNC.U052.A	(Reserved)
MNC.U053.A	Conduct Basic Strata Control Operations
MNC.U054.A	Conduct Specialised Strata Control Operations
MNC.U055.A - MNC.U059.A	(Reserved)
MNC.U060.A	Conduct Roadway Maintenance
MNC.U061.A	Conduct Stonedusting Operations
MNC.U062.A	Dewater Roadways and Work Areas
MNC.U063.A	Lay and Recover Rail
MNC.U064.A	Install and Maintain Explosion Barriers
MNC.U065.A	Construct and Maintain Basic Ventilation Devices
MNC.U066.A	Construct and Maintain Ventilation Devices
MNC.U067.A - MNC.U069.A	(Reserved)
MNC.U070.A	Conduct Continuous Miner Operations
MNC.U071.A	Conduct Shuttle Car Operations
MNC.U072.A	Conduct Feeder Breaker Operations
MNC.U073.A	Conduct Face Ventilation Operations
MNC.U074.A	Conduct Outburst Mining Operations
MNC.U075.A	Conduct Shearer Operations
MNC.U076.A	Conduct Longwall Face Ancillary Equipment Operations
MNC.U077.A	Conduct Pan Tech Operations
MNC.U078.A	Install and Recover Longwall Equipment
MNC.U079.A	Operate Breaker Line Supports
MNC.U080.A	Conduct Flexible Conveyor Train (FCT) Operations
MNC.U081.A - MNC.U090.A	(Reserved)
MNC.U091.A	Maintain Lamp Cabin Operations
MNC.U092.A	Maintain Bathroom Hygiene
MNC.U093.A - MNC.U094.A	(Reserved)
MNC.U095.A	Monitor Control Processes
MNC.U101.A	Apply Spontaneous Combustion Management Measures

**OPEN CUT PRODUCTION (O)**

Unit Identifier	Title
MNC.O1.A - MNC.O8.A	(Reserved)
MNC.O09.A	Perform Basic Earthmoving Operations

**OPEN CUT PRODUCTION (O) (cont.../)**

Unit Identifier	Title
MNC.O10.A	Conduct Dragline Operations
MNC.O11.A	Conduct Burden and Coal Drilling Operations
MNC.O12.A	Conduct Rope/Shovel Operations
MNC.O13.A	Conduct Front End Loader Operations
MNC.O14.A	Conduct Bulk Material Truck Operations
MNC.O15.A	Conduct Bulk Water Truck Operations
MNC.O16.A	Conduct Grader Operations
MNC.O17.A	Conduct Scraper Operations
MNC.O18.A	Conduct Dozer Operations
MNC.O19.A	Conduct Surface Miner Operations
MNC.O20.A	Conduct Auger Miner Operations
MNC.O21.A	Conduct Bucketwheel Operations
MNC.O22.A	Conduct Spreader Operations
MNC.O23.A	Support Bucketwheel System Operations
MNC.O24.A	Conduct High Wall Miner Operations (to be developed)
MNC.O25.A	Lay and Recover Cables
MNC.O26.A	Conduct Dewatering Operations
MNC.O27.A	Conduct Excavator/Hydraulic Shovel Operations
MNC.O28.A	Conduct Conveyor Operations
MNC.O29.A	Conduct Mobile Slew Conveyor Operations
MNC.O30.A	Conduct Control Centre Operations
MNC.O31.A	Coordinate Conveyor System Shift
MNC.O32.A	Access Mechanical Plant
MNC.O33.A	Conduct Conveyor Shifting Dozer Operations
MNC.O34.A to MNC.O39.A	(Reserved)
MNC.O40.A	Conduct Shotfiring Operations
MNC.O41.A	Support Shotfiring Operations
MNC.O42.A	Examine and Maintain Mine Safety
MNC.O43.A	Monitor interaction of light and heavy vehicles and mining equipment
MNC.O44.A	Manage laser levelling of operating plant
MNC.O45.A	Apply and monitor environmental management policies, plans and procedures
MNC.O46.A	Monitor systems and methods of mining

**TECHNICAL MANAGEMENT - MINE ATMOSPHERE (U)**

Unit Identifier	Title
MNC.U44.A	Conduct Special Roadway Operations (Production Inventory)
MNC.U45.A	Recover Equipment (Production Inventory)
MNC.O40/U48.A	Conduct Shotfiring (Production Inventory)
MNC.U102.A	Establish the Spontaneous Combustion Management Plan
MNC.U103.A	Implement the spontaneous Combustion Management Plan
MNC.U104.A	Apply the Spontaneous Combustion Management Plan
MNC.U106.A	Establish the Ventilation Management Plan
MNC.U107.A	Implement the Ventilation Management Plan
MNC.U108.A	Apply and Monitor the Ventilation Management Plan
MNC.U109.A	Manage, Operate and Maintain the Mine Ventilation System
MNC.U111.A	Establish the Gas Management Plan



**TECHNICAL MANAGEMENT - MINE ATMOSPHERE (U) (CONT.../)**

Unit Identifier	Title
MNC.U112.A	Implement the Gas Management Plan
MNC.U113.A	Apply and Monitor the Gas Management Plan
MNC.U116.A	Establish the Gas Drainage Management Plan
MNC.U117.A	Implement the Gas Drainage Management Plan
MNC.U118.A	Apply and Monitor the Gas Drainage Management Plan
MNC.U121.A	Establish the Outburst Management Plan
MNC.U122.A	Implement the Outburst Management Plan
MNC.U123.A	Apply and Monitor the Outburst Management Plan

**TECHNICAL MANAGEMENT - MINING STRUCTURES (U)**

Unit Identifier	Title
MNC.U131.A	Establish the Mining Method and Strata Management Systems
MNC.U132.A	Implement Strata Management Plan
MNC.U133.A	Apply and Monitor the Strata Management Plan

**TECHNICAL MANAGEMENT - MINE INFRASTRUCTURE SYSTEMS (U)**

Unit Identifier	Title
MNC.U136.A	Establish Mine Transport Systems and Production Equipment
MNC.U137.A	Implement Mine Transport Systems and Production Equipment
MNC.U138.A	Apply and Monitor Mine Transport Systems and Production Equipment
MNC.U141.A	Establish Mine Services Systems
MNC.U142.A	Implement Mine Services Systems
MNC.U143.A	Apply and Monitor Mine Services Systems
MNC.U146.A	Establish Mine Fixed Plant and Infrastructure Systems
MNC.U147.A	Implement Mine Fixed Plant and Infrastructure Systems
MNC.U148.A	Apply and Monitor Mine Fixed Plant and Infrastructure Systems

**EMERGENCY AND PERSONAL SAFETY (U)**

Unit Identifier	Title
MNC.U151.A	Establish Emergency Preparedness and Response Systems
MNC.U152.A	Implement Emergency Preparedness and Response Systems
MNC.U153.A	Apply and Monitor Emergency Preparedness and Response Systems
MNC.O42.A	Examine and Maintain Mine Safety

**RISK MANAGEMENT (U)**

Unit Identifier	Title
MNC.G3.A	Manage the Risk Control System
MNC.G2.A	Facilitate the Risk Management Process
MNC.G1.A	Develop and Implement Risk Control Processes.

## IMPORTED UNITS OF COMPETENCY

### GENERAL MANAGEMENT COMPETENCIES

Unit Identifier	Title
BSXFMI301A	Manage Personal Work Priorities and professional Development
BSXFMI302A	Provide Leadership in the Workplace
BSXFMI303A	Establish and Manage Effective Workplace Relations
BSXFMI304A	Participate In, Lead and Facilitate Work Teams
BSXFMI305A	Manage Operations to Achieve Planned Outcomes
BSXFMI306A	Manage Workplace Information
BSXFMI307A	Manage Quality Customer Service
BSXFMI308A	Develop and Maintain Safe Workplace and Environment
BSXFMI309A	Implement & Monitor Continuous Improvement Systems & Processes
BSXFMI3010A	Facilitate and Capitalise on Change and Innovation
BSXFMI3011A	Contribute to Development of a Workplace Learning Environment
BSBFLM501A	Manage personal work priorities and professional development
BSBFLM502A	Provide leadership in the workplace
BSBFLM503A	Establish effective workplace relationships
BSBFLM504A	Facilitate work teams
BSBFLM505A	Manage operational plan
BSBFLM506A	Manage workplace information systems
BSBFLM507A	Manage quality customer service
BSBFLM509A	Promote continuous improvement
BSBFLM510A	Facilitate and capitalise on change and innovation
BSBFLM511A	Develop a workplace learning environment

Note: Further detail on the Business Services Units of Competency is available from the National Training Information System website at [www.ntis.gov.au](http://www.ntis.gov.au).

### TRAINING AND ASSESSMENT

The following is a list of Training and Assessment units of competency (BSZ40198) which can be aligned at AQF 3 and 4 in support of those qualifications listed in this Training Package.

Unit Identifier	Title
<b>Training</b>	
BSZ404A	Train small groups
BSZ405A	Plan and promote a training program
BSZ406A	Plan a series of training sessions
BSZ407A	Deliver training sessions
BSZ408A	Review training
BSZ501A	Analyse competency requirements
BSZ508A	Design training courses
<b>Assessment</b>	
BSZ401A	Plan Assessment
BSZ402A	Conduct assessment
BSZ507A	Develop assessment tools

Note: Further detail on the Business Services Units of Competency is available from the National Training Information System website at [www.ntis.gov.au](http://www.ntis.gov.au).

**MECHANICAL ENGINEERING**

UNIT IDENTIFIER	TITLE
MEM183AA	Use tools for precision work
MEM184AA	Maintain and overhaul mechanical equipment
MEM185AA	Bearings – faults diagnosis installation and removal
MEM186AA	Repair and fit engineering components
MEM187AA	Maintain and repair mechanical drives and mechanical transmission assemblies
MEM188AA	Balance equipment
MEM189AA	Levelling and alignment of machinery and engineering components
MEM1810AA	Equipment condition monitoring and recording
MEM1811A	Shut down/isolate machines/equipment
MEM1816B	Analyse plant and equipment condition monitoring results
MEM1817B	Modify mechanical systems and equipment
MEM1846A	Fault find/repair AC and DC electrical equipment/components which use up to 1000 volts AC or 1500 volts DC
MEM1849A	Disconnect/reconnect fixed wired equipment up to 1000 volts AC or 1500 volts DC
MEM1850A	Disconnect/reconnect fixed wired equipment over 1000 volts AC or 1500 volts DC
MEM1855A	Dismantle, replace and assemble engineering components

Note: Further detail on the Mechanical Engineering units of competency is available from the National Training Information Service website at [www.ntis.gov.au](http://www.ntis.gov.au)

**MINING**

UNIT IDENTIFIER	TITLE
MNIC01A	Establish the mine statutory/legal compliance system
MNIC02A	Establish the mine risk assessment and control system
MNIC03A	Establish mine infrastructure and plant systems
MNIC04A	Establish mine services systems
MNIC05A	Establish plant, equipment and infrastructure maintenance systems
MNIC06A	Establish the mine water management system
MNIC07A	Establish the stockpile management system
MNIC08A	Establish waste and by-product management system
MNIC09A	Establish and manage the mine occupational health and safety system
MNIC10A	Establish the mine emergency systems
MNIC11A	Establish a blasting system
MNIC12A	Establish mine closure management systems
MNIL02A	Establish and manage environmental management policies, plans and procedures
MNIL05A	Manage the decision making process
MNIL06A	Provide leadership
MNIL08A	Manage group process
MNIL09A	Manage major incidents and emergencies
MNIL13A	Initiate, monitor and supervise contracts
MNIS01A	Establish ground control and slope stability systems
MNIS02A	Establish surface product haulage and transport systems
MNMF5FX16A	Implement emergency preparedness and response systems

MNMF5FX26A	Apply and monitor emergency preparedness and response
MNMOCC103A	Prepare for blasting
MNMOCC104A	Conduct blasting operations
MNQ.QM/07A	Implement and maintain operational performance management system
MNQ.QM/17A	Develop, implement and maintain process control systems
MNQ.QM/18A	Design and monitor dredging/barge operations (sluicing) sand and gravel
MNQ.QM/20A	Conduct sales in an extractive operation
MNQ.QM08A	Design, implement maintain and evaluate a quality system
MNQOP30A	Carry out blast survey
MNQOP32A	Carry out shotfiring
MNQQM08A	Implement and promote quality system
MNQQM13A	Manage blasting operations
MNQTL01A	Implement, monitor, rectify and report statutory/legal compliance
MNQTL02A	Implement, monitor and report on the site risk management process associated with Occupational Health and Safety and the environment
MNQTL08A	Implement and monitor quality system

Note: Further detail on the Mining units of competency is available from the National Training Information Service website at [www.ntis.gov.au](http://www.ntis.gov.au)

### Asset Security and National Public Services

UNIT IDENTIFIER	TITLE
PRDSIS03A	Implement a project plan
PRDSIS04A	Determine spatial data requirements to meet the deliverables
PRDSIS05A	Determine suitable sources of information for the creation of new spatial data sets
PRDSIS06A	Plan data collection and validation
PRDSIS07A	Capture new data
PRDSIS08A	Obtain and validate existing data
PRDSIS13A	Design a spatial data storage system
PRDSIS14A	Integrate spatial data sets
PRDSIS15A	Maintain spatial data
PRDSIS16A	Store and retrieve spatial data
PRDSIS18A	Produce project deliverables
PRDSIS19A	Collate and interpret data
PRDSIS20A	Design project deliverables
PRDSIS22A	Control and monitor the spatial components of the project
PRDSIS24A	Maintain financial records
PRDSIS25A	Lead and supervise teams
PRDSIS27A	Maintain client relations
PRSIR31A	Undertake process improvement to reduce costs and improve quality service
PRSIR39A	Manage Occupational Health and Safety in the workplace
PSPPM501A	Initiate projects
PSPPM502A	Manage projects
PSPPM503A	Finalise projects

Note: Further detail on the Asset Security and National Public Services units of competency is available from the National Training Information Service website at [www.ntis.gov.au](http://www.ntis.gov.au)

**ELECTROTECHNOLOGY**

UNIT IDENTIFIER	TITLE
UTENES010A	Report on the integrity of explosion-protected equipment in hazardous areas
UTENES012A	Attend to breakdowns in hazardous areas
UTENES107A	Install explosion-protected equipment and wiring systems
UTENES214A	Maintain equipment in hazardous areas
UTENES215A	Overhaul and repair explosion-protected equipment
UTENES407A	Assess explosion protected equipment for conformity to standards
UTENES408A	Test installations in hazardous areas
UTENES409A	Inspect visually existing hazardous area installations
UTENES410A	Inspect in detail hazardous area installations
UTENES602A	Develop commissioning programs for apparatus and associated circuits
UTENES603A	Develop maintenance programs for apparatus and associated circuits
UTENES606A	Coordinate and manage installation projects
UTENES609A	Develop and manage maintenance programs for hazardous electrical equipment
UTENES610A	Ensure the safety of hazardous areas
UTENES705A	Design and develop modifications to explosion protection
UTENES706A	Classify hazardous areas
UTENES707A	Design electrical installations in hazardous areas
UTENES708A	Design explosion protection electrical

Note: Further detail on the Electrotechnology units of competency is available from the National Training Information Service website at [www.ntis.gov.au](http://www.ntis.gov.au)

## QUALIFICATIONS BLACK COAL INDUSTRY

### Qualification Titles

The following are the titles of the qualifications for production employees and operational management operators in the Black Coal Industry:

- Certificate II in Coal Operations MNC20198
- Certificate III in Coal Operations MNC30198
- Certificate IV in Coal Operational Management MNC40198
- Certificate IV in Surface Coal Mining (Open Cut Examiner) MNC40202
- Diploma of Coal Operational Management MNC50198
- Diploma of Mine Electrical Engineering (Surface) MNC50202
- Diploma of Mine Electrical Engineering (Underground) MNC50302
- Diploma of Mine Mechanical Engineering MNC50402
- Diploma of Surface Coal Mining MNC50502
- Diploma of Mine Surveying MNC50602
- Advanced Diploma of Coal Operational Management MNC60198
- Advanced Diploma of Surface Coal Mining MNC60202

### Criteria for Production Employee Qualifications

The industry developed the following criteria for the identification of qualifications for production employees and operational management.

Black Coal industry qualifications should:

- be structured to reflect minesite realities in terms of work organisation and job designed in a way which earns industry respect
- be neutral in terms of remuneration and other Industrial Relations policies/practices
- avoid leading to unnecessary training
- recognise different entry points and development pathways
- be structured to permit reasonable flexibility in terms of general and technical management requirements
- be structured to encourage enhancement of industry management capabilities and professionalism
- be structured to recognise and respond to the evolving requirements of regulatory authorities

## Customisation of Competency Standards

Individual units of competency are either core or elective to the particular qualification/certificate.

The Black Coal Industry Production Employee and Operational management units of competency should be customised subject to the following criteria:

- The unit of competency may be customised provided the competency outcomes and the specified performance criteria are not diminished or lessened, and
- Specific criteria or conditions established by regulatory authorities are satisfied in fully.

Customisation of units of competency adopted from other ANTA Nationally endorsed training packages/arrangements, including those covering general management competencies, must comply with the conditions established by the owner/ sponsor.

## Hints on Customisation of Competency Standards

Using the Standards	Suggestions	Precautions
Customising Black Coal Competency Standards	The Units of Competency may be customised provided the competency outcomes are retained.	Do not diminish or lessen the level of performance specified in the Units of Competency.
Adding Units of Competency.	Additional Units of Competency may be developed to meet the specific needs of the enterprise.  Units of competency from other industries may be adopted and customised to fit the Coal enterprise's need.	The qualification must reflect the Units of Competency specified by the industry. Additional Units will require ANTA endorsement before they can be accepted as part of a qualification.  Do not diminish or lessen the level of performance specified by the owning industry if portability of recognition is required. (Refer to the owning industry's National Training Package for usage rules).
Using workplace assessment processes.	Ensure assessors meet the industry criteria for assessors and ensure the integrity of the processes to achieve validity, reliability, fairness and flexibility.	Do not devalue the quality of the assessment outcomes by using inadequate processes and procedures.
Selecting individual Units of Competency.	This is accepted and the successful competency outcomes of the assessment will enable the participant to be granted a Statement of Attainment. The AQF qualification is issued on completion of the endorsed package of Units of Competency.	Specific criteria exist for individuals who are seeking a qualification to meet the requirements of a Statutory Licence to practice as a Mine/Quarry Manager or Shotfirer. Individuals and/or enterprises should check the relevant Act and legislative requirements in their State/Territory when selecting units of competency.

## Packaging of Units of Competency for Qualifications

The packaging of units of competency for the purposes of the qualifications is shown in the following Tables. It is emphasised that the packaging rules refer to fundamental parameters and that qualifications, at the enterprise level, may encompass a greater number of horizontally equivalent units of competency.

There are seven (7) core units of competency for production employees.

There are seven (7) core or mandatory units of competency for each certificate and these cover the technical management competencies which have been agreed between NSW & Queensland. This reflects the essentiality of safety in the mining environment.

The Statutory Function relates to regulation requirements in a number of states. Hence, the number of mandatory units varies between qualifications. The packaging allows for, but does not infringe on, the responsibilities and prerogatives of the State – based regulatory authorities. Their influence on the packaging of units is beyond the remit of the Vocational Education and Training system.

## Packaging for Qualifications

<i>Qualification</i>	<i>Units of Competency</i>		
Certificate II in Coal Operations	A total of <b>sixteen (16)</b> units of competency with:		
	<ul style="list-style-type: none"> <li><b>Seven (7) core units being mandatory:</b></li> </ul>		
	<b>Core</b>	MNC.C1.A	MNC.C2.A
		MNC.C4.A	MNC.C5.A
		MNC.C7.A	MNC.C3.A
			MNC.C6.A
	<b>And</b>		
	<ul style="list-style-type: none"> <li><b>Any Seven (7) units from the following:</b></li> </ul>		
	<b>Coal Preparation</b>	MNC.P1.A	MNC.P2.A
		MNC.P6.A	MNC.P8.A
		MNC.P9.A	MNC.P4.A
	<b>Underground</b>	MNC.U11.A	MNC.U12.A
		MNC.U14.A	MNC.U15.A
		MNC.U16.A	MNC.U13A
		MNC.U40.A	MNC.U41.A
		MNC.U42.A	MNC.U49.A
		MNC.U50.A	MNC.U53.A
		MNC.U60.A	MNC.U61.A
		MNC.U62.A	MNC.U63.A
		MNC.U64.A	MNC.U65.A
		MNC.U72.A	MNC.U73.A
		MNC.U77.A	MNC.U74.A
		MNC.U91.A	MNC.U92.A
		MNC.U101.A	
	<b>Open Cut</b>	MNC.O13.A	MNC.O14.A
		MNC.O15.A	MNC.O16.A
		MNC.O17.A	MNC.O18.A
		MNC.O23.A	MNC.O25.A
		MNC.O26.A	MNC.O27.A
		MNC.O28.A	MNC.O29.A
		MNC.O32.A	MNC.O41.A
	<b>General</b>	MNC.G4.A	MNC.G25.A
		MNC.G26.A	MNC.G29.A
		MNC.G30.A	MNC.G35.A
		MNC.G36.A	MNC.G37.A
		MNC.G38.A	MNC.G39.A
		MNC.G40.A	MNC.G41.A
		MNC.G43.A	MNC.G44.A
		MNC.G45.A	MNC.G46.A
		MNC.G47.A	MNC.G48.A
		MNC.G49.A	MNC.G50.A
		MNC.G55.A	MNC.G60.A
		MNC.G61.A	MNC.G62.A
		MNC.G63.A	MNC.G64.A
		MNC.G67.A	MNC.G68.A
		MNC.G69.A	MNC.G70.A
	<b>And</b>		
	<b>Two (2) elective units from the Black Coal Industry Competency Standards or endorsed competencies from other industries appropriate for use in a coal industry production job.</b>		



<i>Qualification</i>	<i>Units of Competency</i>																																														
Certificate III in Coal Operations	A total of <b>Twenty Two (22)</b> units of competency with:																																														
	<ul style="list-style-type: none"> <li>• <b>Sixteen (16) units satisfying the criteria for Certificate II</b></li> </ul> <p><u>And</u></p> <ul style="list-style-type: none"> <li>• <b>Any Four (4) units from any of the following:</b></li> </ul> <table border="1"> <tr> <td><b>Coal Preparation</b></td> <td>MNC.P3.A</td> <td>MNC.P5.A</td> <td>MNC.P7.A</td> </tr> <tr> <td rowspan="5"><b>Underground</b></td> <td>MNC.U26.A</td> <td>MNC.U46.A</td> <td>MNC.U51.A</td> </tr> <tr> <td>MNC.U54.A</td> <td>MNC.U66.A</td> <td>MNC.U70.A</td> </tr> <tr> <td>MNC.U71.A</td> <td>MNC.U74.A</td> <td>MNC.U75.A</td> </tr> <tr> <td>MNC.U76.A</td> <td>MNC.U78.A</td> <td>MNC.U79.A</td> </tr> <tr> <td>MNC.U80.A</td> <td>MNC.U95.A</td> <td></td> </tr> <tr> <td rowspan="4"><b>Open Cut</b></td> <td>MNC.O09.A</td> <td>MNC.O10.A</td> <td>MNC.O11.A</td> </tr> <tr> <td>MNC.O12.A</td> <td>MNC.O19.A</td> <td>MNC.O20.A</td> </tr> <tr> <td>MNC.O21.A</td> <td>MNC.O22.A</td> <td>MNC.O24.A</td> </tr> <tr> <td>MNC.O30.A</td> <td>MNC.O31.A</td> <td>MNC.O33</td> </tr> <tr> <td rowspan="4"><b>General</b></td> <td>MNC.G2.A</td> <td>MNC.G5.A</td> <td>MNC.G27.A</td> </tr> <tr> <td>MNC.G28.A</td> <td>MNC.G42.A</td> <td>MNC.G56.A</td> </tr> <tr> <td>MNC.G57.A</td> <td>MNC.G65.A</td> <td>MNC.G66.A</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table> <p><u>And</u></p> <ul style="list-style-type: none"> <li>• <b>Two (2) elective units from the Black Coal Industry Competency Standards or endorsed competencies from other industries appropriate for use in a coal industry production job.</b></li> </ul>	<b>Coal Preparation</b>	MNC.P3.A	MNC.P5.A	MNC.P7.A	<b>Underground</b>	MNC.U26.A	MNC.U46.A	MNC.U51.A	MNC.U54.A	MNC.U66.A	MNC.U70.A	MNC.U71.A	MNC.U74.A	MNC.U75.A	MNC.U76.A	MNC.U78.A	MNC.U79.A	MNC.U80.A	MNC.U95.A		<b>Open Cut</b>	MNC.O09.A	MNC.O10.A	MNC.O11.A	MNC.O12.A	MNC.O19.A	MNC.O20.A	MNC.O21.A	MNC.O22.A	MNC.O24.A	MNC.O30.A	MNC.O31.A	MNC.O33	<b>General</b>	MNC.G2.A	MNC.G5.A	MNC.G27.A	MNC.G28.A	MNC.G42.A	MNC.G56.A	MNC.G57.A	MNC.G65.A	MNC.G66.A			
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<i>Qualification</i>	<i>Units of Competency</i>																																
Certificate IV in Coal Operational Management	A total of <b>Fifteen (15)</b> units of competency with:																																
	<ul style="list-style-type: none"> <li>• <b>Eleven (11) mandatory units of competency:</b></li> </ul> <table border="1"> <tr> <td><b>Emergency/ Personal Safety</b></td> <td>MNC.U153.A</td> <td></td> </tr> <tr> <td><b>Risk Management</b></td> <td>MNC.G1.A</td> <td><b>or</b> MNC.G2.A</td> </tr> <tr> <td rowspan="3"><b>Mine Atmosphere</b></td> <td>MNC.U104.A</td> <td>MNC.U108.A</td> </tr> <tr> <td>MNC.U113.A</td> <td>MNC.U118.A</td> </tr> <tr> <td>MNC.U123.A</td> <td></td> </tr> <tr> <td><b>Mine Structures</b></td> <td>MNC.U133.A</td> <td></td> </tr> <tr> <td rowspan="2"><b>Mine Infrastructure &amp; Systems</b></td> <td>MNC.U138A</td> <td>MNC.U143.A</td> </tr> <tr> <td>MNC.U148.A</td> <td></td> </tr> </table> <p><u>And</u></p> <ul style="list-style-type: none"> <li>• <b>Any Four (4) units from any of the following:</b></li> </ul> <table border="1"> <tr> <td><b>Open Cut</b></td> <td>MNC.O40.A</td> <td>MNC.O42.A</td> </tr> <tr> <td><b>General</b></td> <td>MNC.G7.A</td> <td></td> </tr> <tr> <td rowspan="2"><b>Underground</b></td> <td>MNC.U44.A</td> <td>MNC.U45.A</td> </tr> <tr> <td>MNC.U48.A</td> <td></td> </tr> </table> <ul style="list-style-type: none"> <li>– <b>General Management units from an approved suite (National FMI, CMC 400 or equivalent).</b></li> <li>– <b>Technical Management units not included above.</b></li> <li>– <b>Appropriate endorsed units from this and other industries which are relevant for application at this level in the Black Coal Industry.</b></li> </ul>	<b>Emergency/ Personal Safety</b>	MNC.U153.A		<b>Risk Management</b>	MNC.G1.A	<b>or</b> MNC.G2.A	<b>Mine Atmosphere</b>	MNC.U104.A	MNC.U108.A	MNC.U113.A	MNC.U118.A	MNC.U123.A		<b>Mine Structures</b>	MNC.U133.A		<b>Mine Infrastructure &amp; Systems</b>	MNC.U138A	MNC.U143.A	MNC.U148.A		<b>Open Cut</b>	MNC.O40.A	MNC.O42.A	<b>General</b>	MNC.G7.A		<b>Underground</b>	MNC.U44.A	MNC.U45.A	MNC.U48.A	
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<i>Qualification</i>	<i>Units of Competency</i>	
Certificate IV in Surface Coal Mining (Open Cut Examiner)	A total of <b>Thirteen (13)</b> units of competency with: <ul style="list-style-type: none"> <li>• <b>ten (10)</b> mandatory units of competency</li> <li>• and <b>three (3)</b> elective units</li> </ul>	
<b>Mandatory Units:</b> <ul style="list-style-type: none"> <li>• 10 units (management and technical)</li> </ul>	<b>Ten (10) mandatory units of competency:</b>	
	MNQTL01A	Implement, monitor, rectify and report statutory/legal compliance
	MNQTL02A **	Implement, monitor and report on the site risk management process associated with Occupational Health and Safety and the environment **
	MNCG2A	Facilitate the risk management process
	MNCO45A	Apply and monitor environmental management policies, plans and procedures
	MNMF5FX26A	Apply and monitor emergency preparedness and response
	MNCG4A	Respond to local incidents and emergencies
	MNCO41A	Support shotfiring operations
	MNCO42A	Examine and maintain mine safety
	MNCO43A	Monitor interaction of light and heavy vehicles and mining equipment
MNCO46A	Apply systems and methods of mining	
<b>Elective Units:</b> <ul style="list-style-type: none"> <li>• 1 information technology</li> </ul>	<b>And One (1) elective unit from the following information technology cluster:</b>	
	MNCG25A	Access, update and retrieve simple computerised information
	MNCG26A	Operate computer to produce documents
	MNCG27A	Use keyboard skills and advanced functions of software packages to produce complex documents
	MNCG28A	Use advanced functions of software packages to produce documents, reports and worksheets
	MNCG29A	Transfer information through the computer
<ul style="list-style-type: none"> <li>• 2 Open Cut operational</li> </ul>	<b>And Two (2) elective units from the following:</b>	
	MNCO10A	Conduct dragline operations
	MNCO11A	Conduct burden and coal drilling operations
	MNCO12A	Conduct rope/shovel operations
	MNCO13A	Conduct front end loader operations
	MNCO14A	Conduct bulk material truck operations
	MNCO16A	Conduct grader operations
	MNCO17A	Conduct scraper operations
	MNCO18A	Conduct dozer operations
	MNCO40A	Conduct shotfiring operations
	MNMOCC103A	Prepare for blasting
	MNMOCC104A	Conduct blasting operations
	MNQOP30A **	Carry out blast survey **
	MNQOP32A **	Carry out shotfiring **
MNQQM13A **	Manage blasting operations **	
	** this unit has pre-requisites – see <b>Pre-requisites – Table 2 – Extractive Industries Training Package MNQ98</b> in the Qualifications section of this Training Package.	

<i>Qualification</i>	<i>Units of Competency</i>																		
Diploma of Coal Operational Management	A total of <b>Fifteen (15)</b> units of competency with:																		
	<ul style="list-style-type: none"> <li>• <b>Eleven (11) mandatory units of competency:</b></li> </ul>																		
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	<b>And Any Four (4) units from any of the following:</b>																		
	<table border="1"> <tr> <td><i>General</i></td> <td>MNC.G7.A</td> </tr> <tr> <td><i>Underground</i></td> <td>MNC.U109.A</td> </tr> </table>	<i>General</i>	MNC.G7.A	<i>Underground</i>	MNC.U109.A														
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<i>Underground</i>	MNC.U109.A																		
	<ul style="list-style-type: none"> <li>– <b>General Management units from an approved suite (National FMI, CMC 500 or equivalent).</b></li> <li>– <b>Technical Management units not included above.</b></li> <li>– <b>Appropriate endorsed units from this and other industries which are relevant for application at this level in the Black Coal Industry.</b></li> </ul>																		

<i>Qualification</i>	<i>Units of Competency</i>												
Diploma of Mine Electrical Engineering (Surface)	A total of <b>Fourteen (14)</b> units of competency with:												
	<ul style="list-style-type: none"> <li>• <b>three (3)</b> mandatory management units of competency</li> <li>• <b>and four (4)</b> mandatory technical units</li> <li>• <b>and seven (7)</b> elective units:</li> </ul>												
	Three (3) mandatory management units:												
<b>Mandatory Units:</b>  <ul style="list-style-type: none"> <li>• 3 management</li> </ul> and  <ul style="list-style-type: none"> <li>• 4 technical</li> </ul>	<table border="1"> <tr> <td>MNQTL01A</td> <td>Implement, monitor, rectify and report statutory/legal compliance</td> </tr> <tr> <td>MNCG1A <b>or</b> MNCG2A</td> <td>Develop and implement risk control processes  Facilitate the risk management process</td> </tr> <tr> <td>MNQTL02A **</td> <td>Implement, monitor and report on the site risk management process associated with Occupational Health and Safety and the environment **</td> </tr> </table>	MNQTL01A	Implement, monitor, rectify and report statutory/legal compliance	MNCG1A <b>or</b> MNCG2A	Develop and implement risk control processes  Facilitate the risk management process	MNQTL02A **	Implement, monitor and report on the site risk management process associated with Occupational Health and Safety and the environment **						
	MNQTL01A	Implement, monitor, rectify and report statutory/legal compliance											
	MNCG1A <b>or</b> MNCG2A	Develop and implement risk control processes  Facilitate the risk management process											
	MNQTL02A **	Implement, monitor and report on the site risk management process associated with Occupational Health and Safety and the environment **											
		<b>and Four (4) mandatory technical units:</b>											
	<table border="1"> <tr> <td>UTENES602A</td> <td>Develop commissioning programs for apparatus and associated circuits</td> </tr> <tr> <td>UTENES603A</td> <td>Develop maintenance programs for apparatus and associated circuits</td> </tr> <tr> <td>UTENES606A</td> <td>Coordinate and manage installation projects</td> </tr> <tr> <td><b>MNCG90A</b></td> <td>Establish and Maintain the Mine Electrical Reticulation and Protection System</td> </tr> </table>	UTENES602A	Develop commissioning programs for apparatus and associated circuits	UTENES603A	Develop maintenance programs for apparatus and associated circuits	UTENES606A	Coordinate and manage installation projects	<b>MNCG90A</b>	Establish and Maintain the Mine Electrical Reticulation and Protection System				
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<b>MNCG90A</b>	Establish and Maintain the Mine Electrical Reticulation and Protection System												
	<b>and Seven (7) elective units from:</b>												
	<ul style="list-style-type: none"> <li>• the units listed below (Technical and Management units) ;</li> <li>• and/or other relevant Technical and Management units, relevant to the job function, from other endorsed Training Packages.</li> </ul>												
	<b>Technical units from other industries may include:</b>												
<b>Elective Units:</b> <ul style="list-style-type: none"> <li>• total – 7</li> </ul>	<table border="1"> <tr> <td>UTENES010A</td> <td>Report on the integrity of explosion-protected equipment in hazardous areas</td> </tr> <tr> <td>UTENES012A &gt;&gt;</td> <td>Attend to breakdowns in hazardous areas &gt;&gt;</td> </tr> <tr> <td>UTENES107A</td> <td>Install explosion-protected equipment and wiring systems</td> </tr> <tr> <td>UTENES214A &gt;&gt;</td> <td>Maintain equipment in hazardous areas &gt;&gt;</td> </tr> <tr> <td>UTENES215A</td> <td>Overhaul and repair explosion-protected equipment</td> </tr> <tr> <td>UTENES407A</td> <td>Assess explosion protected equipment for conformity to standards</td> </tr> </table>	UTENES010A	Report on the integrity of explosion-protected equipment in hazardous areas	UTENES012A >>	Attend to breakdowns in hazardous areas >>	UTENES107A	Install explosion-protected equipment and wiring systems	UTENES214A >>	Maintain equipment in hazardous areas >>	UTENES215A	Overhaul and repair explosion-protected equipment	UTENES407A	Assess explosion protected equipment for conformity to standards
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<i>Qualification</i>	<i>Units of Competency</i>
<b>Diploma of Mine Electrical Engineering (Surface) ..(continued)</b>	
	UTENES408A >> Test installations in hazardous areas >>
	UTENES409A >> Inspect visually existing hazardous area installations >>
	UTENES410A >> Inspect in detail hazardous area installations >>
	UTENES609A Develop and manage maintenance programs for hazardous electrical equipment
	UTENES610A Ensure the safety of hazardous areas
	UTENES705A >> Design and develop modifications to explosion protection >>
	UTENES706A Classify hazardous areas
	UTENES707A Design electrical installations in hazardous areas
	UTENES708A Design explosion protection electrical
	<b>Technical units from the mining industry may include:</b>
	MNMF5FX16A Implement emergency preparedness and response systems
	<b>MNCG91A</b> Implement, monitor, rectify and report on interfaces between electrical and mechanical componentry
	MNQTL08A ** Implement and monitor quality system **
	MNCU137A Implement mine transport systems and production equipment
	MNCU147A Implement mine fixed plant and infrastructure systems
	<b>Management units may include:</b>
	PSPPM501A Initiate projects
	PSPPM502A Manage projects
	PSPPM503A Finalise projects
	<b>MNCG81A</b> Implement, monitor, rectify and report on contracts
	<b>MNCG82A</b> Implement, monitor, rectify and report on inventory control system
	BSBFLM501A Manage personal work priorities and professional development
	BSBFLM502A Provide leadership in the workplace
	BSBFLM503A Establish effective workplace relationships
	BSBFLM504A Facilitate work teams
	BSBFLM505A Manage operational plan
	BSBFLM506A Manage workplace information systems
	BSBFLM507A Manage quality customer service
	BSBFLM509A Promote continuous improvement
	BSBFLM510A Facilitate and capitalise on change and innovation
	BSBFLM511A Develop a workplace learning environment
<b>Note:</b>	<ol style="list-style-type: none"> <li>Care must be taken to ensure that all pre-requisites (specified within a unit of competency) are complied with for any unit of competency chosen as an elective.</li> <li>Units of competency which are part of a prerequisite qualification cannot be credited as an elective for this qualification.</li> </ol>
	<p>** this unit has pre-requisites – see Pre-requisites – Table 2 – Extractive Industries Training Package MNQ98 in the Qualifications section of this Training Package.</p> <p>&gt;&gt; this unit has pre-requisites – see Pre-requisites – Table 1 – Electrotechnology Training Package UTE99 in the Qualifications section of this Training Package.</p>

<i>Qualification</i>	<i>Units of Competency</i>
<b>Diploma of Mine Electrical Engineering (Underground)</b>	A total of <b>Twenty two (22)</b> units of competency with: <ol style="list-style-type: none"> <li><b>three (3)</b> mandatory management units of competency</li> <li><b>and sixteen (16)</b> mandatory technical units</li> <li><b>and three (3)</b> elective units:</li> </ol>
<b>Mandatory Units:</b>	<b>Three (3)</b> mandatory management units:
<ul style="list-style-type: none"> <li>• 3 management</li> </ul>	MNQTL01A Implement, monitor, rectify and report statutory/legal compliance
	MNCG1A <b>or</b> MNCG2A Develop and implement risk control processes
	MNCG2A Facilitate the risk management process
	MNQTL02A ** Implement, monitor and report on the site risk management process associated with Occupational Health and Safety and the environment **
<ul style="list-style-type: none"> <li>• 16 technical</li> </ul>	<b>And Sixteen (16)</b> mandatory technical units:
	UTENES602A Develop commissioning programs for apparatus and associated circuits

Qualification	Units of Competency	
<b>Diploma of Mine Electrical Engineering (Underground) (continued)</b>		
	UTENES603A	Develop maintenance programs for apparatus and associated circuits
	UTENES606A	Coordinate and manage installation projects
	<b>MNCG90A</b>	Establish and Maintain the Mine Electrical Reticulation and Protection System
	UTENES010A	Report on the integrity of explosion-protected equipment in hazardous areas
	UTENES012A >>	Attend to breakdowns in hazardous areas >>
	UTENES107A	Install explosion-protected equipment and wiring systems
	UTENES214A >>	Maintain equipment in hazardous areas >>
	UTENES215A	Overhaul and repair explosion-protected equipment
	UTENES407A	Assess explosion protected equipment for conformity to standards
	UTENES408A >>	Test installations in hazardous areas >>
	UTENES409A >>	Inspect visually existing hazardous area installations >>
	UTENES410A >>	Inspect in detail hazardous area installations >>
	UTSNES609A	Develop and manage maintenance programs for hazardous area electrical equipment
	UTENES610A	Ensure the safety of hazardous areas
	UTENES707A	Design electrical installations in hazardous areas
<p><b>Elective Units:</b></p> <ul style="list-style-type: none"> <li>total – 3</li> </ul>	<p><b>and Three (3) elective units from:</b></p> <ul style="list-style-type: none"> <li>the units listed below (Technical and Management units) ;</li> <li>and/or other relevant Technical and Management units, relevant to the job function, from endorsed Training Packages.</li> </ul>	
	<p><b>Technical units from other industries may include:</b></p>	
	UTENES705A >>	Design and develop modifications to explosion-protected equipment >>
	UTENES706A	Classify hazardous areas
	UTENES708A	Design explosion protection electrical
	<p><b>Technical units from the mining industry may include:</b></p>	
	MNMF5FX16A	Implement emergency preparedness and response systems
	<b>MNCG91A (new unit)</b>	Implement, monitor, rectify and report on interfaces between electrical and mechanical componentry
	MNQTL08A **	Implement and monitor quality system **
	MNCU137A	Implement mine transport systems and production equipment
	MNCU147A	Implement mine fixed plant and infrastructure systems
	<p><b>Management units may include:</b></p>	
	PSPPM501A	Initiate projects
	PSPPM502A	Manage projects
	PSPPM503A	Finalise projects
	MNCG81A	Implement, monitor, rectify and report on contracts
	MNCG82A	Implement, monitor, rectify and report on inventory control system
	BSBFLM501A	Manage personal work priorities and professional development
	BSBFLM502A	Provide leadership in the workplace
	BSBFLM503A	Establish effective workplace relationships
	BSBFLM504A	Facilitate work teams
	BSBFLM505A	Manage operational plan
	BSBFLM506A	Manage workplace information systems
	BSBFLM507A	Manage quality customer service
	BSBFLM509A	Promote continuous improvement
	BSBFLM510A	Facilitate and capitalise on change and innovation
	BSBFLM511A	Develop a workplace learning environment
<p><b>Note:</b></p>	<p>1 Care must be taken to ensure that all pre-requisites (specified within a unit of competency) are complied with for any unit of competency chosen as an elective.</p> <p>2 Units of competency which are part of a prerequisite qualification cannot be credited as an elective for this qualification.</p> <p>** this unit has pre-requisites – see <b>Pre-requisites – Table 2 – Extractive Industries Training Package MNQ98</b> in the Qualifications section of this Training Package.</p> <p>&gt;&gt; this unit has pre-requisites – see <b>Pre-requisites – Table 1 – Electrotechnology Training Package UTE99</b> in the Qualifications section of this Training Package.</p>	

<i>Qualification</i>	<i>Units of Competency</i>	
Diploma of Mine Mechanical Engineering	A total of <b>Fourteen (14)</b> units of competency with: 4. <b>three (3)</b> mandatory management units of competency 5. <b>and three (3)</b> mandatory technical units 6. <b>and eight (8)</b> elective units	
<ul style="list-style-type: none"> <li>• <b>Mandatory Units:</b></li> <li>• 3 management</li> <li>• 3 technical</li> </ul>	<b>Three (3)</b> mandatory management units:	
	MNQTL01A	Implement, monitor, rectify and report statutory/legal compliance
	MNCG1A or MNCG2A	Develop and implement risk control processes Facilitate the risk management process
	MNQTL02A **	Implement, monitor and report on the site risk management process associated with Occupational Health and Safety and the environment **
	<b>And Three (3)</b> mandatory technical units:	
	MNCG4A	Respond to local emergencies and incidents
	MNCO43A	Monitor interaction of light and heavy vehicles and mining equipment
	MNCG83A	Implement, monitor, rectify and report on maintenance management systems
<ul style="list-style-type: none"> <li>• <b>Elective Units:</b></li> <li>• total – 8</li> </ul>	<b>and Eight (8)</b> elective units from: <ul style="list-style-type: none"> <li>• the units listed below (Technical and Management units) ;</li> <li>• and/or other relevant Technical and Management units, relevant to the job function, from endorsed Training Packages.</li> </ul>	
	<b>Technical units from other industries may include:</b>	
	MEM183AA ++	Use tools for precision work ++
	MEM184AA ++	Maintain and overhaul mechanical equipment ++
	MEM185AA ++	Bearings – faults diagnosis installation and removal ++
	MEM186AA ++	Repair and fit engineering components ++
	MEM187AA ++	Maintain and repair mechanical drives and mechanical transmission assemblies ++
	MEM188AA ++	Balance equipment ++
	MEM189AA ++	<b>Levelling and alignment of machinery and engineering components ++</b>
	MEM1810AA ++	<b>Equipment condition monitoring and recording ++</b>
	MEM1811A	Shut down/isolate machines/equipment
	MEM1816B ++	Analyse plant and equipment condition monitoring results ++
	MEM1817B ++	Modify mechanical systems and equipment ++
	MEM1846A ++	<b>Fault find/repair AC and DC electrical equipment/components which use up to 1000 volts AC or 1500 volts DC ++</b>
	MEM1849A ++	Disconnect/reconnect fixed wired equipment up to 1000 volts AC or 1500 volts DC ++
	MEM1850A ++	Disconnect/reconnect fixed wired equipment over 1000 volts AC or 1500 volts DC ++
	MEM1855A ++	Dismantle, replace and assemble engineering components ++
	<b>Technical units from the mining industry may include:</b>	
	MNCG91A	Implement, monitor, rectify and report on interfaces between electrical and mechanical componentary
	MNCG56A	Install, commission and maintain major conveyor equipment and systems
	MNCU137A	Implement mine transport systems and production equipment
	MNCG84A	Implement, monitor, rectify and report on mobile plant and equipment systems
	MNCU147A	Implement mine fixed plant and infrastructure systems
	MNQTL08A **	Implement and monitor quality system **
	<b>Management units may include:</b>	
	PSPPM501A	Initiate projects
	PSPPM502A	Manage projects
	PSPPM503A	Finalise projects
	MNCG81A	Implement, monitor, rectify and report on contracts
	MNCG82A	Implement, monitor, rectify and report on inventory control system

<i>Qualification</i>	<i>Units of Competency</i>	
<b>Diploma of Mine Mechanical Engineering (continued)</b>		
	BSBFLM501A	Manage personal work priorities and professional development
	BSBFLM502A	Provide leadership in the workplace
	BSBFLM503A	Establish effective workplace relationships
	BSBFLM504A	Facilitate work teams
	BSBFLM505A	Manage operational plan
	BSBFLM506A	Manage workplace information systems
	BSBFLM507A	Manage quality customer service
	BSBFLM509A	Promote continuous improvement
	BSBFLM510A	Facilitate and capitalise on change and innovation
	BSBFLM511A	Develop a workplace learning environment
<b>Not e:</b>	1 Care must be taken to ensure that all pre-requisites (specified within a unit of competency) are complied with for any unit of competency chosen as an elective. 2 Units of competency which are part of a <i>prerequisite qualification</i> cannot be credited as an elective for this qualification. ** this unit has pre-requisites – see <b>Pre-requisites – Table 2 – Extractive Industries Training Package MNQ98</b> in the Qualifications section of this Training Package ++ this unit has pre-requisites – see <b>Pre-requisites – Table 3 – Metal and Engineering Training Package MEM98</b> in the Qualifications section of this Training Package.	

<i>Qualification</i>	<i>Units of Competency</i>	
Diploma of Surface Coal Mining	A total of <b>Eighteen (18)</b> units of competency with: <ul style="list-style-type: none"> <li>• <b>thirteen (13)</b> units from the Certificate IV in Surface Coal Mining (Open Cut Examiner)</li> <li>• <b>and one (1)</b> mandatory management units</li> <li>• <b>and five (5)</b> elective units</li> </ul>	
<b>Prerequisite - Certificate IV in Surface Coal Mining (Open Cut Examiner)</b>	Thirteen (13) units from the <b>Certificate IV in Surface Coal Mining (Open Cut Examiner)</b>	
<b>Mandatory Units:</b> • 1 management	<b>and One (1)</b> mandatory management units:	
	MNCU152A <b>or</b> MNM5FX16A	Implement mine emergency preparedness and response plans  Implement emergency preparedness and response systems
<b>Elective Units:</b> • total – 5	<b>and Five (5)</b> elective units from:	
	<ul style="list-style-type: none"> <li>• the units listed below (Technical and Management units) ;</li> <li>• and/or other relevant Technical and Management units, relevant to the job function, from endorsed Training Packages.</li> </ul>	
	<b>Technical units from the mining industry may include:</b>	
	MNCU137A	Implement mine transport system and production equipment
	MNCU142A	Implement mine services system
	MNCU147A	Implement mine fixed plant and infrastructure systems
	MNQM08A **	Implement and promote quality system **
	<b>MNCO44A</b>	Manage laser levelling of operating plant
	MNCO40A	Conduct shotfiring operations
	MNMOCC103A	Prepare for blasting
	MNMOCC104A	Conduct blasting operations
	MNQOP30A **	Carry out blast survey **
	MNQOP32A **	Carry out shotfiring **
	MNQM13A **	Manage blasting operations **
	<i>Management units may include:</i>	
	PSPPM501A	Initiate projects
	PSPPM502A	Manage projects
	PSPPM503A	Finalise projects
	<b>MNCG81A</b>	Implement, monitor, rectify and report on contracts
	<b>MNCG82A</b>	Implement, monitor, rectify and report on maintenance management system
	BSBFLM501A	Manage personal work priorities and professional development
	BSBFLM502A	Provide leadership in the workplace
	BSBFLM503A	Establish effective workplace relationships
BSBFLM504A	Facilitate work teams	
BSBFLM505A	Manage operational plan	

	BSBFLM506A	Manage workplace information systems
	BSBFLM507A	Manage quality customer service
	BSBFLM509A	Promote continuous improvement
	BSBFLM510A	Facilitate and capitalise on change and innovation
	BSBFLM511A	Develop a workplace learning environment
<b>Note:</b>	1	Care must be taken to ensure that all pre-requisites (specified within a unit of competency) are complied with for any unit of competency chosen as an elective.
	2	Units of competency which are part of a prerequisite qualification cannot be credited as an elective for this qualification.

<i>Qualification</i>	<i>Units of Competency</i>	
Diploma of Mine Surveying	A total of <b>Nineteen (19)</b> units of competency with: <ul style="list-style-type: none"> <li><b>fifteen (15)</b> units from the <b>Diploma of Spatial Information Services (PRD50301)</b></li> <li><b>and four (4)</b> additional mining industry specific mandatory units.</li> </ul>	
<i>Diploma of Spatial Information Services (PRD50301)</i>	<b>Eleven (11)</b> core units (Diploma of Spatial Information Services PRD50301):	
	PRDSIS04A	Determine spatial data requirements to meet the deliverables
	PRDSIS06A	Plan data collection and validation
	PRDSIS07A	Capture new data
	PRDSIS08A	Obtain and validate existing data
	PRDSIS14A	Integrate spatial data sets
	PRDSIS15A	Maintain spatial data
	PRDSIS16A	Store and retrieve spatial data
	PRDSIS18A	Produce project deliverables
	PRDSIS19A	Collate and interpret data
	PRDSIS22A	Control and monitor the spatial components of the project
	PRDSIS39A	Manage Occupational Health and Safety in the workplace
	<b>and Four (4)</b> elective units from the units listed below (Diploma of Spatial Information Services PRD50301):	
	PRDSIS03A	Implement a project plan
	PRDSIS05A	Determine suitable sources of information for the creation of new spatial data sets
	PRDSIS13A	Design a spatial data storage system
	PRDSIS20A	Design project deliverables
	PRDSIS24A	Maintain financial records
	PRDSIS25A	Lead and supervise teams
	PRDSIS27A	Maintain client relations
	PRDSIR31A	Undertake process improvement to reduce costs and improve quality service
	<b>and Four (4)</b> mining industry specific mandatory units:	
	MNCG1A	Develop and implement risk control processes
	<b>or</b>	
	MNCG2A	Facilitate the risk management process
	MNQL01A	Implement, monitor, rectify and report statutory/legal compliance
	MNQL02A **	Implement, monitor and report on the risk management processes associated with occupational health and safety and the environment
		**
	<b>MNCG10A</b>	Conduct mine surveying
	** this unit has pre-requisites – see Pre-requisites – Table 2 – Extractive Industries Training Package MNQ98 in the Qualifications section of this Training Package.	
<b>Mandatory Units:</b>	<ul style="list-style-type: none"> <li>total – 4</li> </ul>	



<i>Qualification</i>	<i>Units of Competency</i>																			
<b>Advanced Diploma of Coal Operational Management</b>	<b>A total of Fifteen (15) units of competency with:</b>																			
	<ul style="list-style-type: none"> <li><b>Eleven (11) mandatory units of competency:</b></li> </ul>																			
	<table border="1"> <tr> <td><i>Emergency/ Personal Safety</i></td> <td>MNC.U151.A</td> </tr> <tr> <td><i>Risk Management</i></td> <td>MNC.G3</td> </tr> <tr> <td rowspan="2"><i>Mine Atmosphere</i></td> <td>MNC.U102.A</td> <td>MNC.U106.A</td> </tr> <tr> <td>MNC.U111.A</td> <td>MNC.U116.A</td> </tr> <tr> <td rowspan="2"><i>Mine Structures</i></td> <td>MNC.U121.A</td> <td></td> </tr> <tr> <td>MNC.U131.A</td> <td></td> </tr> <tr> <td rowspan="2"><i>Mine Infrastructure &amp; Systems</i></td> <td>MNC.U136A</td> <td>MNC.U141.A</td> </tr> <tr> <td>MNC.U146.A</td> <td></td> </tr> </table>	<i>Emergency/ Personal Safety</i>	MNC.U151.A	<i>Risk Management</i>	MNC.G3	<i>Mine Atmosphere</i>	MNC.U102.A	MNC.U106.A	MNC.U111.A	MNC.U116.A	<i>Mine Structures</i>	MNC.U121.A		MNC.U131.A		<i>Mine Infrastructure &amp; Systems</i>	MNC.U136A	MNC.U141.A	MNC.U146.A	
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<i>Mine Infrastructure &amp; Systems</i>	MNC.U136A	MNC.U141.A																		
	MNC.U146.A																			
	<p><b>And</b></p> <ul style="list-style-type: none"> <li><b>Any Four (4) units from any of the following:</b></li> </ul>																			
	<table border="1"> <tr> <td><i>General</i></td> <td>MNC.G6.A</td> </tr> <tr> <td><i>Underground</i></td> <td>MNC.U109.A</td> </tr> </table>	<i>General</i>	MNC.G6.A	<i>Underground</i>	MNC.U109.A															
<i>General</i>	MNC.G6.A																			
<i>Underground</i>	MNC.U109.A																			
	<ul style="list-style-type: none"> <li>– <b>General Management units from an approved suite (CMC 600 or equivalent).</b></li> <li>– <b>Technical Management units not included above.</b></li> <li>– <b>Appropriate endorsed units from this and other industries which are relevant for application at this level in the Black Coal Industry.</b></li> </ul>																			

<i>Qualification</i>	<i>Units of Competency</i>	
<b>Advanced Diploma of Surface Coal Mining</b>	<b>A total of Fifteen (15) units of competency with:</b>	
	<ul style="list-style-type: none"> <li><b>four (4) mandatory management units of competency</b></li> <li><b>and eleven (11) elective units</b></li> </ul>	
<b>Mandatory Units:</b> • 4 management	<b>Four (4) mandatory management units:</b>	
	MNIC01A	Establish the mine statutory/legal compliance system
	MNIC02A <i>or</i> MNC.G3.A	Establish the mine risk assessment and control system  Manage the risk control system
	MNIC09A	Establish and manage the mine occupational health and safety system
	MNIC10A <i>or</i> MNIL09A	Establish the mine emergency systems  Manage major incidents and emergencies
<b>Elective Units:</b> • total – 11	<b>And eleven (11) elective units from the following:</b>	
	MNIL02A	Establish and manage environmental management policies, plans and procedures
	MNQ.QM/07A **	Implement and maintain operational performance management system **
	MNIC03A	Establish mine infrastructure and plant systems
	MNIC06A	Establish the mine water management system
	MNIL13A	Initiate, monitor and supervise contracts
	MNIC07A	Establish the stockpile management system
	MNIC08A	Establish waste and by-product management system
	MNIS02A	Establish surface product haulage and transport systems
	MNIS01A	Establish ground control and slope stability systems
	MNIC04A	Establish mine services systems
	MNQ.QM08A **	Design, implement maintain and evaluate a quality system **
	MNIC05A	Establish plant, equipment and infrastructure maintenance systems
	MNQ.QM/17A **	Develop, implement and maintain process control systems **
	MNQ.QM/18A **	Design and monitor dredging/barge operations (sluicing) sand and gravel **
	MNQ.QM/20A **	Conduct sales in an extractive operation **
	MNIC11A	Establish a blasting system
	MNIC12A	Establish mine closure management systems
MNIL06A	Provide leadership	
MNIL05A	Manage the decision making process	
MNIL08A	Manage group process	
	** this unit has pre-requisites – see <b>Pre-requisites – Table 2 – Extractive Industries Training Package MNQ98</b> in the Qualifications section of this Training Package.	

## Streams of Competency Standards – AQF II, III and IV

### CORE (C)

Unit Identifier	Title	Core (C) Elective (E)		
		II	III	IV
MNC.C1.A	Work Safely	C		
MNC.C2.A	Work Co-operatively with Others	C		
MNC.C3.A	Solve Individual Work Problems	C		
MNC.C4.A	Plan and Organise Individual Work	C		
MNC.C5.A	Contribute to Quality Work Outcomes	C		
MNC.C6.A	Apply Local Risk Control Processes	C		
MNC.C7.A	Apply Mine Communication Systems	C		

### COAL PREPARATION AND TREATMENT (P)

Unit Identifier	Title	Core (C) Elective (E)		
		II	III	IV
MNC.P1.A	Handle Raw Coal	E		
MNC.P2.A	Monitor Coal Preparation Plant Operations	E		
MNC.P3.A	Control Coal Preparation Plant Operations		E	
MNC.P4.A	Treat and Dispose of Rejects and Tailings	E		
MNC.P5.A	Conduct Sampling Operations		E	
MNC.P6.A	Conduct Stockpile Dozer Operations	E		
MNC.P7.A	Conduct Stockpile Reclaimer Operations		E	
MNC.P8.A	Conduct Coal Rail Despatch Operations	E		
MNC.P9.A	Perform Coal Plant Minor Maintenance	E		

### GENERAL (G)

Unit Identifier	Title	Core (C) Elective (E)		
		II	III	IV
MNC.G2.A	Facilitate the Risk Management Process		E	
MNC.G4.A	Respond to Local Emergencies and Incidents	E		
MNC.G5.A	Conduct Fire Team Operations		E	
MNC.G6.A to MNC.G24.A	(Reserved)			
MNC.G25.A	Access, Update and Retrieve Simple Computerised Information	E		
MNC.G26.A	Operate a Computer to Produce Documents	E		
MNC.G27.A	Use Keyboard Skills and Advanced Functions of Software to Produce Complex Documents		E	

**GENERAL (G) (cont.../)**

Unit Identifier	Title	Core (C) Elective (E)		
MNC.G28.A	Use Advanced Functions of Software Packages to Produce Documents, Reports and Worksheets		E	
MNC.G29.A	Transfer Information Through a Computer	E		
MNC.G30.A	Conduct Purchasing	E		
<i>MNC.G31.A to MNC.G34.A</i>	<i>(Reserved)</i>			
MNC.G35.A	Apply Operational Maintenance Skills	E		
MNC.G36.A	Provide Electrical Support (To Tradesperson)	E		
MNC.G37.A	Service Mine Plant and Equipment	E		
MNC.G38.A	Perform Basic Cutting and Welding	E		
MNC.G39.A	Fit and Maintain Tyres and Wheels	E		
MNC.G40.A	Operate Gantry Crane	E		
MNC.G41.A	Conduct Non-Slewing Crane Operations	E		
MNC.G42.A	Conduct Slewing Crane Operations		E	
MNC.G43.A	Conduct Dogging Operations	E		
MNC.G44.A	Conduct Basic Rigging Operations	E		
MNC.G45.A	Conduct Intermediate Rigging Operations	E		
MNC.G46.A	Conduct Basic Scaffolding Operations	E		
MNC.G47.A	Conduct Intermediate Scaffolding Operations	E		
MNC.G48.A	Conduct Forklift Operations	E		
MNC.G49.A	Operate Elevating Work Platform	E		
MNC.G50.A	Operate Vehicle Loading Crane	E		
<i>MNC.G51.A to MNC.G54.A</i>	<i>(Reserved)</i>			
MNC.G55.A	Extend, Retract and Maintain Conveyor Componentry	E		
MNC.G56.A	Install, Commission and Maintain Major Conveyor Equipment and Systems		E	
MNC.G57.A	Repair and Splice Conveyor Belting		E	
<i>MNC.G58.A to MNC.G59.A</i>	<i>(Reserved)</i>			
MNC.G60.A	Operate Support Equipment	E		
MNC.G61.A	Operate Light Vehicle	E		
MNC.G62.A	Operate Medium Vehicle	E		
MNC.G63.A	Operate Heavy Rigid Vehicles	E		
MNC.G64.A	Operate Articulated Vehicle	E		
MNC.G65.A	Operate Double Vehicle		E	
MNC.G66.A	Operate Road Train Vehicle		E	
MNC.G67.A	Transport Dangerous Goods	E		
MNC.G68.A	Load and Unload Vehicle	E		
MNC.G69.A	Test Operational Functions of Production Vehicles & Equipment	E		
MNC.G70.A	Test Operational Function of Support Vehicles and Ancillary Equipment	E		

**UNDERGROUND PRODUCTION (U)**

Unit Identifier	Title	Core (C) Elective (E)		
		II	III	IV
<i>MNC.U01.A to MNC.U010.A</i>	<i>(Reserved)</i>			
MNC.U11.A	Conduct Forklift Operations	E		
MNC.U12.A	Operate Power Tram	E		
MNC.U13.A	Conduct Rail Vehicle Operations	E		
MNC.U14.A	Conduct Tracked Vehicle / Plant Operations	E		
MNC.U15.A	Conduct Wheeled Vehicle Operations	E		
MNC.U16.A	Conduct Wheeled Grader Operations	E		
<i>MNC.U17.A to MNC.U25.A</i>	<i>(Reserved)</i>			
MNC.U26.A	Conduct Environmental Monitoring		E	
<i>MNC.U27.A to MNC.U39.A</i>	<i>(Reserved)</i>			
MNC.U40.A	Install, Maintain and Recover Gas Drainage Systems	E		
MNC.U41.A	Install, Maintain and Recover Electrical Services	E		
MNC.U42.A	Install, Maintain and Recover Water and Air Systems	E		
<i>MNC.U43.A</i>	<i>(Reserved)</i>			
MNC.U44.A	Conduct Special Roadway Operations			E
MNC.U45.A	Recover Equipment			E
MNC.U46.A	Conduct Winding Operations		E	
<i>MNC.U47.A</i>	<i>(Reserved)</i>			
MNC.U48.A	Conduct Shotfiring			E
MNC.U49.A	Support Shotfiring Operations	E		
MNC.U50.A	Conduct Rotational Drilling	E		
MNC.U51.A	Conduct Directional Drilling		E	
<i>MNC.U52.A</i>	<i>(Reserved)</i>			
MNC.U53.A	Conduct Basic Strata Control Operations	E		
MNC.U54.A	Conduct Specialised Strata Control Operations		E	
<i>MNC.U55.A. to MNC.U59.A</i>	<i>(Reserved)</i>			
MNC.U60.A	Conduct Roadway Maintenance	E		
MNC.U61.A	Conduct Stonedusting Operations	E		
MNC.U62.A	Dewater Roadways and Work Areas	E		
MNC.U63.A	Lay and Recover Rail	E		
MNC.U64.A	Install and Maintain Explosion Barriers	E		
MNC.U65.A	Construct and Maintain Basic Ventilation Devices	E		
MNC.U66.A	Construct and Maintain Ventilation Devices		E	
<i>MNC.U67.A to MNC.U69.A</i>	<i>(Reserved)</i>			
MNC.U70.A	Conduct Continuous Miner Operations		E	
MNC.U71.A	Conduct Shuttle Car Operations		E	

**UNDERGROUND PRODUCTION (U) (CONT...)**

Unit Identifier	Title	Core (C) Elective (E)		
		II	III	IV
MNC.U72.A	Conduct Feeder Breaker Operations	E		
MNC.U73.A	Conduct Face Ventilation Operations	E		
MNC.U74.A	Conduct Outburst Mining Operations		E	
MNC.U75.A	Conduct Shearer Operations		E	
MNC.U76.A	Conduct Longwall Face Ancillary Equipment Operations		E	
MNC.U77.A	Conduct Pan Tech Operations	E		
MNC.U78.A	Install and Recover Longwall Equipment		E	
MNC.U79.A	Operate Breaker Line Supports		E	
MNC.U80.A	Conduct Flexible Conveyor Train (FCT) Operations		E	
<i>MNC.U81.A to MNC.U90.A</i>	<i>(Reserved)</i>			
MNC.U91.A	Maintain Lamp Cabin Operations	E		
MNC.U92.A	Maintain Bathroom Hygiene	E		
<i>MNC.U93.A to MNC.U94.A</i>	<i>(Reserved)</i>			
MNC.U95.A	Monitor Control Processes		E	
MNC.U101.A	Apply Spontaneous Combustion Management Measures	E		

**OPEN CUT PRODUCTION (O)**

Unit Identifier	Title	Core (C) Elective (E)		
		II	III	IV
<i>MNC.O1.A to MNC.O8.A</i>	<i>(Reserved)</i>			
MNC.O09.A	Perform Basic Earthmoving Operations		E	
MNC.O10.A	Conduct Dragline Operations		E	
MNC.O11.A	Conduct Burden and Coal Drilling Operations		E	
MNC.O12.A	Conduct Rope/Shovel Operations		E	
MNC.O13.A	Conduct Front End Loader Operations	E		
MNC.O14.A	Conduct Bulk Material Truck Operations	E		
MNC.O15.A	Conduct Bulk Water Truck Operations	E		
MNC.O16.A	Conduct Grader Operations	E		
MNC.O17.A	Conduct Scraper Operations	E		
MNC.O18.A	Conduct Dozer Operations	E		
MNC.O19.A	Conduct Surface Miner Operations		E	
MNC.O20.A	Conduct Auger Miner Operations		E	
MNC.O21.A	Conduct Bucketwheel Operations		E	
MNC.O22.A	Conduct Spreader Operations		E	
MNC.O23.A	Support Bucketwheel System Operations	E		

**OPEN CUT PRODUCTION (O)** (cont../)

Unit Identifier	Title	Core (C) Elective (E)		
		II	III	IV
MNC.O24.A	Conduct High Wall Miner Operations (to be developed)		E	
MNC.O25.A	Lay and Recover Cables	E		
MNC.O26.A	Conduct Dewatering Operations	E		
MNC.O27.A	Conduct Excavator/Hydraulic Shovel Operations	E		
MNC.O28.A	Conduct Conveyor Operations	E		
MNC.O29.A	Conduct Mobile Slew Conveyor Operations	E		
MNC.O30.A	Conduct Control Centre Operations		E	
MNC.O31.A	Coordinate Conveyor System Shift			E
MNC.O32.A	Access Mechanical Plant	E		
MNC.O33.A	Conduct Conveyor Shifting Dozer Operations		E	
MNC.O34.A to MNC.O39.A	(Reserved)			
MNC.O40.A	Conduct Shotfiring Operations			E
MNC.O41.A	Support Shotfiring Operations	E		
MNC.O42.A	Examine and Maintain Mine Safety			E

**Streams of Competency Standards – AQF IV, V and VI**

**BLACK COAL GENERAL MANAGEMENT**

Unit Identifier	Title	Core (C) Elective (E)		
		IV	V	VI
MNC.G10.A	Conduct Mine Surveying		C	
MNC.G81.A	Implement, monitor, rectify and report on contracts		E	
MNC.G82.A	Implement, monitor, rectify and report on inventory control system		E	
MNC.G83.A	Implement, monitor, rectify and report on maintenance management systems		C	
MNC.G84.A	Implement, monitor, rectify and report on mobile plant and equipment systems		E	
MNC.G90.A	Establish and maintain the mine electrical reticulation and protection system		C	
MNC.G91.A	Implement, monitor, rectify and report on interfaces between electrical and mechanical componentry		E	

**BLACK COAL OPEN CUT TECHNICAL MANAGEMENT**

Unit Identifier	Title	Core (C) Elective (E)		
		IV	V	VI
MNC.O43.A	Monitor interaction of light and heavy vehicles and mining equipment	C	C	
MNC.O44.A	Manage laser levelling of operating plant		E	
MNC.O45.A	Apply and monitor environmental management policies, plans and procedures	C		
MNC.O46.A	Monitor systems and methods of mining	C		

**BLACK COAL PRODUCTION**

Unit Identifier	Title	Core (C) Elective (E)		
		IV	V	VI
MNC.U44.A	Conduct Special Roadway Operations	E		
MNC.U45.A	Recover Equipment	E		
MNC.U48.A	Conduct Shotfiring	E		

**BLACK COAL UNDERGROUND TECHNICAL MANAGEMENT**

Unit Identifier	Title	Core (C) Elective (E)		
		IV	V	VI
MNC.U102.A	Establish the Spontaneous Combustion Management Plan			C
MNC.U103.A	Implement the Spontaneous Combustion Management Plan		C	
MNC.U104.A	Apply the Spontaneous Combustion Management Plan	C		
MNC.U106.A	Establish the Ventilation Management Plan			C
MNC.U107.A	Implement the Ventilation Management Plan		C	
MNC.U108.A	Apply and Monitor the Ventilation Management Plan	C		
MNC.U109.A	Manage, Operate and Maintain the Mine Ventilation System		E	E
MNC.U111.A	Establish the Gas Management Plan			C
MNC.U112.A	Implement the Gas Management Plan		C	
MNC.U113.A	Apply and Monitor the Gas Management Plan	C		
MNC.U116.A	Establish the Gas Drainage Management Plan			C
MNC.U117.A	Implement the Gas Drainage Management Plan		C	
MNC.U118.A	Apply and Monitor the Gas Drainage Management Plan	C		
MNC.U121.A	Establish the Outburst Management Plan			C
MNC.U122.A	Implement the Outburst Management Plan		C	
MNC.U123.A	Apply and Monitor the Outburst Management Plan	C		
MNC.U131.A	Establish the Mining Method and Strata Management Systems			C
MNC.U132.A	Implement the Strata Management Plan		C	
MNC.U133.A	Apply and Monitor the Strata Management Plan	C		
MNC.U136.A	Establish Mine Transport Systems and Production Equipment			C
MNC.U137.A	Implement Mine Transport Systems and Production Equipment		C	
MNC.U138.A	Apply and Monitor Mine Transport Systems & Production Equipment	C		
MNC.U141.A	Establish Mine Services Systems			C
MNC.U142.A	Implement Mine Services Systems		C	

Unit Identifier	Title	Core (C) Elective (E)		
		IV	V	VI
MNC.U143.A	Apply and Monitor Mine Services Systems	C		
MNC.U146.A	Establish Mine Fixed Plant and Infrastructure Systems			C
MNC.U147.A	Implement Mine Fixed Plant and Infrastructure Systems		C	
MNC.U148.A	Apply and Monitor Mine Fixed Plant and Infrastructure Systems	C		
MNC.U151.A	Establish Emergency Preparedness and Response Systems			C
MNC.U152.A	Implement Emergency Preparedness and Response Plans		C	
MNC.U153.A	Apply and Monitor Emergency Preparedness and Response Plans	C		
MNC.O42.A	Examine and Maintain Mine Safety	E		
MNC.G1.A	Develop and Implement Risk Control Processes	C(1)	C(1)	
MNC.G2.A	Facilitate the Risk Management Process	C(1)	C(1)	
MNC.G3.A	Manage the Risk Control System			C
MNC.G6.A	Incorporate Health and Hygiene Factors into Mine Management			E
MNC.G7.A	Implement and Apply Health and Hygiene Management Measures	E	E	

Note: E in the Technical Management Standards denotes an elective for VET Qualifications. Statutory obligations at the State level may impose further limitations on which units may actually be treated as electives.

(1) Either MNC.G1.A or MNC.G2.A may be treated as the core requirement as the units are substantially similar. Only one of these units will carry credit for the qualification sought.

## IMPORTED UNITS OF COMPETENCY

### GENERAL MANAGEMENT COMPETENCIES

Unit Identifier	Title	Core (C) Elective (E)		
		IV	V	VI
BSXFMI301A	Manage Personal Work Priorities and professional Development	E	E	
BSXFMI302A	Provide Leadership in the Workplace	E	E	
BSXFMI303A	Establish and Manage Effective Workplace Relations	E	E	
BSXFMI304A	Participate In, Lead and Facilitate Work Teams	E	E	
BSXFMI305A	Manage Operations to Achieve Planned Outcomes	E	E	
BSXFMI306A	Manage Workplace Information	E	E	
BSXFMI307A	Manage Quality Customer Service	E	E	
BSXFMI308A	Develop and Maintain Safe Workplace and Environment	E	E	
BSXFMI309A	Implement & Monitor Continuous Improvement Systems & Processes	E	E	
BSXFMI3010A	Facilitate and Capitalise on Change and Innovation	E	E	
BSXFMI3011A	Contribute to Development of a Workplace Learning Environment	E	E	
BSBFLM501A	Manage personal work priorities and professional development		E	
BSBFLM502A	Provide leadership in the workplace		E	
BSBFLM503A	Establish effective workplace relationships		E	
BSBFLM504A	Facilitate work teams		E	
BSBFLM505A	Manage operational plan		E	
BSBFLM506A	Manage workplace information systems		E	
BSBFLM507A	Manage quality customer service		E	
BSBFLM509A	Promote continuous improvement		E	
BSBFLM510A	Facilitate and capitalise on change and innovation		E	
BSBFLM511A	Develop a workplace learning environment		E	

Note: Further detail on the Business Services Units of Competency is available from the National Training Information System website at [www.ntis.gov.au](http://www.ntis.gov.au).



## TRAINING AND ASSESSMENT

The following is a list of Training and Assessment units of competency (BSZ40198) which can be aligned at AQF 3 and 4 in support of those qualifications listed in this Training Package.

Unit Identifier <i>Training</i>	Title	Core (C) Elective (E)		
		II	III	IV
BSZ404A	Train small groups			E
BSZ405A	Plan and promote a training program			E
BSZ406A	Plan a series of training sessions			E
BSZ407A	Deliver training sessions			E
BSZ408A	Review training			E
BSZ501A	Analyse competency requirements			E
BSZ508A	Design training courses			E
<b>Assessment</b>				
BSZ401A	Plan Assessment			E
BSZ402A	Conduct assessment			E
BSZ507A	Develop assessment tools			E

Note: Further detail on the Business Services Units of Competency is available from the National Training Information System website at [www.ntis.gov.au](http://www.ntis.gov.au).

## MECHANICAL ENGINEERING

UNIT IDENTIFIER	TITLE	CORE (C) ELECTIVE (E)		
		IV	V	VI
MEM183AA	Use tools for precision work		E	
MEM184AA	Maintain and overhaul mechanical equipment		E	
MEM185AA	Bearings – faults diagnosis installation and removal		E	
MEM186AA	Repair and fit engineering components		E	
MEM187AA	Maintain and repair mechanical drives and mechanical transmission assemblies		E	
MEM188AA	Balance equipment		E	
MEM189AA	Levelling and alignment of machinery and engineering components		E	
MEM1810AA	Equipment condition monitoring and recording		E	
MEM1811A	Shut down/isolate machines/equipment		E	
MEM1816B	Analyse plant and equipment condition monitoring results		E	
MEM1817B	Modify mechanical systems and equipment		E	
MEM1846A	Fault find/repair AC and DC electrical equipment/components which use up to 1000 volts AC or 1500 volts DC		E	
MEM1849A	Disconnect/reconnect fixed wired equipment up to 1000 volts AC or 1500 volts DC		E	
MEM1850A	Disconnect/reconnect fixed wired equipment over 1000 volts AC or 1500 volts DC		E	
MEM1855A	Dismantle, replace and assemble engineering components		E	

Note: Further detail on the Mechanical Engineering units of competency is available from the National Training Information Service website at [www.ntis.gov.au](http://www.ntis.gov.au)

**MINING**

UNIT IDENTIFIER	TITLE	CORE (C)ELECTIVE (E)		
		IV	V	VI
MNIC01A	Establish the mine statutory/legal compliance system			<b>C</b>
MNIC02A	Establish the mine risk assessment and control system			<b>C</b>
MNIC03A	Establish mine infrastructure and plant systems			<b>E</b>
MNIC04A	Establish mine services systems			
MNIC05A	Establish plant, equipment and infrastructure maintenance systems			
MNIC06A	Establish the mine water management system			
MNIC07A	Establish the stockpile management system			
MNIC08A	Establish waste and by-product management system			
MNIC09A	Establish and manage the mine occupational health and safety system			<b>C</b>
MNIC10A	Establish the mine emergency systems			<b>C</b>
MNIC11A	Establish a blasting system			
MNIC12A	Establish mine closure management systems			
MNIL02A	Establish and manage environmental management policies, plans and procedures			<b>E</b>
MNIL05A	Manage the decision making process			
MNIL06A	Provide leadership			
MNIL08A	Manage group process			
MNIL09A	Manage major incidents and emergencies			<b>C</b>
MNIL13A	Initiate, monitor and supervise contracts			
MNIS01A	Establish ground control and slope stability systems			
MNIS02A	Establish surface product haulage and transport systems			
MNMF5FX16A	Implement emergency preparedness and response systems		<b>C/E</b>	
MNMF5FX26A	Apply and monitor emergency preparedness and response	<b>C</b>		
MNMOCC103A	Prepare for blasting	<b>E</b>	<b>E</b>	
MNMOCC104A	Conduct blasting operations	<b>E</b>	<b>E</b>	
MNQ.QM/07A	Implement and maintain operational performance management system			<b>E</b>
MNQ.QM/17A	Develop, implement and maintain process control systems			
MNQ.QM/18A	Design and monitor dredging/barge operations (sluicing) sand and gravel			
MNQ.QM/20A	Conduct sales in an extractive operation			
MNQ.QM08A	Design, implement maintain and evaluate a quality system		<b>E</b>	
MNQOP30A	Carry out blast survey		<b>E</b>	
MNQOP32A	Carry out shotfiring	<b>E</b>	<b>E</b>	
MNQQM08A	Implement and promote quality system		<b>E</b>	
MNQQM13A	Manage blasting operations		<b>E</b>	
MNQTL01A	Implement, monitor, rectify and report statutory/legal compliance	<b>C</b>	<b>C/E</b>	
MNQTL02A	Implement, monitor and report on the site risk management process associated with Occupational Health and Safety and the environment	<b>C</b>	<b>C/E</b>	
MNQTL08A	Implement and monitor quality system		<b>E</b>	

Note: Further detail on the Mining units of competency is available from the National Training Information Service website at [www.ntis.gov.au](http://www.ntis.gov.au)

UNIT IDENTIFIER	TITLE	CORE (C) ELECTIVE (E)		
		IV	V	VI
PRDSIS03A	Implement a project plan		E	
PRDSIS04A	Determine spatial data requirements to meet the deliverables		C	
PRDSIS05A	Determine suitable sources of information for the creation of new spatial data sets		E	
PRDSIS06A	Plan data collection and validation		C	
PRDSIS07A	Capture new data		C	
PRDSIS08A	Obtain and validate existing data		C	
PRDSIS13A	Design a spatial data storage system		E	
PRDSIS14A	Integrate spatial data sets		C	
PRDSIS15A	Maintain spatial data		C	
PRDSIS16A	Store and retrieve spatial data		C	
PRDSIS18A	Produce project deliverables		C	
PRDSIS19A	Collate and interpret data		C	
PRDSIS20A	Design project deliverables		E	
PRDSIS22A	Control and monitor the spatial components of the project		C	
PRDSIS24A	Maintain financial records		E	
PRDSIS25A	Lead and supervise teams		E	
PRDSIS27A	Maintain client relations		E	
PR SIR31A	Undertake process improvement to reduce costs and improve quality service		E	
PR SIR39A	Manage Occupational Health and Safety in the workplace		E	
PSPPM501A	Initiate projects		E	
PSPPM502A	Manage projects		E	
PSPPM503A	Finalise projects		E	

Note: Further detail on the Asset Security and National Public Services units of competency is available from the National Training Information Service website at [www.ntis.gov.au](http://www.ntis.gov.au)

UNIT IDENTIFIER	TITLE	CORE (C) ELECTIVE (E)		
		IV	V	VI
UTENES010A	Report on the integrity of explosion-protected equipment in hazardous areas		C/E	
UTENES012A	Attend to breakdowns in hazardous areas		C/E	
UTENES107A	Install explosion-protected equipment and wiring systems		C/E	
UTENES214A	Maintain equipment in hazardous areas		C/E	
UTENES215A	Overhaul and repair explosion-protected equipment		C/E	
UTENES407A	Assess explosion protected equipment for conformity to standards		C/E	
UTENES408A	Test installations in hazardous areas		C/E	
UTENES409A	Inspect visually existing hazardous area installations		C/E	
UTENES410A	Inspect in detail hazardous area installations		E	
UTENES602A	Develop commissioning programs for apparatus and associated circuits		C	
UTENES603A	Develop maintenance programs for apparatus and associated circuits		C	
UTENES606A	Coordinate and manage installation projects		C	

UTENES609A	Develop and manage maintenance programs for hazardous electrical equipment		C/E	
UTENES610A	Ensure the safety of hazardous areas		C/E	
UTENES705A	Design and develop modifications to explosion protection		E	
UTENES706A	Classify hazardous areas		E	
UTENES707A	Design electrical installations in hazardous areas		C/E	
UTENES708A	Design explosion protection electrical		E	

Note: Further detail on the Electrotechnology units of competency is available from the National Training Information Service website at [www.ntis.gov.au](http://www.ntis.gov.au)

## **New apprenticeships**

New Apprenticeships (offered as a Traineeship) will be possible under the Black Coal Training Package for entry level and for existing employees at Certificate II Coal Operation and Certificate III in Coal Operations.

The customisation of the New Apprenticeship is possible through the choice of Elective Units for the qualification and the customisation of units of competency as described in Tables above.

# ASSESSMENT GUIDELINES BLACK COAL INDUSTRY

## Introduction

The Black Coal Assessment Guidelines are one of the endorsed components of the Black Coal Training Package. They are for use by a range of people including:

- Assessors in the Black Coal Industry
- Enterprises
- Registered Training Organisations and trainers
- Training Managers
- Human Resource Managers
- Regulatory Authorities
- Industry Bodies.

The Guidelines aim to:

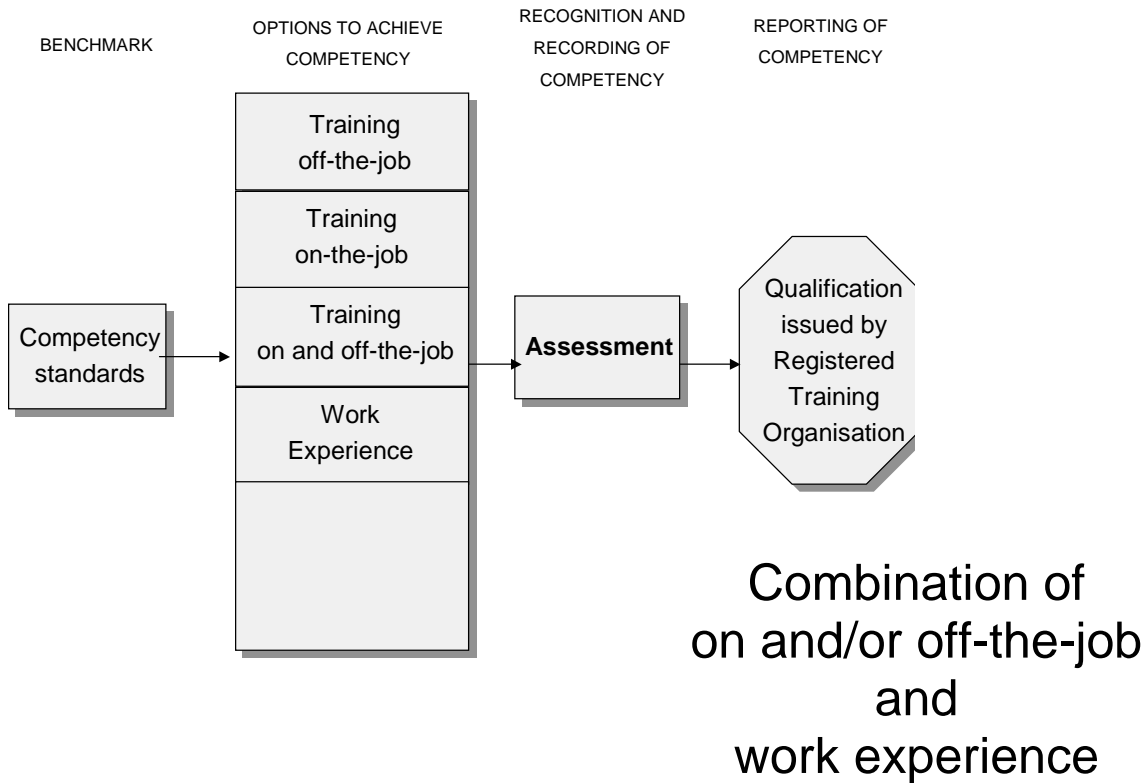
- provide information on the context and issues for effective assessment
- show where assessment fits in recognising workplace knowledge and skills and how it leads to a qualification
- support knowledge and skill recognition for career progression
- recognise current practices and bodies associated with assessment
- build on and formalise existing good practice within mines and training organisations
- provide guidance for those involved to improve their systems and practice
- provide guidance for newcomers to training and assessment
- provide information on what constitutes good practice in assessing the Black Coal units of competency.

Assessment is the process of collecting evidence of the skills and knowledge a candidate has developed, either in a structured learning situation, at work, or in some other context. The mining industry has adopted a competency based learning system. This means that each candidate's skills and knowledge are assessed against the nationally endorsed units of competency required by industry, rather than compared with the skills and knowledge of other candidates.

These guidelines provide advice about assessment in the Black Coal industry ensuring that qualifications awarded recognise achievements of a consistently high standard, are nationally recognised, and encourage flexible ongoing learning. The system gives individuals access to formal qualifications through one of two pathways: training and assessment and assessment only recognition, or a combination of both pathways.

The pathways described lead to nationally recognised qualifications because they involve assessment against the nationally endorsed Black Coal competency standards by assessors meeting the requirements of these guidelines, within a nationally monitored quality assurance framework.

**FIGURE 1: ASSESSMENT AND QUALIFICATIONS**



These Assessment Guidelines form part of the endorsed components of the Black Coal Training Package. The policies and guidelines developed to support an industry assessment system must be consistent with legislative, regulatory and statutory requirements. These guidelines are directed at ensuring that relevant personnel are aware of and implement legislative, statutory and regulatory requirements.

## The Mining Industry Assessment System

### Overview

The mining industry assessment system builds on and formalises good practice within mining enterprises and training organisations. It provides a common language for recognition of competency throughout the mining industry.

In the mining industry, assessment is used for a range of purposes: to meet legislative and regulatory requirements, to satisfy quality system requirements, and to establish mine requirements for a particular function or use of a machine. Implementation of the Mining Industry Assessment System means that assessments can also be used for the issuing of nationally recognised AQF qualifications.

### Benefits

The system offers benefits for employers, employees/candidates, and contractors.

#### *For employers:*

- provides benchmarks for employee skills, knowledge and competence
- provides a mechanism for formal recognition of skills and knowledge developed at work
- assists in the process of multi skilling and cross skilling
- assists in identifying employees with the required mix of knowledge and skills, and therefore makes recruitment more reliable and consistent
- sets workplace standards and serves as the basis of performance appraisal
- serves as a starting point in enterprise agreements
- assists in specification of the skills level required of contractors
- supports due diligence responsibilities
- assists in meeting legal and regulatory training requirements
- assists in business improvement initiatives.

#### *For employees/assessment candidates:*

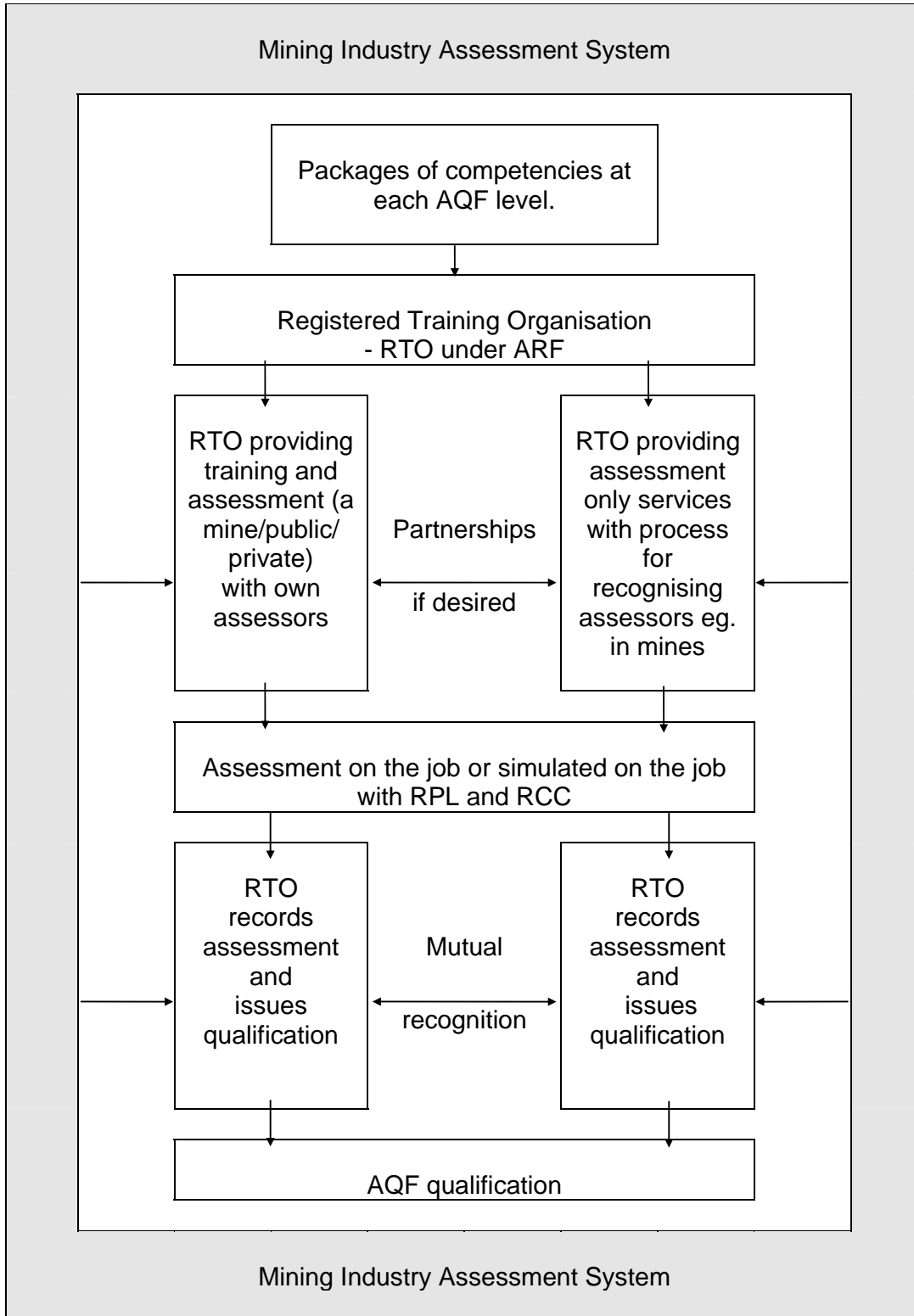
- provides formal recognition of competencies developed at work
- leads to a nationally recognised qualification
- assists in identifying and pursuing a career path
- focuses training on individual needs
- assists in the process of multi skilling and cross skilling
- offers flexibility, so people can learn at their own pace and choose the structured and/or work-based training and assessment environment that suits them best.

#### *For contractors:*

- provides evidence that their skill mix meets their contractual requirements
- provides a benchmark for contractor capability assessment
- leads to portable, nationally recognised qualifications
- provides contractors with documentation to assist in indemnity
- supports contractors in building efficient systems for multi site operations.

The system, which is summarised in the following diagram, is competency based and nationally endorsed. The components and features of the system are detailed in the following pages.

**FIGURE 2: MINING INDUSTRY ASSESSMENT SYSTEM**





## Competency and AQF qualifications

In the mining industry assessment system the endorsed competency standards for each sector form the benchmark for assessment. Assessment in the Black Coal industry is therefore based on the nationally endorsed Black Coal Competency Standards. These standards, and other nationally endorsed competency standards recognised by the Black Coal industry, set the benchmarks that candidates must reach for full or part qualifications under the Australian Qualifications Framework (AQF). Results of assessments have national recognition regardless of how candidates have acquired their skills and knowledge, or the assessment pathway they have followed.

**For qualifications under the AQF in the mining industry, assessment must be on the job, conducted in the workplace or in a simulated situation.** Although evidence for assessment may be gathered from a range of environments, on the job, off the job or a combination of both, assessment on the job or in a simulated situation ensures that competencies are relevant to the industry, and that candidates can function effectively in the real work environment. The technology, size and complexity of the equipment to be used, occupational health and safety issues and legislative and regulatory requirements require assessment in the Black Coal industry to be conducted in the workplace or a simulated situation.

### Black Coal Industry Competency Standards

The Black Coal Industry Competency Standards include the following:

- Coal Core
- Coal General
- Underground
- Open Cut Production
- Coal Preparation

Units of competency from other industry sectors may be appropriate for use in a coal industry production job. Such industry units of competency may include:

- Mechanical Engineering
- Electrical Engineering
- Water and Waste Water
- Building and Construction
- Leadership and Management.

## Black Coal industry qualifications

Units of Competency in the Black Coal Industry Competency Standards have been packaged into qualifications and aligned to the AQF

Candidates are awarded a qualification on achieving the specified units of competency for that qualification.

Candidates who demonstrate that they have acquired one or more units of competency, but not enough for the award of a qualification, will receive a Statement of Attainment which they can build on at some later time to achieve a qualification.

## Black Coal pathways to a qualification

The Black Coal industry recognises qualifications which candidates achieve through:

- the recognition of current competencies and prior learning which meet competency requirements
- structured training course(s) which meet competency requirements
- a combination of a course of study meeting the competency requirements and/or recognition of prior learning or current competencies, including credit transfer, and/or experience.

Qualifications can be reached through two main pathways: a **training and assessment pathway** and an **assessment only pathway**. Both pathways incorporate the recognition of prior learning (RPL) and recognition of current competencies (RCC), both are based on the same assessment benchmarks and industry endorsed assessment procedures, and both include assessments conducted by assessors who meet the requirements in these guidelines. Both lead to nationally recognised qualifications, but the time taken to gain a qualification will vary according to the pathway taken and factors related to the particular mine or work area.

The pathways are summarised in Table 13 and detailed in the following page

**Table 13. Pathways to a Qualification**

<b>Responsible for</b>	<b>Training and assessment pathway</b>	<b>Assessment only pathway</b>
Training design	Registered Training Organisation (a mine or a public or private training provider)	Mine
Training delivery	Registered Training Organisation, perhaps with mine partnership	A mine, perhaps a partnership with a Registered Training Organisation
Training context	Some off-job, some simulated workplace environment or mine partnership	Mine
Assessors	Registered Training Organisation Assessor	Assessors recognised by Registered Training Organisation assessment only services
Assessment records	Registered Training Organisation	Registered Training Organisation providing assessment only services and mine
Issuing qualifications	Registered Training Organisation	Registered Training Organisation assessment only services
Quality assurance	Registered Training Organisation and ARF process and procedures	Registered Training Organisation assessment only services and ARF process and procedures

### **Training and assessment pathway**

The training and assessment pathway provides qualifications as a result of formal training and assessment by a public training provider, private training provider or a mine registered by a State/Territory Recognition Authority as a Registered Training Organisation for training and assessment purposes against the Black Coal Training Package.

#### *Training*

Registered Training Organisations operating in the Black Coal industry design and deliver formal structured training programs which reflect the Black Coal Competency Standards as outlined in the Black Coal Training Package. For some components of a program, such as the development of knowledge that underpins successful performance of practical tasks, the training is conducted off the job. Program participants must learn

to apply their knowledge and skills in simulated workplace environments, or during work with local mines.

#### *Assessments*

Assessments are conducted by Assessors employed or recognised by the Registered Training Organisation. Some parts of the training program may be assessed off the job, but all assessment against competencies must be conducted in practical industry settings: either in simulated workplaces or at local mines. (See *Partnerships and flexible arrangements — blending pathways*, below.)

#### *Recording units of competency*

The Assessor reports the assessment outcomes to the Registered Training Organisation when a candidate has successfully demonstrated one or more units of competency.

The Registered Training Organisation is responsible for recording the results of all assessments, and keeping the candidates personal files secure and confidential.

#### *Issuing qualifications*

The Registered Training Organisation issues an AQF qualification when a participant has achieved a relevant package of competencies as outlined in the Black Coal Training Package. Any qualification issued under the AQF must be issued with a document which identifies the units of competency achieved.

If a candidate leaves the program before achieving all of the units of competency for a qualification, the Registered Training Organisation issues a Statement of Attainment for units of competency achieved.

#### *Quality assurance*

Each Registered Training Organisation is responsible for ensuring the fairness, validity, reliability and consistency of the assessments it conducts. All assessment processes must meet Australian Recognition Framework requirements, national assessment principles and provide consistency of outcomes.

### **Assessment only pathway**

The assessment only pathway involves a Registered Training Organisation providing assessment only services. This may be a mine or public or private Registered Training Organisation. It provides formal qualifications as a result of assessment in mines and/or by contractors which are not registered by State/Territory Recognition Authorities as training organisations. Assessment is conducted by appropriately qualified assessors recognised by the Registered Training Organisation.

### *Training*

Structured training is designed and delivered at work, either as part of routine operations or in designated training sessions. Candidates, their supervisors and trainers use the Black Coal competency standards as the benchmark for the skills and knowledge that the candidates are expected to acquire. They organise a formal assessment when reasonably confident that the candidate has acquired one or more units of competency.

### *Assessments*

Assessors recognised by the Registered Training Organisation providing assessment only services conduct the assessments in the workplace. Assessors may be employees of the mine, or an assessor may be contracted from another mine or training organisation.

The assessor, recognised by the Registered Training Organisation providing assessment only services, checks the candidate's acquisition of one or more units of competency, in consultation with the candidate's supervisor, team leader, site co-ordinator and/or the training department within the mine. Evidence should be gathered on a number of occasions, in a variety of contexts and situations. (For information about the assessment process, see Part 2 of these Guidelines.) The assessment must be on the job, and conducted in the workplace or in a simulated situation.

### *Recording units of competency*

If the candidate is successful, the assessor reports the assessment outcomes to the Registered Training Organisation providing assessment only services. The mine also keeps records of an employee's assessment, in compliance with legislative and regulatory requirements, quality system requirements and Duty of Care.

### *Issuing qualifications*

The Registered Training Organisation providing assessment only services is responsible for recording the assessment outcomes. A copy of the assessment outcomes validated by the Mine Manager or Training Manager is sent to the Registered Training Organisation providing assessment only services. This fits within the partnership arrangements as described in the ARF.

The Registered Training Organisation issues an AQF qualification if the candidate has demonstrated the required package of competencies, and maintains records of all applicants' achievements in assessment. Any qualification issued under the AQF must be issued with a document which identifies the units of competency achieved.

If an employee leaves an organisation or withdraws from training before achieving all the competencies required for a qualification, the Registered Training Organisation providing assessment only services will issue Statements of Attainment for the competencies the candidate has achieved. The Registered Training Organisation maintains records of the competencies achieved by applicants for Statements of Attainment, so people can return to training and build on earlier achievements to attain full AQF qualifications.

### *Quality assurance*

Ensuring the integrity of the assessment only pathway to qualifications is the responsibility of the Registered Training Organisation providing assessment only services. The Registered Training Organisation is required to ensure that assessments conducted at the mine by assessors meet national assessment principles, and that AQF qualifications are only issued when earned. Assessments must be demonstrably fair, reliable, valid and flexible to provide consistent outcomes.

## **Registered Training Organisation Assessment Only Services**

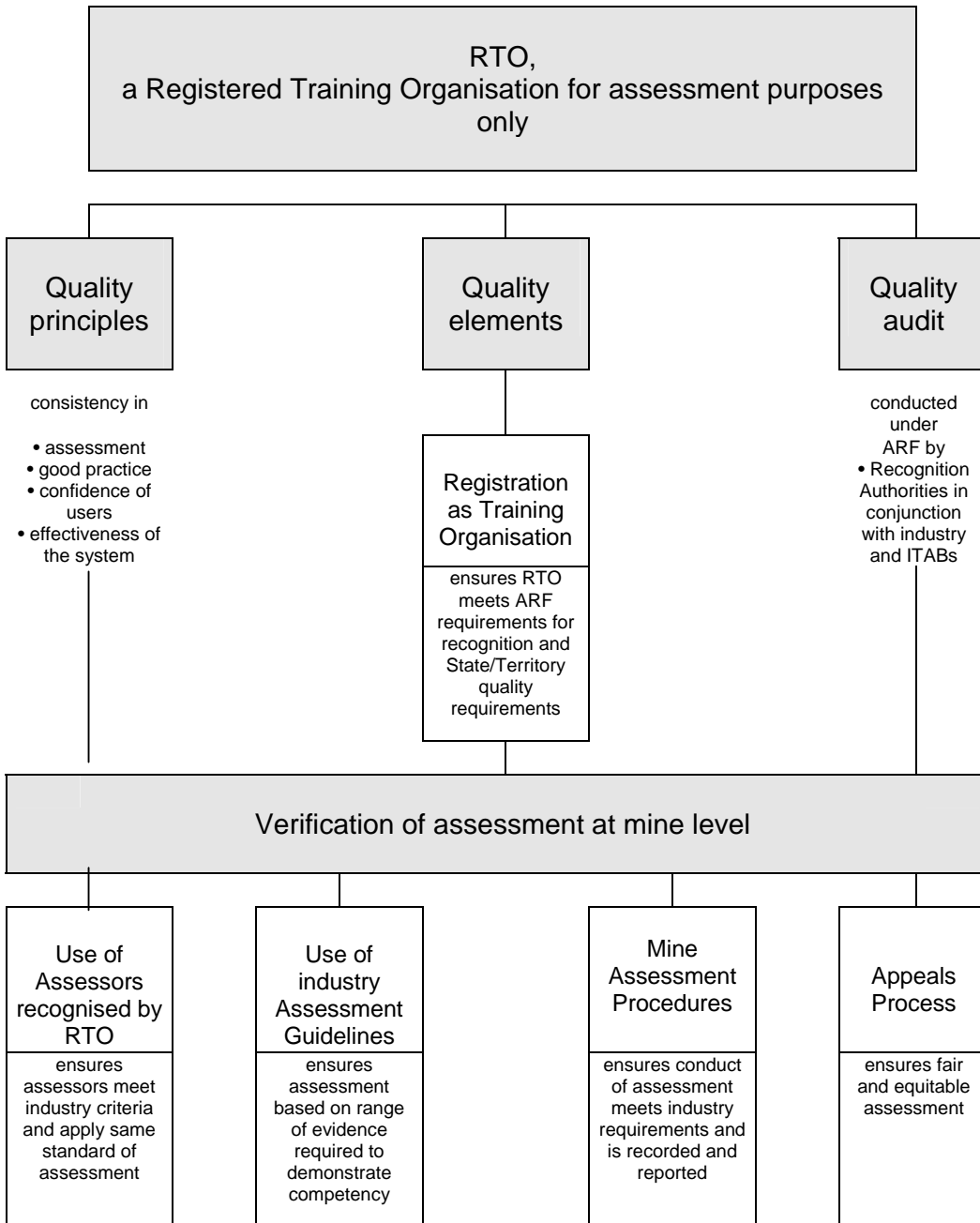
Registered Training Organisation providing assessment only services suggested function and quality management

The availability of the Registered Training Organisation providing assessment only services gives mines and contractors access to nationally recognised AQF qualifications even though they are not themselves Registered Training Organisations.

The procedures and criteria outlined in these guidelines for recognition of assessors ensure that all assessments endorsed by the Registered Training Organisation providing assessment only services meet industry requirements and national standards for competency-based assessment.

Any Registered Training Organisation providing assessment only services is subject to quality audits conducted under the ARF by State/Territory Recognition Authorities. The Black Coal Industry requires quality management of assessments to have confidence in the assessment outcomes and provides the following model to assist in achieving this.

**FIGURE 3: REGISTERED TRAINING ORGANISATION ASSESSMENT ONLY SERVICES QUALITY MODEL**



## Partnerships and flexible arrangements — blending pathways

The Black Coal Assessment Guidelines support and encourage flexible training and assessment arrangements based on partnerships between mines and the providers of formal structured training programs. Such partnerships optimise the use of resources and maximise opportunities for individuals to progress in the industry through improving their skills, knowledge and qualifications.

Individuals may complete part of their training in a mine and part with a Registered Training Organisation. People who have completed relevant packages of competency through either pathway or any blended pathway can choose to gain their qualification through a Registered Training Organisation providing assessment only services.

Some options are shown in the following Table 14.

**TABLE 14. FLEXIBLE ARRANGEMENTS, BLENDING PATHWAYS**

Pathway to a Qualification	Assessment	Qualification issued by:
1. A mine which <b>is not</b> a Registered Training Organisation conducts training and assessment. Some off-the-job training may be provided by other organisations which also are not Registered Training Organisations.	Assessment undertaken by Assessors employed by the mine or contracted from outside the mine and recognised by an RTO providing assessment only service.	Registered Training Organisation providing assessment only services
2. A mine which <b>is</b> a Registered Training Organisation conducts training and assessment	Assessment undertaken by Assessors employed by the mine or contracted from outside the mine.	Registered Training Organisation, ie. the mine
3. Off-the-job training by a Registered Training Organisation, on the job training by a mine. The mine employs and provides an Assessor recognised by the Registered Training Organisation or registered with the Registered Training Organisation providing assessment only services.	The Registered Training Organisation conducts off-the-job assessment; and the mine conducts the on the job assessment.	Registered Training Organisation
4. Off-the-job training by a Registered Training Organisation, with on the job training by a mine. The mine provides a technical expert to assist in assessment.	The Registered Training Organisation conducts off-the-job assessment and provides Assessors to conduct on the job assessment in conjunction with the technical expert provided by the mine.	Registered Training Organisation
5. Off-the-job training by a Registered Training Organisation, with on the job training by a mine.	The Registered Training Organisation conducts off-the-job assessment and provides Assessors to conduct on the job assessment.	Registered Training Organisation



## Assessor qualifications

Assessment against competencies will be carried out in accordance with the guidance outlined. The guidance includes the necessary qualifications for those conducting assessments and provides for those situations where more than one person may contribute to the assessment and where the required technical and assessment competencies may not all be held by any one person.

Assessor in the Black Coal Industry must meet the following criteria:

- have demonstrated competence against the following units of competency from the Training Package for Assessment and Workplace Training :
  - BSZ401A Plan Assessment
  - BSZ402A Conduct Assessment
  - BSZ403A Review Assessment
- have an understanding of the industry context, and of the use of endorsed Black Coal competency standards as the benchmarks for assessment and be able to work with a technical expert
- be competent in an area within the Black Coal Industry at least to the level being assessed.

Registered Training Organisations must consult with mines to determine the appropriateness of the assessors for at-job assessments within their mine.

Specific criteria may exist for assessors who are assessing a candidate for a qualification that is a requirement for the issue of a statutory licence to practice, for example Shotfirer. This requirement may vary from State to State depending on legislative requirements.

## Assessment arrangements

In some cases, assessors will meet the criteria required by the industry and have a sound understanding of the general industry context, but not have the necessary expertise to conduct assessments according to the specific needs of a particular mine. Assessors working in teams can overcome this difficulty. If a team conducts an assessment, it is important that the mine is first consulted, and recognises and trusts the technical expert.

Suitable arrangements may include:

- An assessor who is not competent in the area being assessed, but who meets all other criteria, works with another person (a technical expert) who is competent in, and can advise on, the relevant vocational competencies at least to the level being assessed.
- The assessor convenes an assessment panel with members who, between them, meet all of the requirements of the industry and the mine.

- An assessor who is not familiar with the assessment evidence being collected, works with a workplace team leader or supervisor who has the relevant vocational competencies at least to the level being assessed.
- An assessor monitors and validates assessment procedures carried out by a workplace supervisor, team leader or site coordinator with the relevant vocational competencies at least to the level being assessed.

## Appeals Process

The Appeals Process provides a mechanism for the assessee or other interested party, such as an employer, to dispute the outcomes of an assessment and seek reassessment.

It is the responsibility of the RTO to conduct the Appeals Process. In any appeal which involves assessment in the workplace the employer must be consulted and consideration given to consultation with any relevant workplace committee.

## Guidelines for Designing Assessment Materials

Most assessments in the Black Coal industry take place at work or in a simulated situation. When designing assessment processes, assessors therefore first need to ‘interpret’ the units of competency to suit the assessment environment. This involves identification of:

- equipment to be used in the assessment, and the manufacturer’s instructions for its use and/or maintenance
- occupational health and safety policies and requirements of the mine
- the specific knowledge, understanding and agreed procedures that apply in the workplace(s) concerned.

## Determining appropriate assessment methods and tools

It is the responsibility of the assessor, working with other technical experts if necessary, to determine appropriate ways of gathering evidence of a candidate’s competency. The evidence should be collected over time, rather than on just one occasion, but the evidence gathering should not be prohibitively costly or time-consuming. Assessors must ensure that assessment processes do not place *inappropriate* emphasis on language, literacy or numeracy, and do not disadvantage candidates on inappropriate grounds such as gender or cultural background.

Given these constraints, key questions to consider when selecting assessment methods and tools include:

<i>Will the evidence be valid?</i>	Do the assessment methods and tools used measure what they claim to measure?
<i>Will the evidence be reliable?</i>	Would the assessment methods and tools provide consistent outcomes regardless of who does the assessment?
<i>Will the evidence be authentic?</i>	Can the assessor be confident that the assessment methods and tools will provide evidence of the candidate's <i>own</i> performance?
<i>Will the evidence be sufficient?</i>	Do the assessment methods and tools gather enough suitable evidence to result in an acceptable judgement about whether competence has been demonstrated?
<i>Are the assessment methods and tools fair?</i>	Do the assessment methods and tools provide a fair assessment for all candidates, or do they rely (to any extent) on irrelevant factors?

## **Methods and tools — glossary**

Assessments methods and tools commonly applied in the Black Coal include:

### *Observation of skill demonstration*

This involves the assessor observing performance (either real or simulated) and, if appropriate, checking the product produced by the candidate during the demonstration. Performance may be observed in a structured manner or unobtrusively through direct or indirect methods.

### *Oral questions*

By asking the candidate oral questions, the assessor can test the candidate's communication skills at the same time as authenticating the knowledge that underpins performance. One advantage of oral questioning is that the candidate can seek clarification from the assessor when necessary. This is not possible with written or computer based questions.

### *Written questions*

Written questions may take a number of forms such as:

*Multiple choice* — a question or incomplete statement followed by four or five options from which the candidate selects the correct one.

*Short answer* — a question with a predetermined answer, which varies from one word to, at most, two or three sentences.

### *Simulation*

A simulation is a mock situation in which the candidate can be asked to reproduce normal workplace performance. Simulations are common in circumstances where cost, safety and operational demands on equipment and other resources may limit access to the workplace for conducting assessments. Courses provided by training organisations

that are not in partnership with a mine usually rely on simulations for both training and assessment.

*Case studies*

A case study can be based on written information and/or practical experiences in a simulated or actual workplace. It provides the candidate with opportunities to demonstrate their problem solving and decision making skills, and their flexibility in applying underpinning knowledge to new contexts.

*Project*

A project is usually a quite complex and/or time-consuming exercise which a candidate completes without close supervision, then submits for assessment. Projects often include the completion of a project report about how the project was carried out.

*Portfolio*

A portfolio is a presentation of documented evidence of a candidate's competency. It may include examples or a critique of a candidate's work. Evidence provided in a portfolio must be authenticated.

*Critical incident*

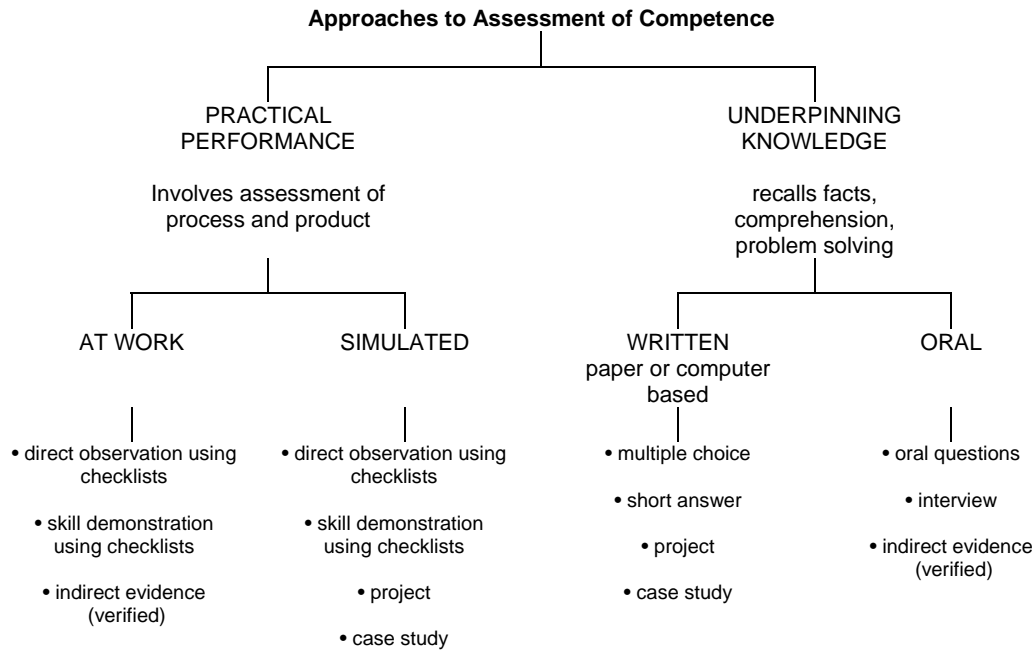
Assessments based on critical incidents involve a candidate identifying a problem or challenging workplace situation which they feel they resolved. The assessor and the candidate discuss how the candidate responded to the incident and how a similar response could be translated to other situations. The analysis of critical incidents is useful as a way of assessing the candidate's acquisition and application of a cluster of competencies.

*Indirect evidence*

Indirect evidence is evidence of competency which is not demonstrated for the assessor. For example, ability to apply standard emergency procedures may be assessed on the basis of a supervisor's statement about a candidate's performance in the workplace.

Different approaches are suited to the assessment of different types of competency.

**FIGURE 5: SUITABLE ASSESSMENT METHODS**



**Note:** Oral questions can also be used in conjunction with skill demonstration and observation.

## Guidelines for Conducting Assessments

The nationally endorsed Black Coal Competency Standards are the benchmark for assessment in the Black Coal Industry. Like competency standards applicable to other industries, they are expressed in a common format based on units of competency. **All assessment outcomes must relate to one or more units of competency**, no matter how that competency has been acquired.

Each unit of competency has the following components which provide guidance on suitable training and assessment activities and outcomes:

**Unit of competency:** This refers to a general area of competence (ie. skills and knowledge) described in the title of the unit. Each unit contains elements, performance criteria and a range of variables.

**Elements of competency:** Elements describe the things that an employee who works in a particular area will be able to do. They are expressed as actions or outcomes which can be assessed.

**Performance criteria:** Performance criteria guide the assessor in judging a candidates skills and knowledge. They specify the level of performance expected if the candidate has achieved the unit of competency.

**Range of variables:** The range of variables refers to the industry (and mine) specific factors which may apply. It places the unit of competency in the context in which performance should be demonstrated, eg. typical facilities and equipment.

**Evidence guide:** This part indicates the kinds of evidence that is required to demonstrate full competency in the unit, including underpinning knowledge and transferable skills.

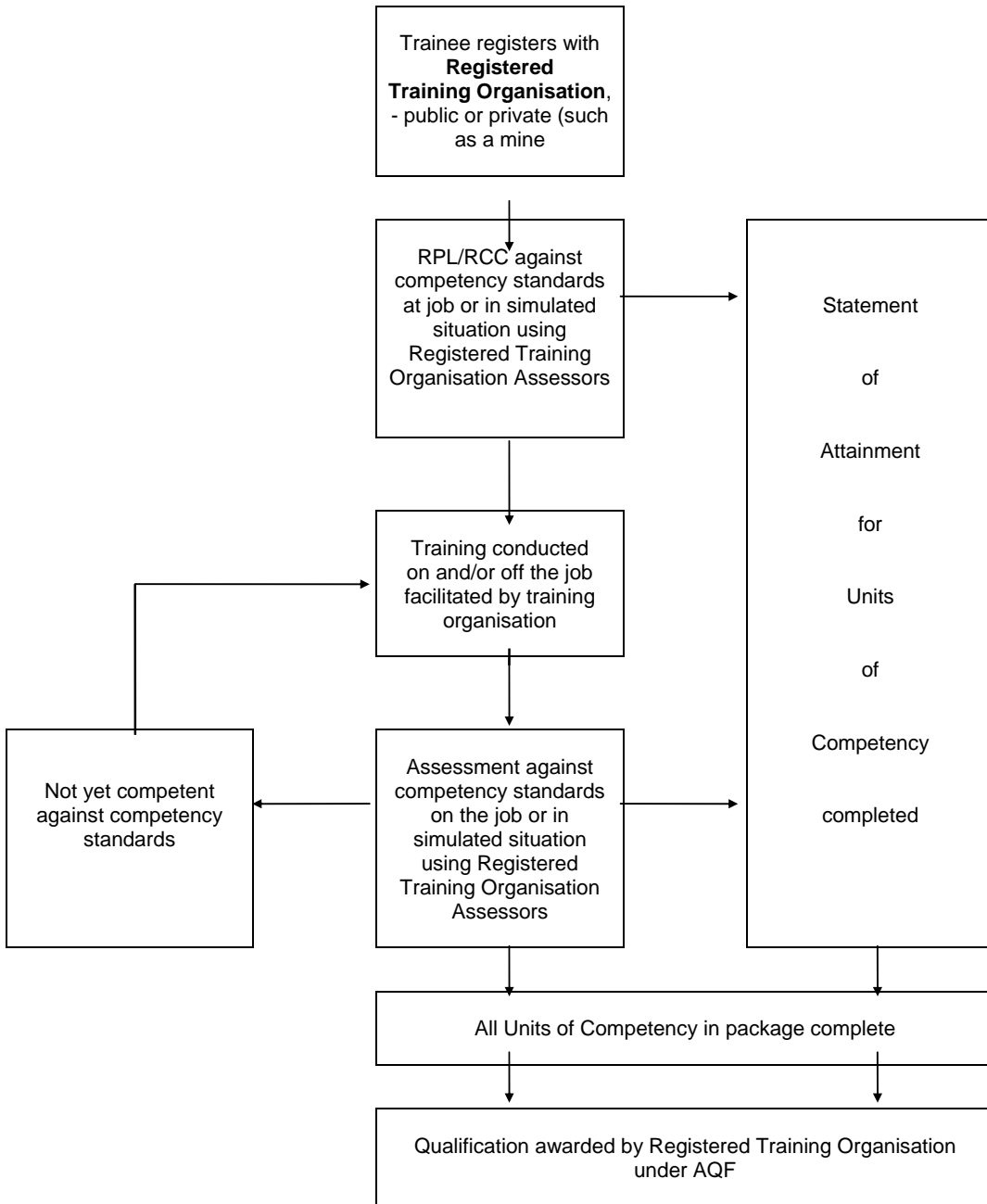
## **Conducting assessments**

Assessments are conducted when a candidate (and/or their trainer or supervisor) is reasonably confident that they have acquired one or more units of competency. The candidate may have acquired the competency through recent training or through previous training or experience (ie. Recognition of Prior Learning or Recognition of Current Competency), as shown in the model in Figure 6.

## **Gathering evidence**

Gathering a range of evidence will usually give a sufficiently balanced picture of the candidate's overall level of competence. It is only necessary to collect enough suitable evidence to enable a judgement to be made on the candidate's overall level of competence.

FIGURE 6: QUALIFICATIONS THROUGH TRAINING OR RPL/RCC

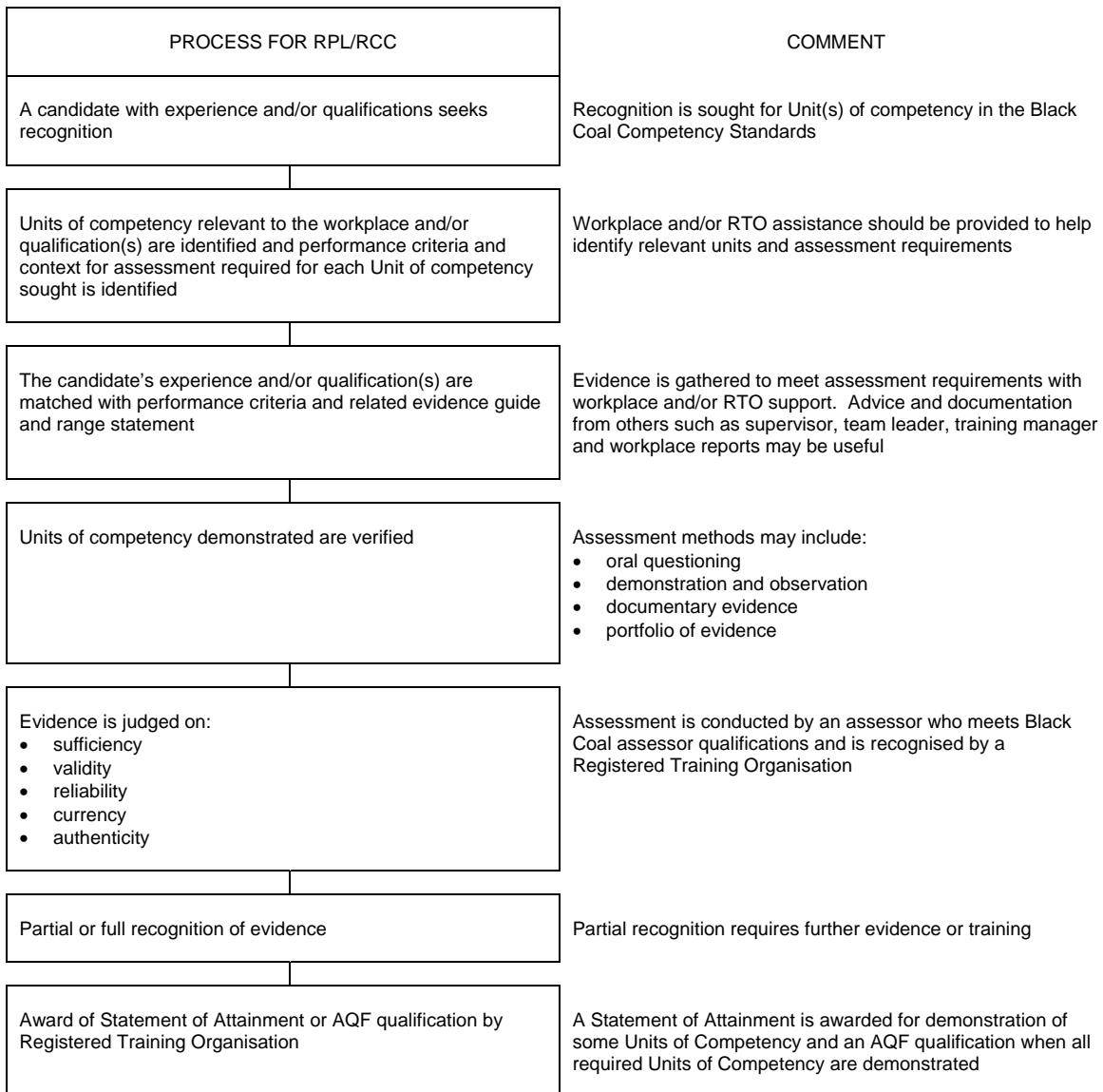


## Recognition of Current Competencies (RCC) and Recognition of Prior Learning (RPL)

Recognition of Current Competencies (RCC) and Recognition of Prior Learning (RPL) are ways of recognising that a person has achieved required competencies, through previous informal and formal learning, or through work and life experience. Assessments for RCC and RPL rely on the same range of evidence as assessments of competencies people have recently acquired through training, however they may also include documentary evidence of previous achievements, qualifications and references from people who are familiar with the candidate’s record.

RPL and RCC assessments are conducted before training is recommended. Figure 4 diagrammatically represents the procedures involved in recognising prior learning or current competencies against the Black Coal Competency Standards.

**FIGURE 4: THE BLACK COAL INDUSTRY PROCESS FOR RPL AND RCC**





## Combined approaches and holistic assessment

In many cases assessors will be able to use a range of different assessment methods together for holistic assessment. This is important as a means of ensuring full competency (rather than an ability to perform just one type of assessment task particularly well) and maximising candidates' chances of demonstrating their skills and knowledge. For example, exclusive reliance on oral questioning may unfairly disadvantage shy candidates, and could lead to an incorrect decision.

Using a range of methods and tools also supports integrated or holistic assessment. This means designing assessment activities which combine knowledge and understanding, problem solving, technical skills, and attitudes and ethics which go towards successful completion of workplace tasks. Holistic assessment usually involves:

- actual or simulated workplace tasks, especially tasks which require the integration of a range of competencies and associated underpinning knowledge
- the use of analytical skills to solve problems associated with the task(s)
- a combination of theory and practice.

The integrated approach to assessment checks the way a range of skills, knowledge and understanding are combined together to successfully complete practical workplace tasks.

## Minimising the cost of assessment in the workplace

Assessors should, where possible, find ways to minimise the cost and inconvenience caused by assessment activities. For example:

- use performance of actual work activities as sources of evidence
- arrange for demonstrations of competence in the most appropriate place
- make the assessment only as precise and/or complex as necessary at the candidate's level of qualification and occupational area
- separate evidence gathering from judgement, and assign evidence gathering to less expensive personnel (including candidates themselves)
- design assessment events so that the candidate can have prior knowledge of the requirements and can be actively involved in evidence gathering
- use holistic assessment scenarios which build on secondary evidence such as a record book, trainer's report or workplace report
- limit the number of times a single unit of competency or similar units of competency are assessed
- monitor progress as part of normal responsibilities, rather than relying on assessment events
- provide self appraisal tools for candidates
- assess more than one unit of competency at a time.

**Assessors' checklist**

In **planning** the assessment have you:

- explained and confirmed the context of the assessment to the candidate
- checked that the assessment environment is safe and accessible
- arranged any resources required for the assessment
- informed all relevant people of the assessment plans
- arranged to gather the necessary range of evidence

In **conducting** the assessment have you:

- made sure you have gathered sufficient evidence
- provided clear and constructive feedback to the candidate during the assessment
- sought more evidence if you are unsure or gained guidance from another assessor
- made an assessment decision in accordance with the requirements for the unit of competency

In **finalising** the assessment have you:

- informed the candidate of the assessment decision and discussed it with them
- provided clear and constructive feedback
- provided the candidate with guidance on further goals or training opportunities
- advised the candidate of reassessment opportunities and/or the appeals mechanism if necessary
- recorded the assessment results in accordance with industry and Registered Training Organisation requirements
- maintained the confidentiality of the assessment outcomes
- reviewed the assessment process
- reported on the conduct of the assessment with any suggestions for improvement.

## Useful Contacts

Any enquires about the Black Coal Training Package should be directed to any of the following organisations.

Des Caulfield  
National Mining ITAB  
PO Box A2616  
SYDNEY SOUTH NSW 1235  
Ph (02) 9286 1433 Fax (02) 9264 9367  
**Email:** [mitab@nswmin.com.au](mailto:mitab@nswmin.com.au)  
**Website:** [www.miningitab.com.au](http://www.miningitab.com.au)

Carl Tinsley  
NSW Mining ITAB  
PO Box A2616  
SYDNEY SOUTH NSW 1235  
Ph (02) 9286 1433  
Fax (02) 9264 9367

Phil Stewart  
Qld Mining ITAB  
PO Box 3061  
NEWSTEAD QLD 4006  
Ph (07) 3872 8500  
Fax (02) 3852 5966

Paul Kennett  
VIC Engineering Skills Training Board  
PO Box 1276  
Collingwood VIC 3066  
Ph (03) 9417 2277  
Fax (03) 9416 2662

Gil Court  
Major Industry Training Advisory Council  
GPO Box 1610  
Darwin NT 0801  
Ph (08) 8981 0077  
Fax (08) 8981 0060

Ottmar Helm  
Tasmanian Minerals & Processing ITB  
PO Box 25  
MOONAH TAS 7009  
Ph (03) 6278 1678  
Fax (03) 6228 7398

Lee Jackson  
WA Chamber of Minerals & Energy  
Locked Bag N984  
Perth WA 6844  
Ph (08) 9325 2955  
Fax (08) 9221 3701

## **Related References, Resources and Materials**

Australian National Training Authority. 1997. *A Marketing Model for Industry Training, Training Packages. Quality skills, to meet your needs.* ANTA. Brisbane.

Australian National Training Authority. 1997. *Guidelines for Training Package Developers. Australia's National Training Framework.* ANTA. Brisbane.

Australian National Training Authority. 1997. *Assuring Quality and Choice in National Training. Australia's National Training Framework.* ANTA. Brisbane.

Australian National Training Authority. 1996. *Generic Management Competency Standards for Frontline Management.* ANTA. Brisbane.

### Guidance for Management of the Training Function

National Staff Development Committee. 1994. *Developing Competency-Based Curriculum for Adult Literacy and Basic Education.* NSDC, Melbourne.

### Training Delivery/Facilitation Skills and Approaches to Workplace Training

National Staff Development Committee. 1996. *Case Studies of Action Learning Groups Volume 3: Flexible Delivery* NSDC. ANTA, Melbourne.

National Staff Development Committee. 1996. . *Case Studies of Action Learning Groups Volume 4: Workplace Competencies and CBT Implementation.* NSDC. ANTA, Melbourne.

National Staff Development Committee. 1994. *responsibility - People with Disabilities: Skilling Staff in Vocational Education, Training and Employment Sectors.* NSDC. Melbourne.

National Staff Development Committee. 1995. *Gender Inclusive Training - Module.* NSDC, Melbourne.

National Staff Development Committee. 1995. *Gender Inclusive Training Kit - Boxed Kit.* NSDC, Melbourne.

### Design of Training Resource Material

Australian Committee for Training Curriculum. 1995. *Gender Inclusive Guidelines for Curriculum Designers and Writers.* ACTRAC Products Ltd, Melbourne.

Courtenay, M and G. Mawer. 1995. *Integrating English Language, Literacy and Numeracy into Vocational Education and Training: A Framework.* DEETYA. Adult Literacy Information Office. Sydney.

Department of Employment and Youth Affairs. 1997. *Integrating Key Competencies. Vols 1-6*. The Office of Training and Further Education.

Fitzpatrick, Lynne and A. Roberts. 1997. *Workplace Communication in National Training Packages*. A Practical Guide. DEETYA. Language Australia Publications.

Australian National Training Authority. 1997. *Better Training. Addressing English Language, Literacy and Numeracy in Vocational Education and Training* ANTA. Melbourne.

### Assessment of Competencies and Recognition of Prior Learning

*A Guide to the Competency Standards for Assessment*, National Assessors and Workplace Trainers Body, PO Box 2164, Clovelly 2031 (P) 02 9664 2305 (F) 02 9665 0549

*Competency Standards for Assessment*, National Assessors and Workplace Trainers Body, PO Box 2164, Clovelly 2031 (P) 02 9664 2305 (F) 02 9665 0549

Hagar, P., J. Athanasou and A. Gonczi, *Assessment Technical Manual*. DEET. J.S. McMillan. Sydney.

National Staff Development Committee. 1995. *Case Studies of Action Learning Groups Vol 1: Assessment, Recognition, Evaluation*. NSDC. ANTA. Melbourne.

National Staff Development Committee. 1996. Research Report: *Recognition of Prior Learning for Aboriginal and Torres Strait Islander Peoples*. NSDC, ANTA, Melbourne.

Rumsey, D. 1994. *Assessment Practical Guide*.. DEET. J.S. McMillan. Sydney.  
Reference list of relevant resources and materials

*Workplace Assessor's Guide for the Australian Drilling Industry*, ADITC, Ltd., PO Box 1545 Macquarie Centre, NSW 2113 (P) 02 9887 1077 (F) 02 9888 2078

*Guide to Assessment*, Scottish Qualifications Authority, 1993. Hanover House, 24 Douglas Street, Galsgow, G2 7NQ.

*Assessment Works - The Kit*, Centre for Vocational Assessment Research, 1997. PO Box 5199, West Chatswood 2057 (P) 02 9413 0807 (F) 02 9412 4451.

**Resources:**

- AQF Implementation Kit
- AQF Professional Development Kit
- Training and Assessment Matters - Newsletter of the National Assessors and Workplace Trainers Body, PO Box 2164, Clovelly 2031 (P) 02 9664 2305 (F) 02 9665 0549
- Video - Assessing Core Skills, Workplace Assessor's Guide for the Australian Drilling Industry, ADITC, Ltd., PO Box 1545 Macquarie Centre, NSW 2113 (P) 02 9887 1077 (F) 02 9888 2078
- Video Safety in the Crushing Plant, Institute of Quarrying, PO Box 164 Kieraville 2500, (P) 02 4229 3032 (F) 02 4229 3661

## Glossary of Terms

Appeal Process	An integrated process, within any assessment system, that allows a person who has been assessed to dispute an assessment result and to have an opportunity for further assessment. The Appeal Process must meet the requirements of State/Territory Recognition Authorities.
Assessment	Assessment is the process of collecting evidence and making judgements on whether competency has been achieved
Assessment Guidelines	One of the endorsed components of Training Packages which sets out industry approach to valid, reliable and fair assessment and which underpins assessment carried out by Registered Training Organisations under the Australian Recognition Framework.
Assessment Records	Assessment results can be the basis of the issuing of certificates and qualifications as well as being valuable employment records. They must be kept as a permanent reference about a person's competencies, be stored securely and be readily accessible. Record keeping systems are established as part of an assessment system by a Registered Training Organisation and must comply with ARF and State/Territory Recognition Authority requirements
Assessment Materials	An optional component of Training Packages that complement endorsed industry assessment guidelines and could take the form of assessment exemplars or specific assessment tasks and instructions.
Assessment Tools	Methodology for gathering evidence. This can include direct questioning, direct observation of performance, projects, skill tests, simulations, written tests, examination of finished products, reports from co-workers and supervisors. A variety of assessment tools should be used in the process of establishing competency.
Assessor	A person trained and recognised as being competent in terms of the Competency Standards for assessment, who carries out assessment against competency standards. An assessor will be competent in the subject area being assessed or work with a technical expert.
Australian National Training Authority (ANTA)	ANTA is responsible for developing and implementing policy, strategic direction and priorities for an effective and relevant national vocational education and training system.
Australian Qualifications Framework (AQF)	A comprehensive policy framework defining all qualifications recognised nationally in post-compulsory education and training within Australia. The AQF comprises guidelines which define each qualification together with principles and protocols covering articulation, issuance of a qualification and transition arrangements.

Australian Recognition Framework (ARF)	The Australian Recognition Framework is a comprehensive approach to national recognition of vocational education and training (VET). It is based on a quality assured approach to the registration of training organisations seeking to deliver training, assess competency outcomes and issue qualifications.
Competency Standards	The specification of knowledge and skill and the application of that knowledge and skill to the standards of performance required in the workplace, expressed as a competency standard. Competency standards define the outcomes for training delivery, assessment and the issuance of qualifications and Statements of Attainment under the Australian Recognition Framework.
Customisation	Customisation is the tailoring of units of competence and associated training by Registered Training Organisations to provide a flexible response to industry and enterprise requirements. For Training Packages, customisation is the tailoring of units of competence by the inclusion, modification or substitution of competency units within their alignment with AQF qualifications.
Evidence	Information gathered through the use of a variety of assessment tools that will provide proof from which the assessor can make judgements about competency. In most assessments, evidence is gathered from more than one source, in more than one situation and can have many forms. Direct evidence is observation of performance, indirect evidence can include evaluation of products or services, simulations, or skill tests, questioning or reports from others.
Flexible Delivery	An approach to training that enables a variety of ways in which clients can learn and demonstrate competence. Clients can choose what, where and how they learn and are provided with training that suits their individual learning needs and styles.
Industry Training Advisory Bodies (ITABs)	ITABs are national organisations comprising representation from the industry parties for the development, review and implementation of competency standards and Training Packages. Each national ITAB has a State/Territory ITAB network which determines training priorities for the industry in that State/Territory.
Learning Strategy	An optional component of a Training Package that provides information on how training programs may be organised in the workplace and training institutions. The Learning Strategy complements the endorsed components of a Training Package by providing additional support for Registered Training Organisations seeking to put together specific training programs to assist trainees attain the required competencies.
National Training Framework	The National Training Framework identifies the key components of the vocational education and training system at the national level, the relationship between those components as well as the quality assurance and recognition arrangements that enable individuals to gain national recognition.



National Training Information System (NTIS)	This is a relational database which provides up-to-date information on recognised vocational education and training, including details of endorsed Training Packages and their components (competency standards, assessment guidelines and qualifications and any non endorsed components) together with details of registered Training Organisations and their scope of registration. The Internet address for the NTIS is <a href="http://www.anta.gov.au">http://www.anta.gov.au</a>
Professional Development Materials	An optional component of Training Packages which provides information for trainers on the various components of training packages and how these might be used to develop training programs.
Quality Assurance	A planned evaluation to ensure that standards are being appropriately applied and meets the needs of users. Quality assurance mechanisms are an integral part of a well-designed assessment system.
Recognition of Current Competencies (RCC)	The recognition of current skills and knowledge against relevant competency standards no matter how they have been acquired ie through formal training, work experiences and life experiences.
Recognition of Prior Learning (RPL)	The recognition of current skills and knowledge against relevant competency standards no matter how they have been acquired ie through formal training, work experiences and life experiences.
Registered Training Organisation (RTO)	Any training organisation, registered by State/Territory Training Authorities in accordance with the Australian Recognition Framework, to provide vocational education, training and/or assessment services. RTOs include TAFE Colleges/institutes, private commercial providers, community providers, schools, higher education institutions, enterprises and firms, industry bodies and any other organisation which meets the requirements for registration.
Training Package	Comprehensive integrated products which provide national benchmarks and resources for delivery, assessment and qualifications in vocational education and training. Training Packages comprise endorsed components of national competency standards, assessment guidelines and qualifications, combined with non-endorsed components which may include a learning strategy, assessment resources and professional development materials.

## Attachments

### Attachment 1 - Coal Steering Committee

#### Members

<b>Mr</b>	<b>Alan</b>	<b>Brandt (Chairman)</b>	Warkworth Mining Ltd - Peabody
<b>Mr</b>	<b>Guy</b>	<b>Mitchell</b>	BHPAC - Bris.
<b>Mr</b>	<b>Ian</b>	<b>Curtis</b>	Shell Coal Australia P/L
<b>Mr</b>	<b>Syd</b>	<b>Brown</b>	ACSA - Newstan
<b>Mr</b>	<b>Ian</b>	<b>Murray</b>	CFMEU Mining
<b>Mr</b>	<b>Greg</b>	<b>Dalliston</b>	CFMEU Mining
<b>Mr</b>	<b>Stuart</b>	<b>Gordon</b>	Powercoal
<b>Mr</b>	<b>Richard</b>	<b>Hord</b>	DET
<b>Mr</b>	<b>Duncan</b>	<b>Chalmers</b>	University of NSW

### Coal Steering Committee – OBSERVERS

#### Observers

<b>Mr</b>	<b>Bruce</b>	<b>Lovely</b>	Board of Examiners - Dept of M&E
<b>Ms</b>	<b>Bronwen</b>	<b>Jarvis</b>	Ulan Coal Mines
<b>Mr</b>	<b>Mike</b>	<b>Christie</b>	QMC
<b>Mr</b>	<b>Greg</b>	<b>Rowan</b>	Dept Mines & Energy (DME)
<b>Mr</b>	<b>Michael</b>	<b>Menzies</b>	MIM Holdings Ltd
<b>Mr</b>	<b>Peter</b>	<b>Gerdes</b>	Warkworth Mining Ltd - Peabody
<b>Mr</b>	<b>Graham</b>	<b>Gosling</b>	CEPU
<b>Mr</b>	<b>John</b>	<b>O'Brien</b>	NSW Coal Qualifications Board
<b>Mr</b>	<b>Ray</b>	<b>Fogolyan</b>	ANTA
<b>Mr</b>	<b>John</b>	<b>Royle</b>	AMWU
<b>Mr</b>	<b>Noel</b>	<b>Parish</b>	NSW Mining ITAB
<b>Mr</b>	<b>Phil</b>	<b>Stewart</b>	Qld Mining ITAB

## Attachment 2 – Attendance Lists

## NATIONAL COAL SECTOR COMPETENCY STANDARD REVIEW

## ATTENDANCE LIST FOR THE COAL TREATMENT WORKSHOP

AT EMERALD ON 9 SEPTEMBER 1996.

NAME		REPRESENTING		Telephone
First	Surname	Position	Mine/Organisation	
Peter	Fenech	Electrical Delegate	UMW Goonyella/Riverside	07 9417 904
Darryl	Hicks	P/P Foreman	Norwich Park	07 9411 292
Colin	Loadsman	P/P S/Miner	Goonyella	07 9418 091
Phil	Kelly	Eng Stream	Goonyella/Riverside	07 9413 387
Paul	Kidd	Washery Op	German Creek	850 266
Bruce	Crichton	CHUP Coordinator	German Creek	850 440
Geoff	Lindsey	Washery op	North Goonyella	404 490
Sandy	Grayson-Warry	HR Adviser-Training	Curragh/Arco	079 869 214
Ross	Meek	P/P Miner	Gregory	828 235
Brad	Glass	UMN Delegate	Gregory Mine	822 556
Garry	Johnson	CPP Manager	Gregory	828 236
Peter	Kidcaff	CPP Operator	Norwich Park	07 9411 292
Adrian	Cowan	Human Resources	Saraji	07 9412 294
Barry	Jensen	CFMEU Delegate	Norwich Park	07 9581 664
Shane	Guest	Training Coordinator	Norwich Park	07 9411 244
Tad	Kaszycki	Training & Org Development	Arco - Gordonstone	07 9828 614
Arvo	Jaavuo	Production Leader	Gordonstone	07 9828 676
Terry	Seeresini	Operations	Gordonstone	07 9828 640
Peter	Markcrow	Mechanical	Gordonstone	07 9824 877
Steven	Taylor	Prod Training Adviser	Moura	07 9909 739
Graeme	Whelan	Training Officer	Moura	07 9909 883
Bruce	Lindner	Operator/Trainer	Moura	07 9972 112
Stan	Suchowieck	Boiler Maker/Washery Operator	Oakey Creek	07 9848 653
Graham	Watson	CPP Operator	Oakey Creek	07 9848 297
Paul	Cullen	CPP Coordinator	Oakey Creek	07 9848 908

## NATIONAL COAL SECTOR COMPETENCY STANDARD REVIEW

### ATTENDANCE LIST FOR OPEN-CUT WORKSHOP

AT EMERALD ON 10 SEPTEMBER 1996.

NAME		REPRESENTING		Telephone
First	Surname	Position	Mine/Organisation	
Mal	Mahon	Mining Foreman	BHP Blackwater	
Les	Kent	Training Advisor	BHP Blackwater	860 649
Matt	Best	Mine Workers Health & Safety Training	UMW Brisbane	07 3839 8588
Bill	Kington	Drag Line Op.	Callide Coal Fields	07 9921 156
Darren	Gaw	Production Employee	Callide Coalfields	07 9924 267
Neil	Leighton	Production Foreman	Callide	07 9901 651
Peter	Fenech	Electrician	Goonyella/Riverside	07 9417 904
Colin	Loadsman	Miner	Goonyella/Riverside	07 9418 091
Phil	Kelly	Eng. Stream	Goonyella/Riverside	07 9413 387
Bruce	Lindner	Operator Trainer	Moura	07 9972 112
Steven	Taylor	Prod. Training Advisor	Moura	07 9909 739
Graeme	Whelan	Training Officer	Moura	07 9909 883
Adrian	Cowan	Human Resources	Saraji	07 9412 249
Frank	Doherty	Production Employee	Gregory	07 9822 283
Clinton	Faine	Production Employee	Gregory	07 9849 390
Ralph	Magann	Production Employee	Peak Downs	07 9418 786
Shane	Guest	Training Co-ord	Norwich	07 9411 244
Barry	Jensen	CMFEU Rep	Norwich	07 9411 222
Les	Farrell	Prod Co-ordinator	German Creek	07 9857 776
Brian	Jones	CFMEU Rep	German Creek	07 9857 487
Kevin	Luck	Training Supervisor	Curragh	07 9869 294
Darryl	Shield	Process Co-ordinator	Callide Coalfields	07 9902 544
Greg	Biggs	Training & Development Coordinator	Callide Coalfields	07 9922 388 041 989 3812
Bill	Renwick	Operator Trainer	Oaky Creek	07 9847 479
Tom	Kozak	Mining Superintendent	Oaky Creek	07 9847 250
Trevor	Ariel	Operator Trainer	Oaky Creek	07 9848 646

**NATIONAL COAL SECTOR COMPETENCY STANDARD REVIEW**  
**ATTENDANCE LIST FOR THE ENGINEERING MECHANICAL WORKSHOP**  
**AT EMERALD ON 11 SEPTEMBER 1996.**

NAME		REPRESENTING		Telephone
First	Surname	Position	Mine/Organisation	
David	Forrest	Engineer	Southern	850 436
Stephen	Clark	U/G Fitter	Oakey Creek	848 752
Peter	Leggieri	Eng Fitter	German Creek	
Kevin	Geeves	Supervisor	German Creek	850 364
Darrell	Grant	Engineer	Gordonstone Coal	828 500
Roy	Smith	Training Coordinator	Norwich Park	411 304
Ian	Black	Fitter	Capcoal Central	857 841
Ian	Hutchins	Engineer	Capcoal Central	850 523
Nev	Dorward	U/G Fitter	Oakey North	848 940
Ross	Daniel	Fitter	BHPAC Blackwater	861 469
Maurice	Bissell	Fitter	BHPAC Moura	(079) 973 039
John	Hempseed	Fitter	BHPAC Moura	(079) 971370
Barry	Jensen	CFMEU	Norwich Park	581 664
Adrian	Cowan	Human Resources	Saraji	412 249
Bob	Perrotta	Training Coordinator	Gregory	828 245
Horkie	Prow	Training Coordinator	BHPAC Blackwater	
Phillip	Bourige	Fitter	Oakey Creek	848 751
Chris	Harper	Fitter	Callide	924 010
Barry	Smith	Fitter	BHP Blackwater	827 382
Tad	Kaszycki	Org Dev Training	ARCO - Gordonstone	828 614
Robert	Delaney	Union Training Assessor	UMW P/Downs	415 501
Glenn	Esdale	Snr Maint F/Man	BHP Saraji	412 295
Jeff	Flowerday	Shift Eng	Oakey Creek	848 447
Greg	Biggs	Training & Develop Coordinator	Callide Coalfields	922 388
Morgan	Wakely	Maint Sup't	Oakey Creek	847 308
Phil	Kelly	Eng Stream	Goonyella/Riverside	(079) 413 387
Col	Loadsman	Miner	Goonyella/Riverside	(079) 418 091
Paul	Uhr	Mech Fitter	North Goonyella	(079) 551 749
Stephen	Woods	Mech Fitter	North Goonyella	(079) 548 335
Bill	Paton	Plumber	Gregory	(079) 823 653
Robert	Olive	Mnt Fitter	Gregory	(079) 822 837
Peter	Dolzan	Snr Mnt Coordinator	Gregory	(079) 828 218
Brad	Glass	UMW	Gregory	828 261
Bryan	Butler	UMW	Gordonstone	822 803

NAME		REPRESENTING		Telephone
First	Surname	Position	Mine/Organisation	
Peter	Scarp	U/G Training Coord	Gordonstone	828 511
Brian	Holmes	UMW	Gordonstone	824 052
Peter	Markcrow	Fitter	Gordonstone	824 877
Alan	Russell	Fitter	Newlands	(079) 589 268
John	Van Den Heuver	Training Officer	Newlands	(079) 405 226
Howard	Smith	Union Official	AMWU	(079) 271 487

## NATIONAL COAL SECTOR COMPETENCY STANDARD REVIEW

### ATTENDANCE LIST FOR THE ENGINEERING ELECTRICAL WORKSHOP

AT EMERALD ON 11 SEPTEMBER 1996.

NAME		REPRESENTING		Telephone
First	Surname	Position	Mine/Organisation	
Glenn	Hall	Electrician	Norwich Park	411 222
Merv	Horniblow	Electrician	Gregory	(079) 823 719
Chris	Davies	Electrician	Oakey Creek	(079) 848 501
Lloyd	Baulch	Electrician	Oakey North	(079) 848 286
Peter	Fenech	Electrician	Goonyella/Riverside	(079) 417 904
David	Forrest	Engineer	Southern	(079) 850 436
Greg	Golding	Electrician	Southern	(079) 850 445
Dave	Crane	Maint Leader	Gordonstone	(079) 828 695

**NATIONAL COAL SECTOR COMPETENCY STANDARD REVIEW**

**ATTENDANCE LIST FOR THE UNDERGROUND WORKSHOP**

**AT EMERALD ON 12 SEPTEMBER 1996.**

NAME		REPRESENTING		Telephone
First	Surname	Position	Mine/Organisation	
Shane	Brunker	Vice President	North Goonyella	404 449
Stephen	Jones	U/G Miner	North Goonyella	404 449
Ian	Ross	S.T. Officer	North Goonyella	404 420
Gordon	Wilson	Delegate	Oakey North	848 739
Bill	Picot	President	Oakey North	848 343
John	Allen	President	Gordonstone	824 441
Tad	Kaszycki	Org. Dev. Training	ARCO - Gordonstone	828 614
Peter	Sharp	U/G Training	Gordonstone	828 511
Bryan	Butler	Secretary	Gordonstone	822 803
Brian	Homes	U/G Training	Gordonstone	824 052
Russell	Albury	Services Superintendent	Oakey Creek No.1	847 393
Darryl	Donnellan	U/G Trainer	Oakey Creek No.1	847 478
Ross	Wyatte	U/G Trainer	Oakey Creek No.1	847 478
Keith	Weise	TTF Member/Trainer	Crinum BHP	823 086
Stephen	Jones	Training Coordinator	Crinum BHP	828 116
David	Walker	U/G Trainer	Central Capcoal	857 616
Paul	Spence	U/G Miner	Southern Capcoal	857 593
John	Rowe	U/Manager	Southern Capcoal	857 228
Bruce	Danvers	U/Manager	Central Capcoal	857 803
Mick	McWilliam	Training Officer	Capcoal	850 322

## NATIONAL COAL SECTOR COMPETENCY STANDARD REVIEW

### ATTENDANCE LIST FOR THE GENERAL WORKSHOP

**AT BRISBANE ON 13 SEPTEMBER 1996.**

NAME		REPRESENTING		Telephone
First	Surname	Position	Mine/Organisation	
David	Ashen	Trainer O/P	Tarong Coal	071 624 835
David	Humphreys	Principal Engineer	Simtars	3810 6322
Paul	Barnes	Research Scientist	Simtars	3810 6319
Steve	Brunker	Training Com	Ebinezer	3201 4105
Steve	Baker	Engineer	Tarong Coal	071 624 782
Peter	Guinea	Trainer Oper	Tarong Coal	071 624 598
Charlie	Murray	Training Manager	BHP Coal	073 226 0600
Rodney	Golding	PEICM	DME	073 237 1627
Adrian	Cowan	Senior HR Officer	Saraji/BHP	079 412 249
David	Kidd	Senior HR Adviser	ARCO Coal	073 867 8216
Donald	Wiegand	Training Comm	Oakleigh Colliery	074 641 600
Matt	Best	UMW District Safety Health Training Insp	UMW QLD District	073 8398 588
Darryl	Brumpton	Consultant	Jeuinbah East	074 643 990



## NATIONAL COAL SECTOR COMPETENCY STANDARD REVIEW

### ATTENDANCE LIST FOR THE UNDERGROUND PRODUCTION WORKSHOP AT PENRITH ON 16 SEPTEMBER 1996.

NAME		REPRESENTING		Telephone
First	Surname	Position	Mine/Organisation	
Danny	Ponton	Training Coordinator	Ulan Coal	063 725 363
Warwick	Anderson	Under Manager ACGA Rep	West Cliff Colliery	046 404 188
John	Young	Training Committee	Tahmoor	046 400 126
Ralph	Whitfield	Fed	Munmorah	043 991 488
Tony	Mildow	Deputy Manager	Charbon Coal	063 794 404
Albert	Fittler	Safety Officer	Charbon Coal	065 794 404
Barrie	Haigh	Training Manager	Clarence	063 501 954
Howard	Fisher	President West Dist	CFMEU	063 523 177
Stephen	Ferris	Project Manager Engineering	Power Coal	049 595 722
Kenneth	Seabrook	Project Manager Mining Training	Power Coal	049 595 722
Tony	Jones	Mine Electrical Engineer	Power Coal - Endeavour	043 909 600
Ian	Vitnell	Deputy	Power Coal - Endeavour	043 909 600
Michael	Morris	Fed	Power Coal - Endeavour	049 421 106
Steven	Screen	Fire Shiftman	Power Coal - Myuna	049 468 815
Alex	Paterson	Under Manager	Newstan	049 560 200
Noel	Parish	Executive Officer	NSW Mining ITAB	02 9286 1433
Des	Caulfield	Executive Officer	NSW Mining ITAB	02 9286 1433
Gary	Brown	Training Manager	Oakbridge	049 981 140

## NATIONAL COAL SECTOR COMPETENCY STANDARD REVIEW

### ATTENDANCE LIST FOR ELECTRICAL WORKSHOP

AT PENRITH ON 17 SEPTEMBER 1996.

NAME		REPRESENTING		Telephone
First	Surname	Position	Mine/Organisation	
Geoff	Dyson	Electrician (Training Committee)	Munmorah Colliery	H 049 469916 W 043 991388
Gary	Young	Electrician (Training Committee)	Myuna Colliery	049 469427
Scott	Hamment	Electrician (Training Committee)	Clarence Colliery	Clarence Colliery C/- B Haigh
Alan	Rumble	Training Coordinator	Hunter Valley Mine	065 700217
Stephen	Ferris	Project Manager Engineering Training	Powercoal	049 595 722
Kenneth	Seabrook	Project Manager Mining Training	Powercoal	049 595 722
Tony	Jones	Mine Elect.	Endeavour Colliery	043 909600
Peter	Hadden	Electrician (Training Committee)	Endeavour Colliery	043 499313
John	Young	Training Committee	Tahmoor Colliery	046 400126
Noel	Parish	Executive Officer	NSW Mining ITAB	02 9286 1433
Wayne	McAndrew	Dist. Official West	CFMEU	063 523 177

**NATIONAL COAL SECTOR COMPETENCY STANDARD REVIEW**  
**ATTENDANCE LIST FOR THE ENGINEERING MECHANICAL WORKSHOP**  
**AT PENRITH ON 18 SEPTEMBER 1996.**

NAME		REPRESENTING		Telephone
First	Surname	Position	Mine/Organisation	
Terry	Lawrence	T/Comm	Power Coal	
Wayne	McAndrew	V/President	CFMEU	(063) 523 177
Allan	Baker	Leading Hand Fitter-Trainer	Clarence Colliery	(063) 514 184
Maurice	Gammidge	Fitter Trainer	Munmorah	(043) 991 388
Stephen	Ferris	Project Manager Engineering Training	Power Coal	(049) 595 722
Kenneth	Seabrook	Project Manager Mining Training	Power Coal	(049) 595 722
Tony	Jones	Mine Elec Eng	Endeavour Colliery	(043) 909 600
Alan	Rumble	Training Coordinator	Hunter Valley Coal & Allied	(065) 700 217
Bob	Madeley	Engineering	Tahmoor Mine	(046) 400 187
John	Young	Training Committee	Tahmoor Colliery	(046) 400 100
Noel	Parish	Exec Officer	NSW Mining ITAB	02 9286 1433
Des	Caulfield	Exec Officer	National Mining ITAB	02 9286 1433

## NATIONAL COAL SECTOR COMPETENCY STANDARD REVIEW

### ATTENDANCE LIST FOR THE COAL PREPARATION WORKSHOP

**AT SINGLETON ON 20 SEPTEMBER 1996.**

NAME		REPRESENTING		Telephone
First	Surname	Position	Mine/Organisation	
Noel	Parish	Executive Officer	NSW Mining ITAB	02 9286 1433
Des	Caulfield	Executive Officer	NSW Mining ITAB	02 9286 1433
Greg	Grant	Training Manager	Bulga Coal	065 702 407
Neil	Hassett	CPP Supervisor	Bulga Coal	065 702 560
Peter	Gerdes	Training Officer	Warkworth	065 701 500
Keith	Pracy	CPP Supervisor	ACSA Clarence	063 555 740
Alex	Arthur	Manager	Liddell Coal	065 761 121

**BLACK COAL STANDARDS REVIEW PROJECT**

**LIST OF ATTENDEES AT NSW WORKSHOPS**

Name	Mine	Contact	
		Phone	Fax
<b><u>Open Cut</u></b>			
<b><u>Tuesday 17 June</u></b>			
COOPER, Bob	BCA	06-288 4309	06-288 3060
CAULFIELD, Des	National Mining ITAB		
PARISH, Noel	National Mining ITAB		
HEUSTON, Wayne	Bayswater Colliery Company	065-723476	
IZZARD, Paul	Bayswater Colliery Company	065-451889	
BADMAN, Brad	Peabody Ravensworth	065-700780	065-700747
DARK, Greg	C&A, Hunter Valley #1	065-700273	065-700275
FORD, Wallace	Bulga Coal	065-702400	
O'NEILL, Stephen	Bulga Coal	065-702400	
<b><u>Coal Preparation</u></b>			
<b><u>Wednesday 18 June</u></b>			
COOPER, Bob	BCA	06-288 4309	06-288 3060
PARISH, Noel	NSW Mining ITAB		
TROTTER, Bob	Bulga Coal	065-702400	
DUNN, Terry	Liddell Coal	065-761121	065-761142
<b><u>General</u></b>			
<b><u>Thursday 19 June</u></b>			
<b><u>Friday 20 June</u></b>			
WILLCOX, Peter	BCA	06-288 8124	06-288 3060
HEUSTON, Wayne	Bayswater Colliery	065-723476	
IZZARD, Paul	Bayswater Colliery	065-451889	
SMITH, Peter	Chain Valley Colliery	043-580715	
DODT, Charlie	Chain Valley Colliery	043-580715	
FORD, Wallace	Bulga Coal	065-702400	
O'NEILL, Stephen	Bulga Coal	065-702400	
KELLY, Peter	Warkworth	047-906505	
CALWELL, Gary	Chain Valley Colliery	043-580700	
SMITH, Peter	Chain Valley Colliery		043-580779
RUMBLE, Alan	Hunter Valley No. 1	065-700217	065-700277
BADMAN, Brad	Peabody - Ravensworth Mine	065-700700	065-700747
<b><u>Underground</u></b>			
<b><u>23 June, Penrith UG</u></b>			
HOWES, Phil	Tahmoor Colliery		
YOUNG, John	Tahmoor Colliery		
LOADSMAN, Neal	Dartbrook		
ONLEY, Grant	Dartbrook		
MITCHELL, Michael	Chain Valley		
DODT, Charlie	Chain Valley		
MASON, Greg	Clarence Colliery		
NEALE, Greg	ACSA		
PARISH, Noel	NSW Mining ITAB		

Name	Mine	Contact	
		Phone	Fax
<p><b><u>Underground</u></b>  <b><u>24 June, Penrith</u></b>                      ONLEY, Grant                      MULLHOLLAND, Wayne                      LOADSMAN, Neal                      YOUNG, John</p>	<p>Tahmoor Mine                      Tahmoor Colliery                        Dartbrook                      Tahmoor</p>		
<p><b><u>Core</u></b>  <b><u>25 June Penrith</u></b>                      PARISH, Noel                      NEALE, Greg                      BROWN, Syd                      SOLOMON, Michael</p>	<p>NSW Mining ITAB                      ACSA                      Newstan                      Cumnock No. 1</p>		049-504230
<p><b><u>Leadership</u></b>  <b><u>26 June Penrith</u></b>                      PARISH, Noel                      NEALE, Greg                      BROWN, Syd                      SOLOMON, Michael</p>	<p>NSW Mining ITAB                      ACSA                      Newstan                      Cumnock No. 1</p>		049-504230

**MECHANICAL ENGINEERING, 14 - 18 July 1997**

Name	Mine	Phone
PUKAVANCE, Noel	165 Ungala Road, BLACKSMITHS NSW 2281	049 712 608
KELLY, Phil	Goonyella / Riverside Mine BHPC Via Moranbah Qld 4744	079 404 764
BIGGS, Greg	Callide Coalfields Pty Ltd, PO Box 144, Biloela Qld 4715	079 922 388
COWAN, Adrian	Saraji Mine, PMB Dysart Qld 4745	079 412 249
ANSTISS, Terry	BHP Coal Pty Ltd PO Box 225, Moura Qld 4718	079 909 818

**QUEENSLAND COAL COMPETENCY STANDARDS WORKSHOPS  
OPEN CUT - 15 July 1997**

Name	Mine	Contact	
		Phone	Fax
ARTHUR, Peter	South Blackwater Coal P/L	079 805 242	079 805 225
DALLISTON, Greg	CFMEU	07 3839 8588	07 3839 8404
ELZER, Kathy	BHP Saraji Mine	079 412 276	079 581 451
FLOHR, Des	BHP Saraji Mine	079 412 276	079 581 451
GAW, Darren	Callide Coalfields	079 922 388	079 923 947
GUEST, Shane	BHP Norwick Park Mine	079 411 244	079 582 861
LINDNER, Bruce	BHP Moura Mine	079 909 739	079 909 702
LUCK, Kevin	Curragh Qld Mining	079 869 294	079 869 326
McNUTT, Marty	Eltin Limited (Ebenezer Mine)	08 9334 8888	08 9334 8800
MORTIMER, Bob	GHP Goonyella Riverside Mine	079 404 787	079 404 466
PERROTTA, Bob	Gregory Mine	079 828 245	079 828 274
RENWICK, Bill	Oaky Creek Coal	079 847 380	079 847 205
TREDWELL, Roger	Curragh Qld Mining	079 869 294	079 869 326
WHELAN, Graeme	BHP Moura Mine	079 909 739	079 909 702
WRIGHT, H	BHP Norwick Park Mine	079 411 244	079 582 861

**QUEENSLAND COAL COMPETENCY STANDARDS WORKSHOPS  
COAL PREPARATION/TREATMENT - 16 July 1997**

Name	Mine	Contact	
		Phone	Fax
ARTHUR, Peter	South Blackwater Coal P/L	079 805 242	079 805 225
CULLEN, Paul	Oaky Creek Coal	079 847 380	079 847 205
DALLISTON, Greg	CFMEU	07 3839 8588	07 3839 8404
ELZER, Kathy	BHP Saraji Mine	079 412 276	079 581 451
GUEST, Shane	BHP Norwick Park Mine	079 411 244	079 582 861
J Single & 2 Others	BHP Norwick Park Mine	079 411 244	079 582 861
LINDNER, Bruce	BHP Moura Mine	079 909 739	079 909 702
MORTIMER, Bob	GHP Goonyella Riverside Mine	079 404 787	079 404 466
NEWELL, John	South Blackwater Coal	079 805 205	079 805 202
SCERESINE, Terry	Gordonstone Coal Management	079 828 575	079 820 048
TREDWELL, Roger	Curragh Qld Mining	079 869 294	079 869 326
WHELAN, Graeme	BHP Moura Mine	079 909 739	079 909 702

**QUEENSLAND COAL COMPETENCY STANDARDS WORKSHOPS  
CORE / LEADERSHIP - 17 July 1997**

Name	Mine	Contact	
		Phone	Fax
ARTHUR, Peter	South Blackwater Coal P/L	079 805 242	079 805 225
DALLISTON, Greg	CFMEU	07 3839 8588	07 3839 8404
ELZER, Kathy	BHP Saraji Mine	079 412 276	079 581 451
FLOHR, Des	BHP Saraji Mine	079 412 276	079 581 451
GUEST, Shane	BHP Norwick Park Mine	079 411 244	079 582 861
JEFFERY, Rickie	Central Queensland Uni	079 822 904	079 822 031
McCONOCHIE, R	BHP Norwick Park Mine	079 411 244	079 582 861
SMITH, Anne	Central Queensland Uni	079 822 904	079 822 031
TOBIN, Steve	Oaky Creek Coal	079 847 380	079 847 205

**QUEENSLAND COAL COMPETENCY STANDARDS WORKSHOPS  
CORE / LEADERSHIP - 18 July 1997**

Name	Mine	Contact	
		Phone	Fax
ARTHUR, Peter	South Blackwater Coal P/L	079 805 242	079 805 225
DALLISTON, Greg	CFMEU	07 3839 8588	07 3839 8404
ELZER, Kathy	BHP Saraji Mine	079 412 276	079 581 451
FLOHR, Des	BHP Saraji Mine	079 412 276	079 581 451
FORBES, Tim	Oaky Creek Coal	079 847 265	079 847 304
GUEST, Shane	BHP Norwick Park Mine	079 411 244	079 582 861
JEFFERY, Rickie	Central Queensland Uni	079 822 904	079 822 031
McCONOCHIE, R	BHP Norwick Park Mine	079 411 244	079 582 861
SIMPSON, John	South Blackwater	079 805 424	079 827 137
SMITH, Anne	Central Queensland Uni	079 822 904	079 822 031
TOBIN, Steve	Oaky Creek Coal	079 847 380	079 847 205

**QUEENSLAND COAL COMPETENCY STANDARDS WORKSHOPS  
GENERAL COMPETENCIES - 21 July 1997**

Name	Mine	Contact	
		Phone	Fax
ARTHUR, Peter	South Blackwater Coal P/L	079 805 242	079 805 225
DALLISTON, Greg	CFMEU	07 3839 8588	07 3839 8404
DELANEY, Bob	Peak Downs	079 688 308	
ELZER, Kathy	BHP Saraji Mine	079 412 276	079 581 451
FLOHR, Des	BHP Saraji Mine	079 412 276	079 581 451
GAW, Darren	Callide Coalfields	079 922 388	079 923 947
HALLAM, Keith	South Blackwater Coal	079 827 239	
KENT, Les	BHP Blackwater	079 860 649	079 826 636
MORTIMER, Bob	Goonyella Coalfields	079 404 787	079 404 766
RENWICK, Bill	Oaky Creek Coal	079 847 380	079 847 205



**QUEENSLAND COAL COMPETENCY STANDARDS WORKSHOPS  
GENERAL COMPETENCIES - 22 July 1997**

Name	Mine	Contact	
		Phone	Fax
ARTHUR, Peter	South Blackwater Coal P/L	079 805 242	079 805 225
DALLISTON, Greg	CFMEU	07 3839 8588	07 3839 8404
DELANEY, Bob	Peak Downs	079 688 308	
DONNELLAN, Darryl	Oaky Creek Coal	079 847 478	079 847 205
ELZER, Kathy	BHP Saraji Mine	079 412 276	079 581 451
FLOHR, Des	BHP Saraji Mine	079 412 276	079 581 451
FORBES, Tim	Oaky Creek Pty Ltd	079 847 265	079 847 304
GAW, Darren	Callide Coalfields	079 922 388	079 923 947
GUEST, Shane	BHP Norwich Park Mine	079 411 244	079 582 861
HALLAM, Keith	South Blackwater Coal	079 827 239	
KENT, Les	BHP Blackwater	079 860 649	079 826 636
McCONCHIE, R	BHP Norwich Park Mine	079 411 202	079 582 357
McNUTT, Marty	Eltin Limited (Ebenezer Mine)	08 933 4888	08 933 4880
MORTIMER, Bob	Goonyella Coalfields	079 404 787	079 404 766
RENWICK, Bill	Oaky Creek Coal	079 847 380	079 847 205
RUMPF, Neil	Oaky Creek No 1	079 847 478	
SIMPSON, John	South Blackwater Coal	079 805 424	079 827 137
SMITH, Graeme	BHP Blackwater Mine	079 860 683	079 826 825
TOBIN, Steve	Oaky Creek Coal	079 847 380	079 847 205
WALLIS, Kellie	Eltin Limited (Ebenezer Mine)	07 5464 3344	07 5464 3311
WHELAN, Graeme	BHP Moura Mine	079 909 852	079 909 898

**QUEENSLAND COAL COMPETENCY STANDARDS WORKSHOPS  
UNDERGROUND COMPETENCIES - 23 July 1997**

Name	Mine	Contact	
		Phone	Fax
DALE, Rick	Oaky North	079 847 452	079 847 356
DALLISTON, Greg	CFMEU	07 3839 8588	07 3839 8404
DONNELLAN, Darryl	Oaky Creek Coal	079 847 478	079 847 205
RUMPF, Neil	Oaky Creek No 1	079 847 478	
SIMPSON, John	South Blackwater Coal	079 805 424	079 827 137

**QUEENSLAND COAL COMPETENCY STANDARDS WORKSHOPS  
UNDERGROUND COMPETENCIES - 24 July 1997**

Name	Mine	Contact	
		Phone	Fax
COREY, Sean	Oaky Creek Coal		
DALE, Rick	Oaky North	079 847 452	079 847 356
DALLISTON, Greg	CFMEU	07 3839 8588	07 3839 8404
DONNELLAN, Darryl	Oaky Creek Coal	079 847 478	079 847 205
SIMPSON, John	South Blackwater Coal	079 805 424	079 827 137

**Consultation List – Statutory Functions Workshops**

<b>Name</b>	<b>Organisation</b>	<b>Role/Comments</b>
Alan Bradford		<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ No response</li> </ul>
Alan Brandt	Warkworth Mining (02) 657 01500	<ul style="list-style-type: none"> <li>◆ Project Steering Committee</li> <li>◆ Telephone briefings</li> </ul>
Albert Johnson	Boral	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Distributed to other stakeholders</li> <li>◆ No response</li> </ul>
Alex Walters	Rio Tinto (07) 4980 2403	<ul style="list-style-type: none"> <li>◆ Attended Emerald meeting/workshop</li> </ul>
Andrew Longland	Quarry Mining Industrial Trainers (07) 3349 1399	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Attended Brisbane workshop</li> </ul>
Arvo Varveri	Moranbah Nth (07) 4968 8669	<ul style="list-style-type: none"> <li>◆ Information sent</li> </ul>
Bevan Reibel	Sth Blackwater (07) 498 25780	<ul style="list-style-type: none"> <li>◆ Attended Emerald meeting/workshop</li> </ul>
Bill Dixon	Theiss Contractors (07) 336 80526	<ul style="list-style-type: none"> <li>◆ Project Steering Committee</li> </ul>
Bill Keating	BHP	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ No response</li> <li>◆ Apology for Emerald workshop</li> </ul>
Bob Case	Austcoal (02) 4640 0152	<ul style="list-style-type: none"> <li>◆ Phone briefing</li> <li>◆ Information sent</li> <li>◆ No response</li> </ul>
Bob Gibbons	Joint Coal Board (02) 4948 9011	<ul style="list-style-type: none"> <li>◆ Phone briefing</li> <li>◆ Contribution to development of job functions</li> <li>◆ Information sent for comment</li> <li>◆ attended Brisbane meeting – provide further contacts</li> </ul>
Bob Goering	SA Chamber of Mines and Energy	<ul style="list-style-type: none"> <li>◆ Phone briefing</li> <li>◆ Information sent</li> <li>◆ Meeting re qualifications and brown coal</li> </ul>
Bob Kennedy	DMR (02) 4227 1699	<ul style="list-style-type: none"> <li>◆ Phone briefing</li> <li>◆ Provision of comments re job functions</li> <li>◆ Information sent</li> </ul>
Bob Paton	MERS ITAB (02) 9955 5500	<ul style="list-style-type: none"> <li>◆ Feedback re use of existing mechanical engineering units and need to ensure that MERS core is included.</li> <li>◆ In principle agreement</li> <li>◆ Further feedback will be required when mechanical is finalised</li> </ul>
Bob Webber	Oceanic (02) 4958 4468	<ul style="list-style-type: none"> <li>◆ Attended NSW workshop</li> </ul>

<b>Name</b>	<b>Organisation</b>	<b>Role/Comments</b>
Brad Bauer	DME (07) 4938 4683	<ul style="list-style-type: none"> <li>◆ Information sent re shot firing</li> </ul>

		<ul style="list-style-type: none"> <li>◆ No response</li> </ul>
Brad Watson	Wambo Colliery (02) 6570 2307	<ul style="list-style-type: none"> <li>◆ Telephone briefing</li> <li>◆ Information sent</li> </ul>
Brian Gover	South Blackwater (07) 4980 5255	<ul style="list-style-type: none"> <li>◆ Attended Emerald meeting/workshop</li> </ul>
Greg Lyne	DME (07) 49838 4123	<ul style="list-style-type: none"> <li>◆ concern that too many competencies are included compared to present requirements</li> <li>◆ specific comments for each function – some issues addressed in Emerald re electrical, mechanical and OCE</li> <li>◆ Attended Emerald meetings/workshops</li> </ul>
Bruce Lovely	DME (07) 3237 1631	<ul style="list-style-type: none"> <li>◆ Meeting re project scope</li> <li>◆ Meeting re job functions</li> <li>◆ Brisbane PSC meeting</li> <li>◆ Information sent</li> <li>◆ provided information and comments re proposed units and existing requirements – comments re AQF levels raised at Emerald meetings and comments re core and option structures addressed</li> </ul>
Bruce Robinson	Camberwell Coal	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Comments re original job function descriptors for electrical engineering - too much emphasis on underground</li> </ul>
Carl Tinsley	NSW ITAB (02) 9286 1433	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Assistance in identifying personnel for NSW workshop</li> <li>◆ Project Steering Committee</li> </ul>
Chris Fraser	Victorian Chamber of Mines (03) 9629 8603	<ul style="list-style-type: none"> <li>◆ Meeting to discuss qualifications and job functions.</li> <li>◆ Adjustments made to job function descriptors</li> </ul>
Danny Duke	Rocla (02) 9928 3653	<ul style="list-style-type: none"> <li>◆ Meeting re quarry sector</li> <li>◆ General satisfaction with existing package</li> <li>◆ Information distributed</li> </ul>
Dave Alcock	DME (07) 4938 4127	<ul style="list-style-type: none"> <li>◆ Attended Emerald meeting/workshop</li> <li>◆ Agreed to facilitate comment re mechanical competencies in QLD</li> </ul>
Dave Horner	DME (07) 4953 3000	<ul style="list-style-type: none"> <li>◆ Attended Emerald meeting/workshop</li> </ul>

<b>Name</b>	<b>Organisation</b>	<b>Role/Comments</b>
Dave Slape	South Blackwater (07) 4980 5403	◆ Attended Emerald meeting/workshop
David Granger	Newstan Colliery (02) 4950 4230	◆ Attended NSW workshop ◆ Information sent
David Mackie	DME (07) 3237 1628	◆ Meeting re job functions ◆ Information sent
Dennis Spruce	DMR (02) 4942 2300	◆ Attended NSW workshop
Des Hancox	Namoi Hunter (02) 6577 4210	◆ Attended NSW workshop ◆ Information sent
Doug Core	Gregory Mine (07) 4982 8213	◆ Attended Emerald meeting/workshop
Doug Head	Peabody Resources (02) 6570 0747	◆ Attended NSW workshop
Dugald Gray	Nucrush (07) 5573 1388	◆ Information sent
Frank Locke	Callide (07) 4990 1825	◆ Information sent for comment ◆ Attended Emerald meeting/workshop
G Norris		◆ Information sent ◆ No response
Gary Brown	United (02) 6578 9529	◆ Information sent ◆ Phone briefing, no response
George Karooz	Peabody Moura Mine (07) 3307 8135	◆ Information sent ◆ No response
George Tremlett	QMITAB (07) 3221 2994	◆ Project Steering Committee ◆ State and Territory ITAB Network ◆ Assistance in identifying QLD stakeholders,. attended QLD workshops – Brisbane and Emerald
Gil Court	NT Minerals ITC (08) 8981 0077	◆ State and Territory ITAB network
Gordon Jervis		◆ Information sent ◆ No response
Graham Callinan	South Blackwater (07) 4980 5517	◆ Attended Emerald meeting/workshop
Graham Leatherland	NSW Surveyors Board (02) 6332 8236	◆ Surveying information sent
Graham Plath	Morambah North	◆ Information sent ◆ No response
Graham Terrey	DMR (02) 9981 8470	◆ Telephone briefing ◆ Meeting re job functions ◆ Meeting re qualifications and competency map ◆ Information sent
Graham Willetts	Rio Tinto (07) 4980 2342	◆ Attended Emerald meeting/workshop

<b>Name</b>	<b>Organisation</b>	<b>Role/Comments</b>
Greg Biggs	Callied (07) 4990 1643	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Attended Emerald workshop/workshop</li> </ul>
Greg Cocks	Cornwell Coal (Tas)	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ No response</li> </ul>
Greg Dalliston	CFMEU (07) 3839 8588	<ul style="list-style-type: none"> <li>◆ Project Steering Committee</li> <li>◆ Attended Brisbane meetings and Emerald workshops</li> <li>◆ Distribution of information to stakeholders</li> <li>◆ Assistance in identifying OCE units and shot firing units</li> <li>◆ Provided curriculum information in these areas</li> <li>◆ Reviewed drafts of OCE units</li> </ul>
Greg Rowan	DME (07) 3235 4442	<ul style="list-style-type: none"> <li>◆ Project Steering Committee</li> <li>◆ Meetings re job functions and competency maps</li> <li>◆ Attendance at Brisbane meetings and Emerald workshops.</li> <li>◆ Concern with lack of consultation during development – provided assistance in organising and facilitating QLD meetings to promote wider consultation</li> <li>◆ Distributed information to other stakeholders</li> <li>◆ Coordinated some responses from Queensland stakeholders</li> </ul>
Guy Mitchell	BHP Coal (07) 3226 0619	<ul style="list-style-type: none"> <li>◆ Project Steering Committee</li> <li>◆ written response at request of DME</li> <li>◆ increase core technical competencies at expense of some existing core which mine workers will already possess</li> <li>◆ re-structured quals address some of these concerns whilst others may be assessed trough RPL and RCC</li> <li>◆ agreed to assist in addressing some issues regarding lack of project understanding in industry</li> <li>◆ assistance in distributing information and coordinating responses from some stakeholders</li> </ul>

<b>Name</b>	<b>Organisation</b>	<b>Role/Comments</b>
Hugh Taylor	Taylor Mining Services	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Attended Brisbane workshop</li> <li>◆ Provided comments regarding surveying – identified units from existing coal/extractive comps and areas for additions or new comps for (propose to include as RoVs)</li> <li>◆ Received draft surveying units for comment</li> </ul>
Ian Coad	Lo Yang (03) 5173 3494	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Site visit</li> <li>◆ Contribution to brown coal units</li> <li>◆ Contribution to job functions</li> </ul>
Ian Hodges	GNS Engineering (07) 4952 4922	<ul style="list-style-type: none"> <li>◆ Phone briefing</li> <li>◆ Attended Emerald meeting/workshop</li> <li>◆ Information sent</li> </ul>
Ian Murray	United Mineworkers (02) 4990 7600	<ul style="list-style-type: none"> <li>◆ Meeting for project scope</li> <li>◆ Project Steering Committee</li> <li>◆ Attended Brisbane meeting</li> </ul>
Ian Neil	Bayswater (02) 643 4488	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ sent report of Brisbane meeting with request for comments on OCM comps – no reply No response</li> </ul>
Ian Smith	Roche Bros. (07) 3249 6666	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Meeting re project scope and job functions</li> </ul>
Igor Skofic	Eloura Colliery (02) 4262 1355	<ul style="list-style-type: none"> <li>◆ Attended NSW workshop</li> </ul>
Jeff McKerihan	BHP (07) 4968 8383	<ul style="list-style-type: none"> <li>◆ Attended Emerald meeting/workshop</li> </ul>
Jim Armstrong	Moura Mine (07) 4990 9741	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Attended Emerald meeting/workshop</li> </ul>
John Axelsen	Sth Blackwater (07) 4980 5242	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Attended Emerald meeting/workshop</li> </ul>
John Connolly	BHP (07) 4940 4610	<ul style="list-style-type: none"> <li>◆ Attended Emerald meeting/workshop</li> </ul>
John Hanley	National Mining Training Centre (03) 5120 4534	<ul style="list-style-type: none"> <li>◆ Meeting re brown coal, Site visits</li> <li>◆ On going communication and visits re brown coal inclusion</li> </ul>
John Janetski	(02) 6570 1121	<ul style="list-style-type: none"> <li>◆ Phone briefing re open cut examiner</li> <li>◆ Information sent</li> </ul>
John Kabel	DME (07) 3237 1105	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Meeting re job functions, competency mapping and qualifications</li> <li>◆ Attended Brisbane workshop</li> <li>◆ Facilitated development of new competency for electrical</li> </ul>
<b>Name</b>	<b>Organisation</b>	<b>Role/Comments</b>
John Mitas	DNRE (03) 9412 5083	<ul style="list-style-type: none"> <li>◆ Telephone briefing</li> </ul>

		◆ Information sent
John O'Brien	DMR (02) 9901 8589	◆ Telephone briefing ◆ Information sent ◆ Assistance in identifying NSW stakeholders
John Palmer	Newlands (07) 4940 5276	◆ Attended Emerald meeting/workshop
John Pringle	Boral Quarries (07) 3867 7408	◆ Information sent ◆ Meeting re job functions and project scope
John Rowell	NSW TAFE Commission (02) 9809 3559	◆ Information sent
John Wardby	DMR (02) 4942 2300	◆ Telephone briefing ◆ Information sent ◆ Assistance in identifying personnel for NSW workshop ◆ Suggested inclusions for elect. eng. ◆ Comments re job functions to enable inclusion of underground
Ken Byers	DME (07) 4953 3000	◆ written response at request of DME ◆ suggests electrical should be at AQF 6 – issue raised and addressed at Emerald workshop August 17 ◆ electives for electrical should cover design of power distribution, hazardous areas, failure mechanisms, mining systems. Attempt to address these issues with new electrical unit.
Kerry McTagart	Coal and Allied (02) 6570 0277	◆ Attended NSW workshop
Kim Tynan	Moura Mine (07) 4990 9745	◆ Information sent ◆ Attended Emerald meeting/workshop
Krysyana Odermatt	Flinders Power (08) 8675 4270	◆ Site visit – Leigh Creek ◆ Information forwarded to SA stakeholders
Lee Jackson	WA Chamber of Minerals & Energy (08) 9325 2955	◆ State and Territory ITAB Network
Leo Roberts	DMR (02) 9901 8550	◆ Telephone briefing ◆ Information sent ◆ Input to job functions
Les Darwen	German Creek Mine	◆ written response to DME. ◆ move some technical electives for electrical to technical core (addressed)
Lester Davis	Theiss Contractors (07) 3275 8517	◆ Delegated to Bill Dixon
Lionel Smith	BHP (07) 4982 8142	◆ Attended Emerald meeting/workshop
Mario Donovan	(07) 4958 1771	◆ Attended Emerald meeting/workshop
<b>Name</b>	<b>Organisation</b>	<b>Role/Comments</b>
Mark Adlam	Curragh Mine 0419 713 130	◆ Attended Emerald meeting /workshop
Mark Donghi	Kestral Coal Mine	◆ Information sent



		◆ No response
Mike Caffevy	DME (07) 4938 4134	◆ Attended Emerald meeting/workshop
Mike Christie	Stanmore Resources (07) 5496 3164	◆ Phone briefing ◆ Information sent
Mike Walker	DME (07) 4938 4121	◆ Attended Emerald meeting/workshop
Morgan Wakely	Oaky Creek (07) 4984 7308	◆ Information sent
Nick Arnold	Peabody Resources (02) 6570 0751	◆ Attended NSW workshop
Noel Parish	NSW Mining ITAB (02) 9286 1433	◆ State and territory ITAB network ◆ Project Steering Committee ◆ Assistance organising NSW workshop and stakeholders
Ottmar Helm	Tas Minerals Processing ITB (03) 6278 1424	◆ State and Territory ITAB network
Paul Grogan	Peak Downs	◆ Information sent ◆ No response
Paul Kennett	Vic ESTB (03) 9417 2277	◆ State and territory ITAB network
Paul Macklin	Newlands (07) 4940 5448	◆ Attended Emerald meeting/workshop
Paul McLaughlin	Blair Athol	◆ Information sent ◆ Attended Emerald workshop
Peter Arthur	Sth. Blackwater (07) 4980 5242	◆ Information sent ◆ Comments re job functions
Peter Binnie	Mt Isa Mines	◆ Information sent ◆ No response
Peter Coffey	Dartbrook Coal (02) 6541 1935	◆ Attended workshop NSW ◆ Information sent
Peter Crawford	Jellinbah	◆ Information sent ◆ No response
Peter Dolzan	Gregory (07) 4982 8214	◆ Information sent ◆ Telephone contact
Peter Hibble	(07) 4990 2518	◆ Attended Emerald meeting/workshop
Peter Kuhle	Kestral (07) 4982 8642	◆ Information sent ◆ Attended Emerald meeting/workshop
Phil Orr	Ulan Colliery (02) 6372 5361	◆ Telephone briefing re surveyors functions ◆ Received final draft of surveying comps for comment
Phil Ruffle	Hunter Institute of Technology (02) 4936 0321	◆ Telephone briefing ◆ Information sent ◆ Comments received on competency mapping

<b>Name</b>	<b>Organisation</b>	<b>Role/Comments</b>
Phil Stewart	QMITAB (07) 3852 3911	<ul style="list-style-type: none"> <li>◆ Project Steering Committee</li> <li>◆ State and Territory ITAB Network</li> </ul>
Prof Jim Joy	Minerals Industry Safety and Health Centre (07) 3365 8334	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Meeting re job functions and project scope</li> </ul>
Rick Carins	Cumnock Colliery (02) 6576 0525	<ul style="list-style-type: none"> <li>◆ Phone briefing regarding surveying</li> <li>◆ Information sent</li> <li>◆ Provided other contacts</li> </ul>
Rob Moore	Mount Owen Mine	<ul style="list-style-type: none"> <li>◆ sent report of Brisbane meeting with request for comments on OCM comps – no reply</li> </ul>
Rob O'Smotherly	Newlands (07) 4940 5276	<ul style="list-style-type: none"> <li>◆ Attended Emerald meeting/workshop</li> </ul>
Robert Regan	DNR (02) 9981 8470	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Meetings re job functions, qualifications and competency maps</li> </ul>
Rod Stacey	Drayton Coal (02) 6542 0362	<ul style="list-style-type: none"> <li>◆ Attended NSW workshop</li> </ul>
Roger Mathews	Mines Inspectorate SA (08) 8226 0222	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Telephone briefing</li> </ul>
Ron Cunnion	(07) 4986 0311	<ul style="list-style-type: none"> <li>◆ Attended Emerald meeting/workshop</li> </ul>
Ron Griffey	Pioneer (07) 3246 550	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Meeting re job functions and scope</li> <li>◆ Attended Brisbane workshop</li> </ul>
Ross Wilson	Drayton Coal (02) 5642 0231	<ul style="list-style-type: none"> <li>◆ Attended NSW workshop</li> </ul>
Ryan Kleinschmidt	BHP (07) 4980 5662	<ul style="list-style-type: none"> <li>◆ Attended Emerald meeting/workshop</li> </ul>
Sam Grima	(03) 9467 7251	<ul style="list-style-type: none"> <li>◆ Information sent re quarry sector</li> <li>◆ No response</li> </ul>
Sharon Holmes	QMITAB 0413 109 240	<ul style="list-style-type: none"> <li>◆ Attended Emerald meeting/workshop</li> </ul>
Stan Maginnis	DMR (02) 6531 3052	<ul style="list-style-type: none"> <li>◆ Attended NSW workshop</li> <li>◆ provision of on going information</li> </ul>
Steve Burgess	Oakbridge	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ No response</li> </ul>
Steve Faulkner		<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ No response</li> </ul>
Steve Ferris	(02) 4358 0503	<ul style="list-style-type: none"> <li>◆ Phone briefing</li> <li>◆ Information sent for comment</li> <li>◆ suggested that underground comps should also include open cut comps</li> <li>◆ Need to ensure legislation added to electrical and mechanical (addressed)</li> </ul>
Steve Millington	DMR (02) 6572 1899	<ul style="list-style-type: none"> <li>◆ Telephone briefing</li> <li>◆ Information sent</li> <li>◆ Attended NSW workshop</li> </ul>
<b>Name</b>	<b>Organisation</b>	<b>Role/Comments</b>
Steven Bentham	Dartbrook Coal (02) 6540 8855	<ul style="list-style-type: none"> <li>◆ Information sent</li> <li>◆ Attended NSW workshop</li> </ul>
Stuart Vaccaneo	ACSA Newstan (02) 4956	<ul style="list-style-type: none"> <li>◆ Attended Emerald meeting/workshop</li> </ul>

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Stuart Waite	Newstan Colliery (02) 4950 4230	◆ Attended NSW workshop
Syd Brown	Newstan Colliery (02) 4956 0251	◆ Project Steering Group ◆ Meeting re job functions and project scope ◆ representative sent to Emerald meeting/workshop (Stuart Vaccaneo)
Ted Bell	Civil Construction Corporation (03) 6249 0024	◆ Information sent ◆ No response
Ted Waghorne	Geo-Eng (03) 5133 9571	◆ Latrobe Valley site visits ◆ Inclusion of brown coal competencies ◆ Project Steering Committee
Terrence O'loughlin	Theiss 0418 783 105	◆ Attended Emerald meeting/workshop
Tim Gosling	NT Dept of Mines and Energy (08) 8999 5438	◆ Information sent
Tom Lundy	Wambo (02) 6570 2340	◆ Attended NSW workshop
Tony Palladino	NUEITAB (02) 9290 2533	◆ Feedback re use of existing elctro-technology units and need to ensure that NUEITAB core is also included. ◆ Further feedback will be required when electrical is finalised

## **MNC.C1.A WORK SAFELY**

### **NATIONAL MINING ITAB**

#### **BLACK COAL : CORE COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers essential competencies and activities required to satisfy safe work practices.**

<u>Elements</u>	<u>Performance Criteria</u>
1.1 Access and Understand the Site Safety Procedures.	1.1.1 Site safety rules and procedures are accessed, understood and applied to the particular work situation. 1.1.2 Isolation of energy sources and immobilisation of potential energy sources is carried out, including tagging, in accordance with authorised and/or enterprise procedures. 1.1.3 Destinations within the mine site are located by understanding and application of mine plans, mine transport rules and appropriate signage. 1.1.4 Breaches in mine safety are identified and acted on or reported in accordance with manager's rules.
1.2 Apply Personal Safety Measures.	1.2.1 Personal protective measures are followed in accordance with site procedures and manager's rules. 1.2.2 Safe working areas are established and maintained in accordance with site procedures and manager's rules. 1.2.3 Permits and clearances are obtained, in accordance with site procedures, before specialised work is carried out. 1.2.4 Safe manual handling procedures are followed in accordance with authorised codes of practice and/or site procedures.
1.3 Apply Operational Safety Measures.	1.2.5 Self rescuer equipment is identified and used in accordance with manufacturer's instructions and site procedures (underground). 1.3.1 Alarms are recognised and responded to in accordance with site procedures. 1.3.2 Responsibility in regard to emergency situation procedures is identified, clarified, understood, responded to and reported in accordance with site procedures.

## MNC.C1.A WORK SAFELY

<u>Elements</u>		<u>Performance Criteria</u>
1.3	Apply Operational Safety Measures (continued)	<p>1.3.3 Basic fire fighting techniques are maintained and applied in accordance with site requirements.</p> <p>1.3.4 Familiarity with the emergency escape route(s) is maintained in accordance with site procedures.</p>
1.4	Apply Initial Response First Aid.	<p>1.4.1 Initial response first aid is administered in accordance with authorised procedures.</p> <p>1.4.2 Details of first aid administered are reported in accordance with manager's rules and procedures</p>
1.5	Maintain Personal Well-being for Job.	<p>1.5.1 Standards of fitness and well-being are known and maintained in accordance with the authorised medical criteria.</p> <p>1.5.2 Risks to personal well-being are identified and preventative strategies are adopted.</p> <p>1.5.3 Situations which may endanger the individual or other workers are identified and corrected or reported.</p> <p>1.5.4 Enterprise policy on smoking, alcohol and drug use is identified, clarified and observed.</p>
1.6	Identify and Report Incidents.	<p>1.6.1 Enterprise incident and injury statistics are understood.</p> <p>1.6.2 Incidents and injuries are reported and recorded in accordance with site procedures.</p> <p>1.6.3 Contributions to and participation in incident investigations is to be conducted in accordance with the responsibilities and protection under the relevant legislation.</p>

## MNC.C1.A WORK SAFELY

### **Range of Variables :**

- 1 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 2 Personal protective measures include hard hats, hearing protection, eye protection, safety boots, respiratory masks and other prescribed clothing and equipment.
- 3 Self rescuers may include carbon-oxygen conversion or oxygen generation.
- 4 Permits and clearances may include access to areas, underground welding and cutting, powerline clearances, start-up procedures and blasting/shot firing.
- 5 Manual handling is to include the use of mechanical handling aids which are present at the mine and included in the National Standard for Manual Handling and National Code of Practice for Manual Handling (NOHSC).
- 6 Emergency response route(s) are those authorised at the mine and may include the second egress.
- 7 Initial response first aid is to include cardio-pulmonary resuscitation, expired air resuscitation, bleeding control and basic patient management and may include spinal injury awareness, immediate burns treatment, unconscious casualty procedure, identification of fractures, sprains, strains and the treatment of shock.
- 8 Risks to personal well-being may include non adherence to safety procedures, drug and alcohol, stress, communicable diseases, adverse personal hygiene and horseplay.
- 9 Standards of medical fitness are those established by:
  - Queensland Coal Board medical exam
  - Other medical opinion
  - Joint Coal Board (NSW)
- 10 Emergency situations is to include emergency evacuation and basic fire fighting, and may include falls, entrapment, in-rush, fumes and explosions.

## MNC.C1.A WORK SAFELY

### Evidence Guide

**Context of Assessment.** Competency should initially be assessed in the work or simulated work environment within the bounds of safety.

### Inter-dependent Assessment of Units

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

This unit is applicable during the application of all technical units. Assessment for all technical units will need to explicitly encompass the aspects of this unit which are applicable and appropriate.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. accessing and interpreting mine safety procedures
  - b. accessing and interpreting the chemical substance information system
  - c. applying personal protective equipment requirements
  - d. identifying warnings/alarms and their meanings
  - e. applying emergency evacuation procedures
  - f. administering initial response first aid
  - g. applying tagging/lock-out procedures
  - h. identifying and travelling to locations in the mine
  - i. applying basic fire fighting techniques
  - j. applying site traffic rules
  - k. identifying and reporting of incidents
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge.** A knowledge of:
  - site and equipment safety systems /rules /procedures
  - chemical substance information systems
  - basic geological conditions at the mine
  - current mine layout and plan
  - site authorisation procedures
  - personal safety measures
  - initial response first aid
  - basic fire fighting
  - isolation procedures



- permit and clearance procedures
- personal fitness awareness
- manual handling procedures
- warning and directional signals
- incident reporting systems and procedures

## MNC.C1.A WORK SAFELY

### 6. Underpinning Skills. The ability to:

- access, interpret and apply relevant safety rules and procedures
- apply initial response first aid
- apply basic fire fighting techniques
- navigate within the mine site
- prepare and process reports

### 7. Key Competencies

### Level

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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**MNC.C2.A**

**WORK CO-OPERATIVELY WITH OTHERS**

**NATIONAL MINING ITAB**

**BLACK COAL : CORE COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers individual, interpersonal and team competencies required to achieve agreed goals.**

<u>Elements</u>	<u>Performance Criteria</u>
2.1 Communicate in the Workplace.	2.1.1 The communication requirement is identified and understood. 2.1.2 The type and style of communication selected is appropriate to the context, the audience and available technology. 2.1.3 Communication and information systems are accessed, interpreted, applied and maintained in a current and accurate state. 2.1.4 Radio and other communication systems are operated, monitored and recommendations made for quality improvements as necessary.
2.2 Work in a Team.	2.2.1 Site goals and the contributions to be made by teams are identified and understood. 2.2.2 Individual contributions to team activities are identified, agreed and reviewed periodically with the team. 2.2.3 Personal development wishes are made known and assistance and encouragement is provided to other team members wishing to enhance their role and the role of the team. 2.2.4 Defined roles and strengths of other team members are identified and utilised. 2.2.5 Ground-rules for team operations are reviewed and changes are made through team consultative processes. 2.2.6 Team goals and unity are positively promoted to clients and other team members and others. 2.2.7 Team improvements are initiated and/or encouraged from team members. 2.2.8 Causes of disharmony and other barriers to achievement are promptly resolved or referred to the appropriate party for resolution.

<p>2.3 Achieve and Maintain Agreed Competency Standards.</p>	<p>2.3.1 Competencies required for effective work participation are identified from analysis of the role and responsibilities to be performed.</p> <p>2.3.2 Means of achieving/maintaining required competencies are identified.</p> <p>2.3.3 Individual development requirements are identified and pursued with appropriate people.</p>
<p>2.4 Participate in Meetings.</p>	<p>2.4.1 Meeting procedures and objectives are identified, understood, and observed.</p> <p>2.4.2 Points of view and comments, including agreement and dissent are presented in a logical, persuasive and orderly manner.</p> <p>2.4.3 Points of view of other members are given a fair hearing.</p>

**Range of Variables :**

- 1 Communications systems may include previous shift reporting, written and/or verbal instructions and operating procedures, equipment/machinery tagging procedures, electronic mail, telephones, facsimile, two-way radios and radio network, whistles and lights.
- 2 Competency achievement/maintenance processes may include recognition of prior learning, assessment processes, on-the-job training and job rotation, formal vocational education and training, and refresher training.
- 3 Team is a generic term which refers to the mine work organisation. Teams may be known/titled locally as crews, gangs, shifts or other industrially and historically acceptable terms.

**Evidence Guide**

**1. Context of Assessment.** Competency should initially be assessed in the work or simulated environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

This unit is applicable during the application of all technical units. Assessment for all technical units will need to implicitly encompass the aspects of this unit which are applicable and appropriate.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. interpreting and communicating operational information
- b. working as a member of a team
- c. setting personal and team goals
- d. managing personal conflict
- e. identifying personal development needs
- f. participating in meetings
- g. providing feedback and follow up

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- relevant legislative provisions covering discrimination and equal employment opportunity
- site/team work structure and methods
- site communication procedures
- interpersonal communication skills
- site training/development systems
- basic job/skill analysis techniques
- basic conflict management
- meeting procedures (prepare-participate-follow-up)

**6. Underpinning Skills.** The ability to:

- communicate effectively in the work place

- provide individual and team support through feedback
- work with others
- participate in meetings



**7. Key Competencies****Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	0
Using technology.	

NATIONAL MINING ITAB

BLACK COAL : CORE COMPETENCY STANDARDS

**Descriptor:** This unit covers the application of systematic problem solving techniques to routine work.

<u>Elements</u>	<u>Performance Criteria</u>
3.1 Define the Problem.	3.1.1 The existence, cause and immediate effects of the problem are confirmed by preliminary investigation. 3.1.2 The extent and nature of the problem is defined by observation and investigation which may include the application of diagnostic and mathematical techniques. 3.1.3 The problem is prioritised in relation to operational requirements and the likely impact on production.
3.2 Identify the Preferred Option for Solving the Problem.	3.2.1 All possible options for resolution of the problem are considered. 3.2.2 Feasible options are identified by preliminary analysis and testing of the possible options. 3.2.3 The preferred option is identified from a detailed analysis of the cost, safety and welfare issues.
3.3 Prepare the Action Plan.	3.3.1 Proposed course of action and resource needs are identified and confirmed from analysis of the preferred option. 3.3.2 Action plan to solve the problem is prepared.

**Range of Variables :**

- 1 The range of individual work problems may include:
  - Communications systems failures and anomalies
  - Equipment selection, availability or failure
  - Site/face aspects including geological conditions, ventilation, dust, moisture and noise
  - Safety and emergency situations and incidents
  - Quality/productivity
  - Competency shortcomings in individuals
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules. OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Action plan may include priority requirements, objective, methodology, resource requirements, coordination and feedback requirements, and safety requirements.

**Evidence Guide**

**1. Context of Assessment.** Competency should initially be assessed in the work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

This unit is applicable during the application of all technical units. Assessment for all technical units will need to implicitly encompass the aspects of this unit which are applicable and appropriate.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. interpreting and communicating operational information
- b. diagnosing problems
- c. identifying feasible options
- d. analysing options
- e. preparing an action plan

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- problem solving processes
- basic operational planning processes
- regulations and schemes related to the area of activity
- characteristics, technical capabilities, limitations and operational standards of the equipment to be used
- fault finding and trouble shooting techniques
- site and equipment safety requirements
- site resources systems

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- analyse situations
- prioritise options
- apply diagnostic techniques

- communicate in the workplace
- maintain less complex records
- plan activities
- allocate or obtain available resources

**7. Key Competencies****Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**NATIONAL MINING ITAB**

**BLACK COAL : CORE COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the planning, organising and completion of individual work.**

<u>Elements</u>	<u>Performance Criteria</u>
4.1    Plan and Prepare for Work.	<p>4.1.1 Work requirements are identified by the individual from allocated tasks or selected from the group current work targets.</p> <p>4.1.2 Work is planned from an analysis of the required standard work procedures, outcomes, tasks, available time, resource requirements and known priorities.</p> <p>4.1.3 Duplication of effort is minimised by coordinated planning of related and/or sequential jobs</p> <p>4.1.4 Preparations for work are completed .</p>
4.2    Complete Work as Planned.	<p>4.2.1 Requirements are discussed and sequenced with appropriate parties.</p> <p>4.2.2 Work is completed in accordance with the agreed plan, outcomes and quality requirements and within the operating capacities of the equipment and operator.</p> <p>4.2.3 Work process is modified to meet changing circumstances and priorities.</p> <p>4.2.4 Work documentation and/or reports are completed to enterprise/site requirements.</p>

**Range of Variables :**

- 1 Work and tasks may be allocated through undermanager/deputy /team facilitator, work schedules or plans. They may be individual tasks and jobs or group/function work schedules.
- 2 Work preparations are likely to include identification and analysis of work and related safety requirements, identification and obtaining/arranging of resources, briefing of involved parties, and preparation of the work site.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Documentation and/or reports may be shift reports/handover briefs/time cards and other records.

**Evidence Guide**

1. **Context of Assessment.** Competency should initially be assessed in the work or simulated environment within the bounds of safety.
2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

This unit is applicable during the application of all technical units. Assessment for all technical units will need to implicitly encompass the aspects of this unit which are applicable and appropriate.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. determining relevant work requirements
  - b. applying operational safety measures
  - c. planning work actions
  - d. preparation for the work
  - e. interpreting and communicating operational information
  - f. identifying and obtaining resources
  - g. completing the work to plan
  - h. maintaining work records and/or reports
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or



fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- basic work planning processes
- operational safety requirements
- equipment characteristics, technical capabilities and limitations, operational procedures
- job outcome, standards and priorities
- mine resource systems
- recording procedures

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical and operational information
- plan and prepare for work
- recognise and respond to changing circumstances
- communicate in the workplace
- obtain resources
- complete records

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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**MNC.C5.A**

**CONTRIBUTE TO QUALITY WORK  
OUTCOMES**

**NATIONAL MINING ITAB**

**BLACK COAL : CORE COMPETENCY STANDARDS**

**Descriptor:**

**This unit covers individual involvement in the achievement of quality work outcomes and environmental compliance throughout work activities.**

<u>Elements</u>		<u>Performance Criteria</u>	
5.1	Plan and Prepare for Quality Work Outcomes.	5.1.1	Relevant quality procedures are identified from site/enterprise and team quality requirements.
		5.1.2	Performance indicators for individual work are identified and agreed with the appropriate persons.
		5.1.3	Work plans and processes facilitate the achievement of quality work outcomes.
5.2	Comply with Environmental Requirements.	5.2.1	Environmental requirements for the work are interpreted and included as a factor in work planning/preparation.
		5.2.2	Environmental monitoring and control measures are implemented during the work processes.
		5.2.3	Environmental incidents and potential problems are responded to or referred to others in accordance with site requirements.
5.3	Achieve and Maintain Quality Work Outcomes.	5.3.1	Responsibility for monitoring quality of outputs is accepted and changes implemented by the individual, as necessary, in accordance with site procedures.
		5.3.2	Performance indicators, adjusted and agreed to meet changing circumstances, are satisfied.
		5.3.3	Loss and damage incidents are minimised by monitoring work processes, reporting incidents and applying local risk control processes.
		5.3.4	Procedural improvements and/or recommendations are communicated to the relevant people.

**Range of Variables :**

- 1 Quality procedures and processes may be contained in work instructions, safe work procedures, manager's rules, product coal specifications, equipment maintenance schedules, technical procedures and adopted or specifically prepared standards.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Performance indicators are to account for issues of time, quantity, quality and cost factors and may include establishing time targets for own work, identifying reasonable criteria for evaluating own work outcomes, identifying measures to avoid wastage, identifying reasonable criteria to judge internal and / or external customer satisfaction and identifying processes to ensure a 'right first time' approach.
- 4 Environmental requirements are those established under law and coverage includes dust, water quality, waste water management, chemicals handling, noise/vibration, fuel/oil handling and disposal, waste management and rehabilitation.
- 5 Environmental control measures may include dust suppression, water treatment, waste water processes, application of materials safety data sheets (MSDS) and hazchem, compliance with noise/vibration standards and application of waste disposal procedures.
- 6 Environmental reports and records may include complaints register and incidental reporting procedures.
- 7 Loss and damage incidents may include personal injury, loss and damage of plant, equipment and materials.

**Evidence Guide**

1. **Context of Assessment.** Competency should initially be assessed in the work or simulated environment within the bounds of safety.
2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

This unit is applicable during the application of all technical units. Assessment for all technical units will need to implicitly encompass the aspects of this unit which are applicable and appropriate.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying operational safety measures
  - b. identifying quality procedures and needs
  - c. planning and preparing for work
  - d. identifying performance indicators
  - e. monitoring and adjusting performance indicators to meet changing circumstances
  - f. satisfying performance indicators
  - g. applying environmental control systems
  - h. processing recommendations for change
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
- 5. Underpinning Knowledge.** A knowledge of:
- operational safety requirements
  - enterprise quality processes
  - enterprise loss and damage control systems
  - work planning processes
  - environmental legislative framework
  - environmental licence provisions
  - site environmental procedures and key constraints
  - site environment control measures
- 6. Underpinning Skills.** The ability to:
- access, interpret and apply information on enterprise quality processes
  - formulate performance indicators for own work
  - communicate in the workplace
  - monitor and recommend changes to the systems
  - apply environmental controls
  - maintain records and/or reporting processes
- 7. Key Competencies**
- |   | <b>Level</b> |
|---|--------------|
| Collecting, analysing and organising ideas and information. | 1            |
| Communicating ideas and information.                        | 1            |
| Planning and organising activities.                         | 1            |

Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	



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# National Mining ITAB

## BLACK COAL : CORE COMPETENCY STANDARDS

**Descriptor:** This unit covers the risk control processes to be performed by employees at all levels. It complements and is allied to Unit C1, Work Safely.

<u>Elements</u>	<u>Performance Criteria</u>
C6.1 Identify Hazards.	<p>C6.1.1 Work area conditions are analysed to identify/recognise potential hazards.</p> <p>C6.1.2 Relevant safety systems information is accessed and analysed to eliminate situations covered by existing and adequate procedures.</p> <p>C6.1.3 The type and scope of unresolved hazards and their likely impact are recognised.</p>
C6.2 Assess Risk.	<p>C6.2.1 Likelihood of the event happening is considered and determined.</p> <p>C6.2.2 Consequence if the event should occur is evaluated and determined.</p> <p>C6.2.3 Risk level (likelihood and consequence combined) is considered and determined.</p>
C6.3 Identify Unacceptable Risk.	<p>C6.3.1 Criteria for determining the acceptability/unacceptability of the risk is identified or sought from the appropriate party.</p> <p>C6.3.2 Risk is evaluated against criteria to identify if it warrants 'unacceptable risk' status and is either actioned or referred to the appropriate person.</p>

C6.4 Identify and Decide on Course of Action.

C6.4.1 Range of actions/controls which may eliminate or minimise the risk are identified.

C6.4.2 All possible options for resolution of the problem/dealing with the risk are identified and considered.

C6.4.3 Feasible options are identified by preliminary analysis and testing of possible options.

C6.4.4 Feasible options are subject to detailed analysis including the identification of resource requirements.

C6.4.5 Most appropriate action for dealing with the situation is selected.

<u>Elements</u>	<u>Performance Criteria</u>
C6.5 Take Action.	<p>C6.5.1 The course of action is planned and prepared in detail.</p> <p>C6.5.2 Resources required for the course of action are acquired or obtained.</p> <p>C6.5.3 Safety information and procedures are accessed and applied throughout the operations.</p> <p>C6.5.4 The course of action is implemented.</p>
C6.6 Complete Records and Reports.	<p>C6.6.1 Information on the course of action and implementation is communicated to the relevant people.</p> <p>C6.6.2 All hazards and actions from personal risk assessment are recorded as specified by legislative and site requirements.</p>

**Range of Variables**

- 1 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 2 The criteria for acceptable risk must be determined by the organisation's internal policy, goals and/or objectives.
- 3 Hazards in the workplace may involve equipment, methods / plans , competencies and/or the work environment.
- 4 Controls for hazards should be considered using option types in sequence from eliminating the hazard, substitution, engineering controls, administrative controls (procedures, etc.) and, finally personal protective equipment.
- 5 Records and reports for Risk Assessment may include Hazard Reporting Forms, Deputy's IOCE Reports, Incident Reports, Near Miss Reports, Shift Reports, etc.
- 6 Site policy, objectives, rules, procedures and assessment techniques will vary between sites.

**Definitions:**

For the purpose of this standard the definitions below apply (AS/NZS 4360: 1995):

- **Consequence:** the outcome of an event or situation expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain.
- **Frequency:** a measure of likelihood expressed as the number of occurrences of an event in a given time.
- **Hazard:** a source of potential harm or a situation with a potential to cause loss.
- **Likelihood:** used as a qualitative description of probability and frequency.
- **Probability:** the likelihood of a specific outcome, measured by the ratio of specific outcomes to the total number of possible outcomes. Probability is expressed as a number between 0 and 1, with 0 indicating an impossible outcome and 1 indicating an outcome is certain.
- **Risk:** the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood.
- **Risk Assessment:** the process used to determine risk management priorities by evaluating and comparing the level of risk against predetermined standards, target risk levels or other criteria.
- **Risk Identification:** the process of determining what can happen, why and how.

**Evidence Guide**

- 1 **Context of Assessment.** Competency should initially be assessed in the work or simulated environment within the bounds of safety.

**Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

This unit is applicable during the application of all technical units. Assessment for all technical units will need to implicitly encompass the aspects of this unit which are applicable and appropriate.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying operational safety requirements

- b. accessing, interpreting and communicating operational hazard-related information
- c. identifying hazards in the work environment
- d. assessing the risk
- e. identifying and deciding a course of action
- f. taking action in response to risks
- g. completing risk management process records and/or reports

- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
- 5. Underpinning Knowledge.** A knowledge of:
- operational safety requirements
  - site and equipment safety requirements
  - site rules, policies, procedures and regulations
  - personal safety measures
  - personal risk assessment and control processes (hazard identification through to action)
  - site communication methods, written and oral
  - reporting and recording procedures
- 6. Underpinning Skills.** The ability to:
- read, interpret, apply and communicate technical information, rules, procedures and
  - proactively identify hazards
  - determine the risk level of a hazard
  - select an appropriate action/control to reduce the risk
  - maintain relevant records and/or reports
  - communicate effectively in the workplace
- 7. Key Competencies** **Level**
- |   |   |
|---|---|
| Collecting, analysing and organising ideas and information. | 1 |
| Communicating ideas and information.                        | 1 |
| Planning and organising activities.                         | 1 |
| Working with others and in teams.                           | 1 |
| Solving problems.   | 1 |
| Using mathematical ideas and techniques.                    | 1 |
| Using technology.   | 1 |

**NATIONAL MINING ITAB**

**BLACK COAL : CORE COMPETENCY STANDARDS**

**Descriptor: This unit covers the use of communication systems at the minesite.**

<u>Elements</u>	<u>Performance Criteria</u>
<p>C7.1 Identify and Access Mine Communication Equipment /System</p>	<p>C7.1.1 Mine communication system components are identified and accessed.</p> <p>C7.1.2 Communication within the mine is established and maintained in accordance with relevant legislative requirements, Australian Standards and site procedures.</p> <p>C7.1.3 Safety requirements related to communication equipment and systems are accessed and applied throughout the operations.</p>
<p>C7.2 Communicate Using Mine Equipment/ System</p>	<p>C7.2.1 Communication options are identified and the most appropriate method is selected for use.</p> <p>C7.2.2 Communications equipment and systems are operated or used in accordance with manufacturer's and site requirements.</p> <p>C7.2.3 Communication is acknowledged and responded to or messages are taken, confirmed and passed promptly to the appropriate person.</p> <p>C7.2.4 Communication is passed in a clear and concise manner, and in accordance with mine procedures.</p> <p>C7.2.5 Emergency procedures are followed including the passing of reports and observance of communications emergency rules.</p> <p>C7.2.6 Faults in equipment are identified and reported in accordance with site procedures.</p>



**Range Of Variables:**

- 1 Communications may be made by radio, telephone, computer, lights, audible, physical signals (bells, whistles, sirens, lamps), written and verbal means.
- 2 Mine communications systems are to include the system overview, operating directories and site specific procedures and constraints.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include avoidance of energy sources, care of equipment and wiring and compliance with hazardous zone procedures.

**Evidence Guide**

1. **Context of Assessment.** Competency should initially be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

This unit is applicable during the application of all technical units. Assessment for all technical units will need to implicitly encompass the aspects of this unit which are applicable and appropriate.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on mine communication systems
- c. identifying and selecting appropriate communication method
- d. using communication equipment and systems
- e. receiving, confirming and passing information
- f. applying emergency communication procedures
- g. identifying and reporting faults in communication equipment / systems

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or

fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- operational safety requirements
- mine communications systems
- characteristics, capabilities and limitations of communication equipment
- communication equipment usage techniques
- identification of faults in communication systems
- emergency procedures
- records maintenance
- site environmental requirements and constraints related to communication equipment / systems

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- operate communications systems
- communicate clearly and concisely
- maintain records
- identify faults
- interpret other communications such as flags, signs, bells and whistles
- apply environmental constraints
- dispose of environmentally sensitive fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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NATIONAL MINING ITAB

BLACK COAL : PREPARATION COMPETENCY STANDARDS

**Descriptor:** This unit covers the preparation of raw coal for processing.

<u>Elements</u>	<u>Performance Criteria</u>
<p>P1.1 Prepare to Handle Raw Coal.</p>	<p>P1.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>P1.1.2 The availability and operational readiness of ROM coal, equipment and personnel are established and confirmed prior to commencement of processing.</p> <p>P1.1.3 Basic mineralogy required to complete allocated task is interpreted and applied to site requirements.</p> <p>P1.1.4 Safety information and procedures are accessed and applied throughout the work.</p>
<p>P1.2 Apply Coal Handling Processes.</p>	<p>P1.2.1 Coal is screened to specified coal size fractions.</p> <p>P1.2.2 Raw coal is crushed, broken or screened to a size within equipment limitations.</p> <p>P1.2.3 Raw coal is treated to separate reject from coal.</p> <p>P1.2.4 Samples of coal are within specification.</p> <p>P1.2.5 The results of the continuous visual inspection are noted and all faults are identified and located by name, number and/or code and rectified where possible and/or reported in accordance with site procedures.</p> <p>P1.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>P1.2.7 Housekeeping duties are completed throughout the work sites.</p> <p>P1.2.8 Reporting is carried out and documents completed, maintained and processed in accordance with site requirements.</p>

**Range of Variables:**

- 1 Work requirements may include consideration of - previous shift report, end product specifications, availability and requirement for personnel and equipment, production results including input tonnages and output tonnages, breakdown details, availability and location of coal by type, seam and blend, defects in equipment, maintenance requirement, water availability and special and/or temporary safety requirements.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Type of coal may include seam, calorific value, size, moisture content, percentage ash, sulphur content, coking and steaming.
- 4 Types of contamination covers anything outside specification including coal, wood, steel, brattice, rock, oversized material, water.
- 5 Crushing and sizing may be by rotary breaker, roller crusher, hammer mill and screens.
- 6 Equipment may include stackers, trippers, shovels, tipplers, waders, trucks, dozers, conveyors, slingers, bins, gates, ploughs, coal/ash analysis, weighers, reclaimers, front-end loaders, skid steer loaders, feeders, coal valves, samplers, dust suppression equipment, magnets.
- 7 Warning devices may include sirens, beacons, barriers, signs, radio, notices.
- 8 Sampling results may include percentage of yield, ash content, moisture, sulphur/CSI., dilution.
- 9 Personnel may include management, yard persons, equipment operators., maintenance personnel, laboratory assistants.
- 10 Standard work practices may include working in confined spaces, cleaning head chutes, start-up and shutdown procedures, isolation procedures, chemical handling, protective equipment, environmental considerations.
- 11 Housekeeping may include area clean-up, clearing of walkways, hosing down and securing of equipment and materials.
- 12 Reporting and recording may include Control Room log book, computer print-out, accident/incident reports, check sheets, pre-shift equipment reports, defect reports, tags and work orders.

### Evidence Guide

**1. Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on raw coal handling operations
- c. identifying shift requirements  
monitoring coal quality in
- d. screening
- e. sizing
- f. removal of contamination
- g. blending
- h. conducting and responding to visual inspections
- i. conducting housekeeping
- j. completing records and reports

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- coal preparation processes
- stockpile specific safety requirements
- stockpile operational and management processes
- basic mineralogy related to coal quality
- equipment characteristics, technical capabilities and limitations
- maintenance procedures
- impact of operations on customer quality requirements
- site environmental requirements and constraints related to handling of raw coal

**6. Underpinning Skills.** The ability to:

- apply operational safety procedures
- access, interpret and apply technical information
- apply eye-hand co-ordination
- use relevant hand tools
- apply diagnostic techniques
- maintain equipment records
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1



NATIONAL MINING ITAB

BLACK COAL : PREPARATION COMPETENCY STANDARDS

**Descriptor:** This unit covers the preparation for and monitoring of Coal Preparation Plant processes.

<b>Elements</b>	<b>Performance Criteria</b>
<p>P2.1 Prepare for Plant Operations.</p>	<p>P2.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>P2.1.2 All appropriate process equipment and plant is located and identified by name, number and/or code and function.</p> <p>P2.1.3 Pre start check of all equipment is carried out and reports provided to control in accordance with manufacturers and/or site authorised procedures.</p> <p>P2.1.4 Basic mineralogy information required to complete the processes is interpreted and applied in accordance with site requirements.</p>
<p>P2.2 Monitor Preparation Plant Processes.</p>	<p>P2.1.5 Safety information and procedures are accessed and applied throughout the work.</p> <p>P2.2.1 The limitations and capabilities of plant processes are identified and detail reported to control.</p> <p>P2.2.2 Plant processes are monitored and reports are passed to control.</p> <p>P2.2.3 The operation of equipment and the use of materials is monitored and reports passed to control.</p>
<p>P2.3 Support Coal Preparation Processes.</p>	<p>P2.2.4 All information required to maintain coal preparation plant processes are reported and recorded in accordance with site procedures.</p> <p>P2.3.1 The results of continuous inspections are noted and all faults are identified and located by name, number and/or code and rectified and/or reported in accordance with site procedures.</p> <p>P2.3.2 Housekeeping duties are completed throughout the work sites.</p> <p>P2.3.3 Operational reporting is carried out and documents completed and processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Work requirements may include consideration of the previous shift report, end product specifications, production results including input tonnages and output tonnages, set points for densities, levels, pressures, breakdown details, availability and location of coal by type, seam, blend, defects including faults in plant / equipment, maintenance requirement, water availability, charts, print-outs, logs, amp readings, thickener, tailings, roll stocks.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Information may be transmitted by two-way radio, telephone, PA, verbal, CB, written, computer monitor and print-outs.
- 4 Personnel may include fitters, management, electricians, contractors, plant operators, machinery operators, supervisors, yardpersons, laboratory assistants.
- 5 Plant equipment may include crushers, stackers, feeders, reclaimers, drums, samplers, conveyors, pumps and screens, gates, compressors, magnetic separators, filters, centrifuge, flotation cells, agitators, elevator buckets, thickeners, blowers, breakers, magnets, belt size, feeders, jigs and cyclones.
- 6 Processes to be controlled may include crushing, screening, jigging, flotation, dense media separation, fines recovery, drying, settling and structuring and effluent treatment.
- 7 Measurement and control may include ash level, moisture content, size, yeild, plant availabiity, product stock pile, bin capacity, reject percentages, sump levels and density control.
- 8 Warning devices may include sirens, beacons, barriers, signs, radio and notices.
- 9 Faults may be identified by alarms, indicator lights, amp guages, computer monitor, camera monitor and visual inspection.
- 10 Adjustments may be made using automatic or manual controls.
- 11 Factors governing levels or densities may include: coal type, water quality, magnetite recovery, gypsum, feed rate and flocculent.
- 12 Types of coal may include seam, calorific value, size, moisture content, percentage ash, sulpher content, coking and steam.
- 13 Recording and reporting may include control room log, computer reports, accident/incident reports, check sheets, pre-shift equipment reports, defect reports, tags and work orders.
- 14 Shift reports may include plant downages, downtime, maintenance requirements and quality information.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on monitoring operations
  - c. identifying process equipment and plant
  - d. pre-start checks
  - e. monitoring and reporting of processes and equipment
  - f. responding to changing situations
  - g. completing housekeeping functions
  - h. completing and processing records
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge.** A knowledge of:
  - site and equipment/plant safety requirements
  - coal preparation processes
  - manual process control techniques
  - equipment/plant characteristics, technical capabilities and limitations
  - equipment/plant operating procedures
  - basic mineralogy related to coal quality
  - basic geological and survey data
  - relevant chemicals, materials and their environmental effects
  - Hazchem related to the work area
  - site environmental requirements and constraints related to coal plant operations
  - recording and reporting procedures
  - impact of processes on customer quality requirements

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, read, interpret and apply technical information
- identify process equipment and plant
- calculate volumes and quantities of additives
- use weighing machines
- apply eye-hand co-ordination
- diagnose faults
- apply preventative control measures
- use relevant hand tools
- prepare and communicate reports
- maintain equipment records
- comply with environmental requirements
- enter basic computer data

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**MNC.P3.A  
OPERATIONS**

**CONTROL COAL PREPARATION PLANT**

**NATIONAL MINING ITAB**

**BLACK COAL : PREPARATION COMPETENCY STANDARDS**

**Descriptor:**                      **This unit covers the preparation for, coordination and control of Preparation Plant operations.**

<b>Elements</b>	<b>Performance Criteria</b>
<p>P3.1 Prepare for Plant Operations.</p>	<p>P3.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p><b>P3.1.2 Information is transmitted to and confirmed with all relevant personnel to make ready for production before commencement of operations.</b></p> <p>P3.1.3 The availability of personnel, materials and equipment are monitored and adjusted to maintain production specifications.</p> <p>P3.1.4 All equipment under plant operator control is located and identified by name, number and/or code and function.</p> <p>P3.1.5 Reports on pre-start checks of all equipment are received and responded to in accordance with manufacturers and/or site authorised procedures</p> <p>P3.1.6 Basic mineralogy information required to complete the operations is interpreted and applied in accordance with site requirements.</p>
<p>P3.2 Control Plant Operations.</p>	<p>P3.1.7 Safety information and procedures are accessed and applied throughout the work.</p> <p>P3.2.1 Equipment is started up and shut down completely or partially in the sequence necessary to avoid damage/spillage.</p> <p>P3.2.2 The limitations and capabilities of plant processes are evaluated and adjustments made to maintain production.</p> <p>P3.2.3 Plant processes are controlled to maintain specifications. and optimise coal recovery</p>
<p>P3.3 Record Operational Information.</p>	<p>P3.2.4 The operation of equipment and the use of materials are controlled to minimise wastage.</p> <p>P3.3.1 All information required to maintain coal preparation plant operations are recorded and reported in accordance with site procedures.</p>

**Range of Variables :**

- 1 Shift requirements may include, shift duties and responsibilities, end product specifications, set points for densities, levels, pressures, breakdown details, defects including faults in plant equipment, maintenance requirement and water availability.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Information may be transmitted by two-way radio, telephone, PA, verbal, CB, written, computer monitor and print-outs.
- 4 Plant equipment may include crushers, stackers, feeders, reclaimers, drums, samplers, conveyors, pumps and screens, gates, compressors, magnetic separators, filters, centrifuge, flotation cells, agitators, elevator buckets, thickeners, blowers, breakers, magnets, belt size, feeders, jigs and cyclones.
- 5 Processes to be controlled may include crushing, screening, jigging, flotation, dense media separation, fines recovery, drying, settling and structuring and effluent treatment.
- 6 Warning devices may include sirens, beacons, barriers, signs, radio, notices.
- 7 Faults may be identified by the following: alarms, indicator lights, amp guages, computer monitor, camera monitor and visual inspection.
- 8 Adjustments may be made using automatic or manual controls.
- 9 Factors governing levels or densities may include: coal type, water quality, magnetite recovery, gypsum, feed rate and flocculent.
- 10 Types of contaminants may include outside specification coal, wood, steel, brattice, rock, out-sized material and water.
- 11 Process support may include housekeeping, working in confined spaces, cleaning of specific equipment, start-up and shut-down procedures, isolation procedures, chemical handling, protective equipment, environmental requirements.
- 12 Recording and reporting may include control room log, computer reports, accident/incident reports, check sheets, pre-shift equipment reports, defect reports, tags and work orders.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on control operations
- c. identifying the range of equipment/plant
- d. completing control equipment pre-start, start-up and shut-down procedures
- e. Completing essential functions including:
  - monitoring and controlling operations within specifications
  - monitoring and reporting of processes and equipment
  - responding to changing situations
  - ensuring quality control
  - completing and processing reports and records

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site and equipment/plant safety requirements
- stockpile specific safety requirements
- stockpile operations and management procedures
- equipment/plant characteristics, technical capabilities and limitations
- equipment/plant operating procedures
- maintenance procedures
- mineralogy related to coal quality
- process control systems and operations (both manual and computerised)
- process quality systems
- basic geological and survey data
- relevant chemicals, materials and their environmental effects
- Hazchem related to the work area
- environmental requirements and constraints related to coal plant operations
- mine recording and reporting procedures
- impact of operations on customer quality requirements



**6. Underpinning Skills.** The ability to:

- apply safety requirements
- read, interpret and apply technical information
- interpret process schematics
- identify equipment and plant
- apply diagnostic techniques
- apply preventative control measures
- calculate volumes and quantities of additives
- maintain equipment records
- maintain process records
- comply with environmental requirements
- prepare reports
- enter computer data

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2

**MNC.P4.A  
TAILINGS**

**TREAT AND DISPOSE OF REJECTS AND**

**NATIONAL MINING ITAB**

**BLACK COAL : PREPARATION COMPETENCY STANDARDS**

**Descriptor:**

**This unit covers the treatment of rejects and tailings and the disposal of waste.**

<u>Elements</u>	<b>Performance Criteria</b>
P4.1 Prepare for Treatment and Disposal.	<p><b>P4.1.1 Materials equipment and labour are identified and acquired for the treatment and disposal of rejects and tailings.</b></p> <p>P4.1.2 Safety information and procedures are accessed and applied throughout the work.</p>
P4.2 Treat and Dispose of Coarse Rejects and Tailings.	<p>P4.1.3 Basic mineralogy information required to complete the operation is interpreted and applied in accordance with site requirements.</p> <p>P4.2.1 The displacement or addition of watering is monitored and adjusted to maintain the disposal of rejects to specification.</p> <p>P4.2.2 The displacement and levels of additives to materials is monitored and adjusted to maintain the treatment and disposal of tailings to specification.</p> <p>P4.2.3 The addition of settling and clarity agents are monitored to maintain density prior to the disposal of tailings.</p> <p>P4.2.4 The disposal of rejects and tailings is carried out in accordance with enterprise or site environmental policy</p>
P4.3 Support Treatment and Disposal.	<p><b>P4.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer’s instructions and site procedures.</b></p> <p>P4.3.1 The results of the continuous visual inspection are noted and all faults are identified and located by name, number and/or code and rectified where possible and/or reported in accordance with site procedures.</p> <p>P4.3.2 Housekeeping duties are completed throughout the work sites.</p> <p>P4.3.3 Reporting is carried out and documents completed, maintained and processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Materials may include: flocculants, gypsum.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Preparation may include: flushing of lines, treatment of tailings with additives, selection of pumps, ancillary equipment and provision of dams and dumps.
- 4 Equipment may include: thickeners, centrifuges, band press filters, spirals, screens, pumps, blowers, agitators, flow and density meters, conveyors, radiation gauges, pipeline, sumps, bucket elevators, reject bins, trucks and dozers.
- 5 Specifications may include: magnetite content, moisture contents, density, ash and solids.
- 6 Support activities may include housekeeping, working in confined spaces, cleaning head chutes, start-up and shutdown procedures, isolation procedures, chemical handling, protective equipment, environmental considerations.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.
2. **Inter-dependent Assessment of Units**  
  
Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.
3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on treatment and disposal operations
  - c. completing pre-start, start-up, park-up and shut-down procedures
  - d. monitoring and controlling processes and equipment
  - e. handling materials within environment dust/spillage limits and site guidelines
  - f. disposing of waste
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- treatment and disposal processes
- equipment characteristics, technical capabilities and limitations
- maintenance procedures
- basic geological and survey data
- basic mineralogy
- relevant chemical and treatment materials
- environmental requirements and constraints related to rejects and tailings

**6. Underpinning Skills.** The ability to:

- apply eye-hand co-ordination
- read, interpret and apply technical and process information
- maintain equipment records
- use relevant hand tools
- apply diagnostic techniques
- calculate, volumes and quantities of additives
- comply with environmental requirements
- prepare and process records/reports

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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NATIONAL MINING ITAB

BLACK COAL : PREPARATION COMPETENCY STANDARDS

**Descriptor:** This unit covers the collection, preparation, analysing and recording of material samples.

<u>Elements</u>	<b>Performance Criteria</b>
P5.1 Prepare for Sampling.	<p>P5.1.1 Sampling instructions are received, interpreted and confirmed.</p> <p>P5.1.2 Communication is established and maintained with coal quality officer.</p> <p>P5.1.3 The frequency of automatic sampling is established in accordance with enterprise requirements.</p> <p>P5.1.4 Sampling materials and equipment are cleaned, placed and checked for operational readiness.</p> <p>P5.1.5 Safety information and procedures are accessed and applied throughout the operations.</p>
P5.2 Sample Materials.	<p>P5.2.1 Visual inspections are carried out to monitor that quality is kept to specification.</p> <p>P5.2.2 Samples are collected and the sampling equipment checked and reset for next batch. in accordance with enterprise requirements</p> <p>P5.2.3 Samples are processed in accordance with site and customer requirements.</p>
P5.3 Record Sampling Details.	<p>P5.3.1 Details of visual inspections are recorded in accordance with enterprise requirements.</p> <p>P5.3.2 Information on samples and incoming and outgoing coal and other material is recorded in accordance with site procedures and customer requirements.</p>

**Range of Variables :**

- 1 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 2 Sampling instructions may be verbal or written and cover time of sample, seam, tonnages, weight, ROM details and stockpile details.
- 3 Sampling equipment and materials may include screens, mills, splitters, ovens, scales and balances.
- 4 Processing may include dividing, crushing, weighing, packaging, freezing, weighing, grinding and air drying.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.
2. **Inter-dependent Assessment of Units**  
  
Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.
3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on sampling operations
  - c. preparing for sampling
  - d. operating and maintaining sampling equipment
  - e. collecting samples and/or sampling information
  - f. processing samples in accordance with site procedures
  - g. recording and storing sample results
  - h. applying and observing environmental requirements
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.



**5. Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- mine sampling procedures and processes
- sampling equipment characteristics, technical capabilities , limitations and locations
- sampling equipment maintenance procedures
- coal standards and customer requirements
- basic mineralogy
- relevant chemicals and their environmental effects
- sampling recording procedures
- site environmental requirements and constraints related to sampling

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- read, interpret and apply technical information
- maintain equipment records
- apply eye-hand co-ordination
- use relevant hand tools
- apply diagnostic techniques
- apply environmental requirements
- dispose of environmentally sensitive materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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## NATIONAL MINING ITAB

## BLACK COAL : PREPARATION COMPETENCY STANDARDS

Descriptor: This unit covers the planned ripping, pushing and placing of materials in a stockpile using a dozer.

<u>Elements</u>	<b>Performance Criteria</b>
P6.1 Plan and Prepare for Stockpile Dozer Operations.	P6.1.1 Stockpile work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.  P6.1.2 Basic geological and survey data required to complete the allocated task is interpreted and applied in accordance to site requirements.  P6.1.3 Safety information and procedures are accessed and applied throughout the operations.
P6.2 Operate Dozer.	P6.2.1 Operations are coordinated with other involved personnel and equipment/plant.  P6.2.2 Pre-start, start-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.  P6.2.3 Dozer controls and functions including manoeuvre, blade and ripper are effectively used to complete specified tasks.  P6.2.4 Towing and pushing of equipment and plant is carried out safely and in accordance with the authorised equipment and/or connection capabilities and site procedures.  P6.2.5 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.  P6.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.

<u>Elements</u>	<u>Performance Criteria</u>
P6.3 Perform Stockpile Operations.	P6.3.1 Coal is placed in and removed from pre-determined stockpile location in accordance with work requirements and site procedures. P6.3.2 Slope and height are formed to work specifications and site procedures. P6.3.3 Coal is packed tightly to prevent air ingress, fires and weather channelling in accordance with site procedures. P6.3.4 Stockpiles are levelled to tolerances in accordance with site procedures. P6.3.5 Spontaneous combustion indicators are monitored and responded to in accordance with site procedures. P6.3.6 Contamination indicators are monitored and responded to in accordance with site procedures.
P6.4 Carry Out Operator Maintenance on Dozer.	P6.4.1 Dozer inspections and fault finding are carried out in accordance with manufacturer's instructions and site requirements. P6.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices. P6.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements. P6.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements. P6.4.5 Records are processed in accordance with site requirements..

**Range of Variables:**

- 1 This unit covers all tracked dozers and those tasks and performance criteria which are within the legal and technical limitations of rubber-wheeled dozers.
- 2 Work details may include the plant identification/allocation, nature and scope of the task, achievement targets, working conditions, adequacy of site lighting, defects to equipment, hazards and potential hazards, and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include boarding and disembarkation procedures, spontaneous combustion awareness, slippery conditions, uneven surfaces, operational signal procedures and equipment lowering and lifting.
- 5 Specified dozer operations/tasks may include ripping, pushing and levelling of coal, pad preparation, drainage, dump establishment and maintenance.
- 6 Towing and pushing may include coal haulers, pumps, lighting sets and other dozers.
- 7 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

1. **Context of Assessment.** Competency should, with the exception of emergency response, be assessed in the normal work environment within the bounds of safety. Assessment of responding to emergency will require simulation and control.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on stockpile dozer operations
- c. completing dozer pre-start, start-up and shut-down procedures

Completing essential stockpile functions including:

- d. preparation of pad
- e. drainage
- f. placement of coal on stockpile
- g. removal of coal from stockpile
- h. compliance with stockpile slope, height and levels specifications
- i. responding to spontaneous combustion and contamination
- j. towing and pushing other equipment
- k. completing operator maintenance
- l. applying site environmental requirements and constraints

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- stockpile management procedures
- equipment characteristics, technical capabilities and limitations
- dozer operational procedures
- dozer maintenance systems and procedures
- site environmental requirements and constraints related to dozer operations
- basic geological and survey data

6. **Underpinning Skills.** The ability to:

- apply operation safety
- access, interpret and apply technical information
- apply eye-hand coordination
- use relevant hand tools
- apply diagnostic techniques
- apply chemical and fuel safety measures
- dispose of environmentally sensitive fluids and materials
- maintain equipment records

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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NATIONAL MINING ITAB

**Black Coal : Preparation Competency Standards**

**Descriptor:** This unit covers the blending, reclaim and dispatch of coal from stockpiles.

<b>Elements</b>	<b>Performance Criteria</b>
<p>P7.1 Prepare for Stockpile Reclaim Operations.</p>	<p>P7.1.1 Shift reclaim and dispatch requirements are obtained from work orders, briefings or handover procedures and details confirmed.</p> <p>P7.1.2 Worksite inspection is carried out and hazards or other notifiable conditions are rectified or reported.</p> <p>P7.1.3 Basic geological and survey data required to complete the allocated tasks/duties is interpreted and applied in accordance with site requirements.</p> <p>P7.1.4 Safety information and procedures are accessed and applied throughout the work.</p>
<p>P7.2 Reclaim and Dispatch Coal.</p>	<p>P7.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>P7.2.2 Pre-start, start-up and shutdown procedures are carried out in accordance with manufacturer’s instructions and site procedures.</p> <p>P7.2.3 Controls are operated in accordance with machine manufacturers instructions and/or site specific instructions to reclaim coal.</p> <p>P7.2.4 Monitoring systems and alarms are acted on and/or reported in accordance with site requirements.</p> <p>P7.2.5 Specified coal is blended, loaded, sampled and despatched in accordance with site procedures.</p> <p>P7.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer’s instructions and site procedures.</p> <p>P7.2.7 Reporting is carried out and documents completed and processed in accordance with site requirements.</p>

<p>P7.3 Carry Out Operator Maintenance</p>	<p>P7.3.1 Reclaimer inspections and fault finding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>P7.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>P7.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>P7.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>P7.3.5 Records are processed in accordance with site requirements.</p>
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**Range of Variables :**

1. Shift requirements and duties may include, the previous shift report, break down details, stockpile status, breakdown details, defects including faults in plant equipment, maintenance requirements, reclaim specifications and dispatch plan/schedule
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Equipment may include bucketwheel, bridge, A-frame and driver reclaimers.
- 4 Hazards may include spontaneous combustion, wet weather operations, electrical start-up and shut-down, belt systems fires, electrical fires, and working with other equipment.
- 5 Other equipment may include dozers, loaders and trucks.
- 6 Information may be transmitted by two-way radio, telephone, PA, verbal, CB, written, computer monitor and print-outs.
- 7 Types of coal may include seam, calorific value, size, moisture content, percentage ash, sulphur content, coking and steam.
- 8 Warning devices may include sirens, beacons, barriers, signs, radio, notices.
- 9 Operator (operational) maintenance procedures are those established and authorised for the site.
- 10 Recording and reporting may include control room log, computer reports, accident/incident reports, check sheets, pre-shift equipment reports, defect reports, tags and work orders.

### Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety and in accordance with dig sequences and machine capabilities.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on reclaimer operations
- c. identification of reclaim requirements
- d. preparation for reclaiming operations
- e. coordination with others
- f. pre-start, start-up and shut-down procedures
- g. operating the reclaimer to:
  - blend coal
  - load coal
  - dispatch coal
  - recording and reporting
  - completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements and procedures
- stockpile management processes
- reclaimer characteristics, technical capabilities and limitations
- reclaimer maintenance procedures
- reclaimer operating procedures
- basic mineralogy related to coal quality
- blending specifications and techniques
- causes of and responses to spontaneous combustion
- environmental requirements and constraints related to reclaim operations
- recording and reporting processes
- impact of reclaiming operations on customer quality requirements

**6. Underpinning Skills.** The ability to:

- apply safety requirements
- access, interpret and apply technical information
- operate the reclaimer
- blend to specification
- apply diagnostic techniques
- use relevant hand tools
- prepare and communicate reports
- comply with environmental requirements
- maintain records

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

## NATIONAL MINING ITAB

## BLACK COAL : PREPARATION COMPETENCY STANDARDS

**Descriptor:** This unit covers the preparation for and conduct of rail despatch operations.

<u>Elements</u>		<b>Performance Criteria</b>
P8.1	Plan for Dispatch Operations.	<p>P8.1.1 Dispatch requirements are received, interpreted and confirmed.</p> <p>P8.1.2 Rail despatch systems components are inspected and test run to ensure they are safe and functioning.</p> <p>P8.1.3 Coordination issues with others involved in or affected by the operations are considered and resolved.</p> <p>P8.1.4 The required quantity and quality of coal product is transferred to or confirmed as being present in the bulk loader/bin.</p> <p>P8.1.5 Documentation and records for the despatch operation are prepared in accordance with site/rail/port authority procedures.</p>
P8.2	Load and Dispatch Coal.	<p>P8.2.1 Train identification and specific loading requirements and patterns are identified and confirmed.</p> <p>P8.2.2 Communications are established with the train operator and supporting plant/equipment operators prior to commencement of loading.</p> <p>P8.2.3 Safety information and procedures are accessed and applied throughout the operations.</p> <p>P8.2.4 Train movement and positioning for bulk loader is directed.</p> <p>P8.2.5 Train is loaded to specification.</p> <p>P8.2.6 Loading records are completed and processed in accordance with site/rail authority requirements.</p>

**Range of Variables:**

- 1 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 2 Dispatch requirements may include the quantity, quality and stockpile source of coal, train identification, essential timings and coordination requirements/issues.
- 3 Dispatch systems components for inspection/test run may include conveyors, feeders, hydraulics (loaders), rail line, signals, samplers and communications equipment.
- 4 Coordination with others may include the servicing rail authority, train operator, discharge port samplers and plant/equipment operators such as dozers and reclaimers.
- 5 Coal product and quality will include the source, the blend and the grade.
- 6 Documentation may include ticketing, report sheets, consignment notes and others agreed with the rail and port/receiving authority.
- 7 Completion of records may include the placement of tickets on train, the recording of load and train details, and the recording of arrival, loading and departure times.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed over a number of operations and in the normal work environment within the bounds of safety.
2. **Inter-dependent Assessment of Units**  
  
Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.
3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on rail dispatch operations
  - c. ensuring dispatch system components are functional
  - d. resolving necessary coordination issues
  - e. obtaining the correct quantity and quality of coal for dispatch
  - f. establishing and maintaining communications with the train and interested parties during operation
  - g. directing train movement
  - h. controlling the loading activity
  - i. completing rail dispatch records
  - j. apply environmental constraints during dispatch operation

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- conditions agreed with the rail authority
- site and equipment safety requirements
- coal product quality procedures
- stockpile and dispatch management systems and procedures
- coal dispatch systems components, their characteristics, functions and limitations
- freight rail operational procedures
- freight rail/customer communication systems
- rail dispatch documentation and recording systems
- Coal and Rail industry environmental requirements and constraints

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- apply communication skills (oral and written)
- use communications equipment
- calculate dispatch details
- operate loading systems
- prepare and maintain documentation and records
- comply with site/rail environmental requirements and constraints

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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## NATIONAL MINING ITAB

## BLACK COAL : PREPARATION COMPETENCY STANDARDS

**Descriptor:** This unit covers coal plant operational maintenance.

<u>Elements</u>		<u>Performance Criteria</u>
P9.1	Identify and Prepare for Maintenance.	P9.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.
		P9.1.2 Equipment, materials and tools required for maintenance are selected, prepared for use and transported to the work site.
		P9.1.3 Safety information and procedures are accessed and applied throughout the operations.
P9.2	Conduct Planned Routine Maintenance.	P9.2.1 Schedule for planned maintenance is received and resources co-ordinated to carry out maintenance.
		P9.2.2 Maintenance carried out in accordance with site procedures.
		P9.2.3 Details of routine maintenance actions taken are completed and any follow-up action required is recorded in accordance with site procedures.
P9.3	Conduct Breakdown Maintenance.	P9.3.1 The extent of work required to fix the breakdown is evaluated and site procedures put in place to minimise loss of production.
		P9.3.2 Breakdown maintenance is carried out in accordance with manufacturer's instructions and site procedures.
		P9.3.3 Details of maintenance action completed and/or required are recorded in accordance with site procedures.
P9.4	Conduct Temporary Repairs.	P9.4.1 The location of the problem is identified and the requirement is prioritised to minimise loss of production.
		P9.4.2 The requirement for temporary repairs is assessed and resources are identified and acquired.
		P9.4.3 The repair is carried out in accordance with site procedures.
		P9.4.4 Details of temporary repairs recorded in accordance with site procedures.

<u>Elements</u>	<u>Performance Criteria</u>
P9.5 Finalise the Maintenance Activity.	P9.5.1 Site restoration and housekeeping is completed in accordance with site procedures and practices.  P9.5.2 Recommendations for changes and improvements to the maintenance processes and procedures are passed to the appropriate person.

**Range of Variables :**

- 1 Operator (operational) maintenance procedures are those established and authorised for the site.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Specific safety requirements are to include equipment and energy isolation, area safety and, where necessary, temporary barriers, work permits and communication systems and procedures.
- 4 Operational maintenance may include screen inspections, pump adjustments, crusher adjustments, belt tracking and tensions, chute inspections and oil levels, roller changes, unbolting pipes and flanges.
- 5 Breakdown maintenance may include any plant and equipment failure and electrical resets.
- 6 Temporary repairs may include patching, bandaging, plugging, clipping and stitching.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on maintenance activities
- c. identifying and/or confirming the maintenance requirements
- d. selecting and preparing maintenance equipment and materials
- e. applying isolation procedures to create a safe work site
- f. carrying out a range of operational maintenance tasks authorised at the site
- g. recording/reporting the operational maintenance activities and outcomes
- h. applying environmental requirements and constraints
- i. restoring the site and completing housekeeping

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- equipment and plant characteristics, technical capabilities and limitations,
- equipment and plant operational procedures
- site equipment and plant maintenance procedures
- site environmental requirements and constraints related to operational maintenance activities

6. **Underpinning Skills.** The ability to:

- apply safety requirements to operational maintenance activities
- access, interpret and apply technical information
- locate and identify equipment and components within the plant
- apply diagnostic techniques
- use relevant hand tools
- maintain equipment records/reports
- comply with site environmental requirements
- dispose of environmentally sensitive oils, fluids and materials

#### 7. Key Competencies

#### Level

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:** **This unit covers the activities required to be carried out by those responsible for the implementation of risk assessment processes and for the preparation of related standard operating procedures.**

<u>Elements</u>	<u>Performance Criteria</u>
G1.1 Identify Hazards.	<p>G1.1.1 Details of the risk are identified, researched and confirmed.</p> <p>G1.1.2 Hazards related to each step of the job are identified from analysis of the scope and conditions related to the job.</p> <p>G1.1.3 Information on known and intended process changes and enhancements is made available to those responsible for control processes.</p> <p>G1.1.4 Relevant safety systems information is accessed, analysed and used to assist in or confirm hazard identification.</p>
G1.2 Assess Risk.	<p>G1.2.1 Likelihood of the event (loss scenario) happening is determined.</p> <p>G1.2.2 Consequence, if the event (loss scenario) should occur, is analysed and determined.</p> <p>G1.2.3 Risk level of the loss scenario (likelihood and consequence combined) is determined.</p>

<p>G1.3 Identify Unacceptable Risk.</p>	<p>G1.3.1 Site criteria for assessing the acceptability of risks is obtained or determined in conjunction with the appropriate party.</p> <p>G1.3.2 Risk level or score is determined by the application of the approved site criteria.</p> <p>G1.3.3 Expert advice is sought to clarify findings which are ambiguous, unclear or of doubtful accuracy.</p>
<p>G1.4 Identify Potential Actions.</p>	<p>G1.4.1 Range of actions/controls which may eliminate or minimise the risk are identified.</p> <p>G1.4.2 All possible options for resolution of the problem/dealing with the risk are identified and considered.</p> <p>G1.4.3 Potential actions are identified by preliminary analysis and testing of possible options.</p>

**MNC.G1.A  
PROCESSES**

**DEVELOP AND IMPLEMENT RISK CONTROL**

<u>Elements</u>	<u>Performance Criteria</u>
G1.5 Decide on Action.	<p>G1.5.1 The preferred option is identified from a detailed analysis of cost, safety and welfare issues.</p> <p>G1.5.2 Selected course of action is planned in detail including the identification of resource requirements.</p> <p>G1.5.3 Selected course of action is authorised in accordance with site requirements.</p>
G1.6 Implement Action.	<p>G1.6.1 Standard operating procedures (SOP or equivalent) for the job are prepared, tested and documented.</p> <p>G1.6.2 Relevant safety systems information is taken into account during the preparation of standard operating procedures.</p> <p>G1.6.3 All assessment proceedings and standard operating procedures are produced and submitted as specified by legislative and site requirements.</p> <p>G1.6.4 Information on the course of action and its implementation is communicated to the relevant people.</p>
G1.7 Review Action.	<p>G1.7.1 Operating procedures are monitored and reviewed for compliance with new SOP.</p> <p>G1.7.2 Amendments to the SOP are actioned or the matter referred to the appropriate party for follow up.</p>

**Range of Variables**

- 1 Safety systems information may include legislation, regulations, relevant Australian Standards, management systems and plans, manager's rules, OH&S policy, codes of practice, safe working procedures, safe job procedures and chemical safety systems.
- 2 Risk control systems and measures include those focused on personal safety (eg., personal protective equipment, medical standards, drug and alcohol, stress

management and evacuation), equipment and machinery isolation, protection and guarding, hazard identification and monitoring, chemical safety, fire safety and other potential emergency related circumstances.

- 3 The criteria for acceptable risk must be determined by the organisation's internal policy, goals and/or objectives.
- 4 Policy, objectives, rules, procedures and assessment techniques will vary between sites.
- 5 Hazards in the workplace may involve equipment, methods/plans , competencies and/or the work environment.



**Range of Variables (continued)**

- 6 Controls for hazards should be considered using option types in sequence from eliminating the hazard, substitution, engineering controls, administrative controls (procedures, etc.) and, finally personal protective equipment.
- 7 Records and reports for Risk Assessment may include Hazard Reporting Forms, Deputy's IOCE Reports, Incident Reports, Near Miss Reports, Shift Reports, etc.

**Definitions:**

**For the purpose of this standard, the definitions below apply (AS/NZS 4360: 1995):**

**Standard operating procedure (SOP)** is a documented work standard also referred to as a Safe Work Practices (SWP) , Safe Job Procedure (SJP), Work Instruction and other similar site specific titles.

- **Hazard:** a source of potential harm or a situation with a potential to cause loss.
- **Consequence:** the outcome of an event of situation expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain.
- **Cost:** of activities, both direct and indirect, involving any negative impact, including money, time, labour, disruption, goodwill, political and intangible losses.
- **Frequency:** a measure of likelihood expressed as the number of occurrences of an event in a given time.
- **Likelihood:** used as a qualitative description of probability and frequency.
- **Loss:** any negative consequence, financial or otherwise.
- **Monitor:** to check, supervise, observe critically, or record the progress of an activity, action or system on a regular basis in order to identify change.
- **Probability:** the likelihood of a specific outcome, measured by the ratio of specific outcomes to the total number of possible outcomes. Probability is expressed as a number between 0 and 1, with 0 indicating an impossible outcome and 1 indicating an outcome is certain.
- **Risk:** the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood.

- **Risk Acceptance:** an informed decision to accept the likelihood and the consequences of a particular risk.
- **Risk Analysis:** a systematic use of available information to determine how often specified events may occur and the magnitude of their likely consequences.
- **Risk Assessment:** the process used to determine risk management priorities by evaluating and comparing the level of risk against predetermined standards, target risk levels or other criteria.
- **Risk Avoidance:** an informed decision not to become involved in a risk situation.

Definitions (continued)

- **Risk Control:** that part of risk management which involves the provision of policies, standards and procedures to eliminate, avoid or minimise adverse risks facing an enterprise.’
- **Risk Identification:** the process of determining what can happen, why and how.
- **Risk Management:** the systematic application of management policies, procedures and practices to the tasks of identifying, analysing, assessing, treating and monitoring risk.

**Evidence Guide**

1. **Context of Assessment.** Initial competency should be assessed in a real work environment over more than one risk assessment/standard operating procedure cycle.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying operational safety requirements
  - b. interpreting and communicating operational hazard-related information
  - c. identifying and understanding risks and hazards
  - d. assessing the risk
  - e. identifying unacceptable risks
  - f. identifying potential actions or responses
  - g. selecting the most appropriate action/response
  - h. preparing standard operating procedures (or equivalent)
  - i. reviewing the action taken
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- operational safety requirements
- site and equipment safety requirements
- statutory and site rules, policies, procedures and regulations
- personal safety measures
- standard operating procedure documentation method
- cost, safety and welfare information
- effective monitoring and reviewing methods
- effective communication methods, written and oral
- reporting and recording procedures

**6. Underpinning Skills.** The ability to:

- read, interpret, apply and communicate technical information, rules, procedures and regulations.
- provide leadership and guidance for group activities
- communicate effectively in the workplace
- monitor and recommend changes to process
- select an appropriate action to reduce the risk
- document the risk assessment process
- write effective standard operating procedures
- maintain relevant records and documents

**7. Key Competencies.** The following are the levels of national key competencies required to support the application of this unit.

	<b>Level</b>
Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	2
Using mathematical ideas and techniques.	1
Using technology.	

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**NATIONAL MINING ITAB**

**BLACK COAL: GENERAL COMPETENCY STANDARDS**

Descriptor: This unit covers the actions taken to facilitate and coordinate the risk management process for a site/area including the application of local and formal risk assessment and control.

<u>Elements</u>	<u>Performance Criteria</u>
G2.1 Determine the Process.	G2.1.1 Process to be used for risk assessment, in line with company policies and management procedures and practices, is identified and determined.
	G2.1.2 Parameters of the task of risk management to be carried out are identified, developed and documented.
	G2.1.3 Data required to complete the tasks is accessed, interpreted and applied in accordance with site requirements.
	G2.1.4 Safety information and procedures are accessed and applied throughout the work.
G2.2 Identify Hazards.	G2.2.1 Types of potential hazards to be examined are identified and confirmed by reference to site circumstances and history/precedence.
	G2.2.2 Process is broken into steps or parts for detailed hazard identification.
	G2.2.3 Potential variations from the existing process, which may result from known work practices or changes to systems/technology are added to the process definition.
	G2.2.4 The steps or parts of the process are analysed and loss scenarios (hazards described as incidents or accidents) are identified and recorded/documented.

G2.3 Assess Risk.

G2.3.1 Likelihood of the event (loss scenario) happening is determined.

G2.3.2 Consequence, if the event (loss scenario) should occur, is analysed and determined.

G2.3.3 Risk level of the loss scenario (likelihood and consequence combined) is determined.



<u>Elements</u>	<u>Performance Criteria</u>
G2.4 Identify Unacceptable Risk.	<p>G2.4.1 Site criteria for assessing the acceptability of risks is sourced or determined in conjunction with the appropriate party.</p> <p>G2.4.2 Risk level or score is determined by the application of the approved site criteria.</p> <p>G2.4.3 Expert advice is sought to clarify findings which are ambiguous, unclear or of doubtful accuracy.</p>
G2.5 Identify Potential Actions.	<p>G2.5.1 Existing controls are identified.</p> <p>G2.5.2 The range of actions which may be appropriate for the situation are identified, analysed and documented.</p> <p>G2.5.3 Possible options for resolution of problems are identified from consideration of their operational effectiveness in terms of elimination, substitution, engineering and administrative control potential.</p> <p>G2.5.4 Feasible options are identified by preliminary analysis and testing of possible options including their potential to provide the most satisfactory integrated response to the range of issues.</p>
G2.6 Decide on Action.	<p>G2.6.1 Most appropriate action for the situation is selected from the feasible options.</p> <p>G2.6.2 The selected course of action is confirmed following a detailed analysis of resource requirements, cost, safety and welfare issues.</p> <p>G2.6.2 The selected course of action is documented in accordance with site requirements.</p>

<p>G2.7 Implement or Facilitate Action.</p>	<p>G2.7.1 The course of action is implemented directly or facilitated through others including the raising and issuing of SOPs.</p> <p>G2.7.2 Safety rules and regulations, including mine managers rules or schemes, legislation and site specific instructions are observed and applied through operations.</p> <p>G2.7.3 Relevant information related to the new/revised SOPs and their implementation is communicated to all interested and involved parties.</p>
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**MNC.G2.A  
PROCESS**

**FACILITATE THE RISK MANAGEMENT**

<u>Elements</u>	<u>Performance Criteria</u>
<p>G2.8 Review the Implementation of Action.</p>	<p>G2.8.1 A system of ongoing process review is determined and facilitated to ensure that controls and procedures have been implemented in accordance with the outcomes of the risk assessment and the SOPs..</p> <p>G2.8.2 Processes, actions and controls are reviewed to ensure continuing effectiveness in the changing work environment.</p> <p>G2.8.3 Anomalies and shortcomings disclosed during the review process are responded to or referred to the appropriate party for follow-up action.</p>
<p>G2.9 Audit the Risk Management Process.</p>	<p>G2.9.1 Risk management processes, including Standard Operating Procedures and implementation processes are formally audited to ensure compliance and effectiveness.</p> <p>G2.9.2 Changed requirements disclosed during audits are responded to in a systematic and timely manner.</p> <p>G2.9.3 Risk management documentation covering the reasons for and changes made are completed and retained to site and relevant statutory requirements.</p>
<p>G2.10 Complete Records and Reports.</p>	<p>G2.10.1 All risk management documentation and reports are produced, processed and maintained as specified by legislative and site requirements.</p>

**Range of Variables:**

1. Parameters of the risk management task may include objectives, system boundaries, hazard and consequence types, methods, team processes, timings, venue/locations and consultation processes.
2. Risk control systems and measures include those focused on personal safety (eg., personal protective equipment, medical standards, drug and alcohol, stress management and evacuation), equipment and machinery isolation, protection and guarding, hazard identification and monitoring, chemical safety, fire safety and other potential emergency related circumstances.
3. Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
4. The criteria for acceptable risk must be determined by the organisation's internal policy, goals and/or objectives.
5. Hazards in the workplace may involve equipment, methods/plans , competencies and/or the work environment.
6. Controls for hazards should be considered using option types in sequence from eliminating the hazard, substitution, engineering controls, administrative controls (procedures, etc.) and, finally PPE.
7. Records and reports for Risk Assessment may include a full report including Objective, Method, Results and Recommendations, the Risk Assessment Forms, Action Planning documents, etc.
8. Site policy, objectives, rules and procedures will vary from site to site.

**Definitions:**

For the purpose of this standard, the definitions below apply (AS/NZS 4360: 1995):

- **Consequence:** the outcome of an event or situation expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain.
- **Cost:** of activities, both direct and indirect, involving any negative impact, including money, time, labour, disruption, goodwill, political and intangible losses.
- **Frequency:** a measure of likelihood expressed as the number of occurrences of an event in a given time.
- **Hazard:** a source of potential harm or a situation with a potential to cause loss.
- **Likelihood:** used as a qualitative description of probability and frequency.
- **Loss:** any negative consequence, financial or otherwise.
- **Monitor:** to check, supervise, observe critically, or record the progress of an activity, action or system on a regular basis in order to identify change.
- **Probability:** the likelihood of a specific outcome, measured by the ratio of specific outcomes to the total number of possible outcomes. Probability is expressed as a number between 0 and 1, with 0 indicating an impossible outcome and 1 indicating an outcome is certain.
- **Risk:** the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood.
- **Risk Acceptance:** an informed decision to accept the likelihood and the consequences of a particular risk.
- **Risk Analysis:** a systematic use of available information to determine how often specified events may occur and the magnitude of their likely consequences.
- **Risk Assessment:** the process used to determine risk management priorities by evaluating and comparing the level of risk against predetermined standards, target risk levels or other criteria.
- **Risk Avoidance:** an informed decision not to become involved in a risk situation.
- **Risk Control:** that part of risk management which involves the provision of policies, standards and procedures to eliminate, avoid or minimise adverse risks facing an enterprise.

- **Risk Identification:** the process of determining what can happen, why and how.
- **Risk Management:** the systematic application of management policies, procedures and practices to the tasks of identifying, analysing, assessing, treating and monitoring risk.

**Evidence Guide**

- 1. Context of Assessment.** Competency should be assessed at the site or simulated work environment in accordance with all relevant legislation and site specific rules.

- 2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - applying operational safety requirements
  - interpreting and communicating operational hazard-related information
  - scoping risk assessment projects
  - breaking processes or functions into clear steps or components
  - identifying and understanding hazards
  - analysing risks
  - identifying best available control options to address an unacceptable risk
  - maintaining records and reports such as the Risk Assessment reports and forms
  - coordinating and monitoring actions and responding to changing situations
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
- 5. Underpinning Knowledge.** A knowledge of:
  - operational safety requirements
  - relevant site and equipment safety requirements
  - statutory and site rules, policies, procedures and regulations
  - personal safety measures
  - the Risk Management Process
  - Risk Assessment scoping methods to determine the process
  - Risk Assessment method, including:
    - identifying hazards
    - assessing risks
    - determining acceptability of risks
    - identifying existing controls
    - determining adequacy of current controls

- identifying new potential controls
- Risk Assessment documentation method
- method of identifying appropriate action based on cost, safety and welfare issues
- Action Planning method
- monitoring and auditing methods
- communication methods, written and oral
- interviewing techniques
- reporting and recording procedures



**6. Underpinning Skills.** The ability to:

- read, interpret, apply and communicate technical information, rules, procedures, regulations, etc.
- provide leadership and guidance for group activities (facilitator)
- communicate effectively in the workplace
- interview process participants
- facilitate and document a scoping session for a Risk Assessment
- facilitate a Risk Assessment exercise
- be involved in a Risk Assessment exercise as a team member
- proactively identify hazards
- analyse the hazard to identify and score the risk
- select an appropriate action to reduce unacceptable risks
- document the Risk Assessment
- write effective Risk Assessment Reports
- maintain relevant records and documents
- monitor and recommend changes to process

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

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NATIONAL MINING ITAB

BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the actions taken to lead, manage and coordinate the risk control system for a site/area.

<u>Elements</u>	<u>Performance Criteria</u>
G3.1 Establish the Risk Control System.	G3.1.1 Site/enterprise policy and strategic risk control system goals and approaches are identified and documented.  G3.1.2 Structures and frameworks for the management and implementation of the risk control system are established.  G3.1.3 Responsibility for site specific functional and/or area aspects of the risk control system are identified, recorded and allocated.

<p>G3.2 Establish Processes to Support the System.</p>	<p>G3.2.1 Detailed processes covering risk assessment, risk analysis and risk control are developed, documented and communicated.</p> <p>G3.2.2 Appropriate development and/or training is provided/arranged for those who have responsibilities within the risk control system.</p> <p>G3.2.3 Information sources required to support the risk control system are identified, obtained, maintained and made available to those who implement the control processes.</p> <p>G3.2.4 Information on known and intended process changes and enhancements is made available to those responsible for implementing control processes.</p> <p>G3.2.5 Site criteria for assessing the acceptability of risks is determined and made available to those responsible for implementing control processes.</p> <p>G3.2.6 Expert advice is obtained and provided as necessary to those responsible for implementing control processes.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
G3.3 Implement the Risk Control System.	<p>G3.3.1 Risk control systems coverage of the entire work environment is planned, scheduled and documented.</p> <p>G3.3.2 Risk control system activities and achievement targets are monitored and resources provided/focussed to ensure the work plan is satisfied.</p> <p>G3.3.3 Support and encouragement is provided to those responsible for the detailed control systems activities.</p> <p>G3.3.4 Risk control system work plan is reviewed and updated periodically and when changing circumstances are anticipated / occur.</p>
G3.4 Audit Risk Control Processes.	<p>G3.4.1 Risk control processes, including Standard Operating Procedures and implementation processes are formally audited to ensure compliance and effectiveness.</p> <p>G3.4.2 Changed requirements disclosed during audits are responded to in a systematic and timely manner.</p> <p>G3.4.3 Risk control documentation covering the reasons for and changes made are completed and retained to site and relevant statutory requirements.</p>
G3.5 Complete Records and Reports.	<p>G3.5.1 All risk management documentation and reports are produced, processed and maintained as specified by legislative and site requirements.</p>

**Range of Variables**

1. Parameters of the risk management task may include objectives, system boundaries, hazard and consequence types, methods, team processes, timings, venue/locations and consultation processes.
2. Risk control systems and measures include those focused on personal safety (eg., personal protective equipment, medical standards, drug and alcohol, stress management and evacuation), equipment and machinery isolation, protection and

- guarding, hazard identification and monitoring, chemical safety, fire safety and other potential emergency related circumstances.
3. The criteria for acceptable risk must be determined by the organisation's internal policy, goals and/or objectives.
  4. Hazards in the workplace may involve equipment, methods/plans , competencies and/or the work environment.
  5. Controls for hazards should be considered using option types in sequence from eliminating the hazard, substitution, engineering controls, administrative controls (procedures, etc.) and, finally PPE.
  6. Records and reports for Risk Assessment may include a full report including Objective, Method, Results and Recommendations, the Risk Assessment Forms, Action Planning documents, etc.
  7. Site policy, objectives, rules and procedures will vary from site to site.

**Definitions:**

For the purpose of this standard, the definitions below apply (AS/NZS 4360: 1995):

- **Consequence:** the outcome of an event or situation expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain.
- **Cost:** of activities, both direct and indirect, involving any negative impact, including money, time, labour, disruption, goodwill, political and intangible losses.
- **Frequency:** a measure of likelihood expressed as the number of occurrences of an event in a given time.
- **Hazard:** a source of potential harm or a situation with a potential to cause loss.
- **Likelihood:** used as a qualitative description of probability and frequency.
- **Loss:** any negative consequence, financial or otherwise.
- **Monitor:** to check, supervise, observe critically, or record the progress of an activity, action or system on a regular basis in order to identify change.
- **Probability:** the likelihood of a specific outcome, measured by the ratio of specific outcomes to the total number of possible outcomes. Probability is expressed as a number between 0 and 1, with 0 indicating an impossible outcome and 1 indicating an outcome is certain.
- **Risk:** the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood.
- **Risk Acceptance:** an informed decision to accept the likelihood and the consequences of a particular risk.
- **Risk Analysis:** a systematic use of available information to determine how often specified events may occur and the magnitude of their likely consequences.
- **Risk Assessment:** the process used to determine risk management priorities by evaluating and comparing the level of risk against predetermined standards, target risk levels or other criteria.
- **Risk Avoidance:** an informed decision not to become involved in a risk situation.
- **Risk Control:** that part of risk management which involves the provision of policies, standards and procedures to eliminate, avoid or minimise adverse risks facing an enterprise.
- **Risk Identification:** the process of determining what can happen, why and how.

- **Risk Management:** the systematic application of management policies, procedures and practices to the tasks of identifying, analysing, assessing, treating and monitoring risk.



### Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety requirements
- b. interpreting and communicating technical risk control process
- c. establishing strategies, structures and frameworks for the mines risk control system
- d. identifying and allocating risk control process responsibility
- e. establishing information and training processes to support the mines risk control system
- f. implementing the mines risk control systems
- g. auditing the risk control system and processes
- h. maintaining risk control records and reports
- i. coordinating and monitoring actions and responding to changing situations

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- statutory and site rules, policies, procedures and regulations
- operational safety requirements
- relevant site and equipment safety requirements
- personal safety measures
- risk control and management systems
- risk control documentation method
- method of identifying appropriate action based on cost, safety and welfare issues
- action planning method
- monitoring and auditing methods
- communication methods, written and oral

- reporting and recording procedures

**6. Underpinning Skills.** The ability to:

- read, interpret, apply and communicate technical information, rules, procedures, regulations, etc.
- provide leadership and guidance for group activities
- communicate effectively in the workplace
- facilitate and document risk control planning
- maintain relevant records and documents
- monitor and decide on changes to process

7. **Key Competencies.** The following are the levels of national key competencies required to support the application of this unit.

	<b>Level</b>
Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	3
Working with others and in teams.	2
Solving problems.	1
Using mathematical ideas and techniques.	2
Using technology.	1

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**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the individual response to emergency or incident situations in any location within an open-cut or underground mine.**

<u>Elements</u>	<u>Performance Criteria</u>
<p>G4.1 Prepare for Emergency Procedures.</p>	<p>G4.1.1 Emergency equipment is located and maintained in accordance with statutory requirements, site procedures and manufacturer’s specifications.</p> <p>G4.1.2 Nature, scope and location of the emergency or incident is identified and confirmed.</p> <p>G4.1.3 Emergency or incident situation is assessed and appropriate course of action is determined in keeping with requirements for personal safety.</p> <p>G4.1.4 Notification of emergency or incident is undertaken in accordance with authorised procedures and methods of communication.</p>
<p>G4.2 Respond to Emergency or Incident Situations.</p>	<p>G4.2.1 Emergency evacuation procedures are followed where appropriate and in accordance with site procedures.</p> <p>G4.2.2 Response to emergency or incident is co-ordinated and controlled, to ensure continuing safety of personnel at the site.</p> <p>G4.2.3 Potential sources of danger are isolated and warning signs/signals/barriers are put in place.</p> <p>G4.2.4 Emergency equipment is selected and used appropriately to deal with the emergency.</p> <p>G4.2.5 Local measures to reduce impact of emergency or incident are taken.</p>

G4.2.6 Emergency situation is continually monitored and assessed and changes in circumstances, requests for further assistance or evacuation, are passed to official.

G4.2.7 Control of the emergency or incident situation is exercised until formal relief is notified/received.

**Range of Variables**

- 1 Local operational emergencies/incidents may include falls, explosion/ignition, inundation, power failure, fires, vehicle/equipment accidents and industrial gas leakages.
- 2 Local personnel related emergencies/incidents may include injuries, critical response first aid, evacuation, entrapment and rescue.
- 3 Local environmental incidents may include fires, chemical spills, overtopping of dams, spillage of oils, fuels, water, coal spillage and dust outside normal limits.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management systems and plans, manager's rules, OH&S policy, codes of practice, safe working procedures and safe job procedures (or equivalent).
- 5 Operational equipment or materials may include roof support materials, fire fighting equipment, pumping equipment, lifting and cutting equipment, relevant plant and equipment.
- 6 Personnel equipment and materials may include first-aid equipment, communication systems, self rescuers (conversion/filter units or oxygen generation), self contained breathing apparatus, respiratory protection, lifting and cutting equipment, rescue/recovery equipment and relevant plant and equipment.
- 7 Environmental equipment and materials may include emergency bunds, absorption materials, spill response kits, personal protection equipment, chemical safety systems and relevant plant and equipment.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment or simulated work environment, where appropriate, **by day and night and in all weather conditions** within the bounds of safety.

This unit is appropriate for local emergencies and incidents which occur underground, in open-cut environments, in preparation/treatment plants and in workshops or other facilities.

2. **Inter-dependent Assessment of Units**

Assessment should include those other aspects of the core competencies which are consistent with the application environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on emergencies and incidents
  - c. identifying and reporting emergencies/incidents
  - d. assessing emergency situations/incidents
  - e. responding appropriately to the emergency/incident
  - f. controlling the emergency situation/incident until relieved
  - g. contributing to post emergency debriefing
  - h. completing operator maintenance on emergency equipment
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge.** A knowledge, focussed on the subject work environment, of:
  - statutory requirements
  - mine emergency procedures
  - mine incident procedures
  - initial response first aid
  - breathing apparatus
  - fire fighting



- hazards and potential hazards
- relevant geological and survey data
- relevant ventilation information
- mine plans
- mine communication systems

**6. Underpinning Skills.** The ability to:

- identify hazards/potential hazards
- observe, analyse and report emergencies/incidents
- read and interpret mine plans
- apply initial response first aid
- apply fire fighting techniques
- communicate
- read, interpret and apply relevant geological and survey data

**MNC.G4.A  
INCIDENTS**

**RESPOND TO LOCAL EMERGENCIES AND**

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	2
Solving problems.	1
Using mathematical ideas and techniques.	2
Using technology.	1

**MNC.G5.A  
OPERATIONS**

**CONDUCT FIRE TEAM**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:                    This unit covers the functions of a mine fire team member.**

<b>Elements</b>	<u>Performance Criteria</u>
G5.1 Plan and Prepare for Work.	<p>G5.1.1 Legislative and site requirements governing fire team operations are accessed, interpreted and confirmed.</p> <p>G5.1.2 Personal safety requirements and the individual's role in the fire team are identified and confirmed.</p> <p>G5.1.3 Fire risks in the mine and the likely impact and responses to site specific hazards are identified and clarified.</p> <p>G5.1.4 Types of fire fighting appliances are identified and their applications confirmed.</p> <p>G5.1.5 Location and range of appliances held at relevant fire boards, depots, sub-stations and stations are identified and confirmed by site visit.</p> <p>G5.1.6 Readiness for operations is achieved and maintained by participation in scheduled training and fire drills.</p>
G5.2 Fight or Contain Fires.	<p>G5.2.1 Notification of fire operations are received from the appropriate authority, clarified and confirmed.</p> <p>G5.2.2 Movement to the fire site is in accordance with site procedures.</p> <p>G5.2.3 Details of the type, nature, source and intensity of the fire are identified and passed to appropriate authorities or received and clarified.</p> <p>G5.2.4 Appliances and equipment selected are appropriate to the fire circumstances and applied in accordance with manufacturers/site instructions.</p> <p>G5.2.5 Conditions in the fire area are continually monitored and fire fighting techniques/applications are modified to reduce the impact of identified and potential hazards.</p>

<b>Elements</b>	<u>Performance Criteria</u>
G5.3 Finalise the Operation.	<p>G5.2.6 Unnecessary risks to the individual and other team members are avoided and evacuation procedures followed in accordance with site rules.</p> <p>G5.2.7 Isolation procedures are applied in accordance with site rules.</p> <p>G5.3.1 Fire recurrence is avoided by the appropriate processes including watering, rake down and chemical means.</p> <p>G5.3.2 Fire area is isolated, roped-off, secured and monitored in accordance with site procedures.</p> <p>G5.3.3 Appliances and equipment are cleaned, inspected and replaced in the designated location or processed for maintenance and repair.</p> <p>G5.3.4 Debriefs are undertaken and records completed in accordance with mine procedures.</p>

**Range Of Variables**

- 1 Types of fires may include Class A - solids, Class B - Liquids, Class C - Gases, Class D - Special classes (metals/electrical).
- 2 Types of fire fighting equipment may include but is not limited to extinguishers, hoses - water, expansion foam, expansion foam generator, spanners, nozzles, breaches, hand tools and water pumps.
- 3 Potential hazards may include but are not limited to smoke, heat, roof and rib, buildings, chemicals, gases and ventilation.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the simulated work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the application environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on fire fighting operations
- c. identifying the type and nature of fire
- d. reporting the fire
- e. working cooperatively within the fire team
- f. selecting the appropriate equipment for the fire type
- g. applying fire fighting procedures
- h. applying evacuation procedures
- i. avoiding panic situations
- j. completing operator maintenance on fire fighting equipment
- k. completing debriefing processes

**Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- legislative and site rules
- causes, characteristics, hazards and responses to the types of fire
- mine gases and characteristics
- basic mine geology and survey information related to fire operations
- basic building structural information related to fire operations
- fire fighting equipment
- fire fighting techniques
- isolation and tagging procedures

- basic teamwork
- critical situation dynamics and control
- communication and reporting procedures
- initial response first aid

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical fire operational information
- identify hazards/potential hazards
- assess the required response
- follow evacuation procedures
- fight fires
- administer first aid
- use hand tools
- work as a team member
- isolate and tag

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Description:** This unit covers the strategic management functions and underpinning knowledge required for the establishment of health and hygiene coverage within the mine's operational and safety hazard management activities.

<u>Element</u>	<u>Performance Criteria</u>
G6.1 Identify the Fundamentals of Human Disease and Injury	<p>G6.1.1 The causal chain and focus of common diseases are identified.</p> <p>G6.1.2 The causes, symptoms and impacts of stress on employee health and effectiveness are identified.</p> <p>G6.1.3 The potential impacts of shiftwork on employee health and effectiveness are identified.</p> <p>G6.1.4 The potential impacts of drug and substance abuse on employee health and effectiveness are identified.</p>
G6.2 Incorporate Health and Hygiene Factors into the Work Environment	<p>G6.2.1 Legislative and industry standards are identified, analysed and used as the basis for health and hygiene activities.</p> <p>G6.2.2. Health and hygiene factors are incorporated into mine operational planning and management systems.</p> <p>G6.2.3 Health and hygiene factors are incorporated into mine safety management plans.</p> <p>G6.2.4 Work injury recording systems are established and resourced.</p> <p>G6.2.5 Sanitation and hygiene infrastructure and systems are established.</p> <p>G6.2.6 Chemical and hazardous substances control systems are established.</p>



	G6.2.7 Atmospheric and dust control measures are established.
	G6.2.8 Mine transport networks and rules are established and maintained.

**MNC.G6.A**

**INCORPORATE HEALTH AND HYGIENE FACTORS INTO MINE MANAGEMENT**

<u>Element</u>	<u>Performance Criteria</u>
<p>G6.3 Establish Health and Hygiene Protection Measures for Individuals</p>	<p>G6.3.1 Individual medical recruitment and re-appraisal measures are established, reviewed and updated.</p> <p>G6.3.2 Health and hygiene training systems and programs are established and resourced.</p> <p>G6.3.3. Personal protection equipment systems and measures are established and resourced.</p> <p>G6.3.4 Systems and procedures for manual and assisted handling are established and resourced.</p>
<p>G6.4 Establish Control Measures for Operational Health and Hygiene Hazards</p>	<p>G6.4.1 Health hazards related to mine lighting are analysed and appropriate systems and procedures are established.</p> <p>G6.4.2 Health hazards associated with vibration are analysed and appropriate systems and procedures are established.</p> <p>G6.4.3 Health hazards associated with noise are analysed and appropriate systems and procedures are established.</p> <p>G6.4.4 Health hazards associated with exposure to extremes of heat / cold are analysed and appropriate systems and procedures are established.</p> <p>G6.4.5 Health hazards associated with equipment and materials are analysed and appropriate systems and procedures are established.</p> <p>G6.4.6 Health hazards associated with atmospheric conditions are analysed and appropriate control measures and systems are incorporated into the ventilation / gas management plans.</p> <p>G6.4.7 Health hazards associated with the handling, storage and conveyance of explosives are analysed and appropriate systems and procedures are established.</p>

	G6.4.8 Health hazards associated with radiation and radiation sources are analysed and appropriate systems and procedures established.
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<u>Element</u>	<u>Performance Criteria</u>
G6.5 Incorporate health and hygiene factors within mine audit and review systems.	G6.5.1 The effectiveness of health and hygiene management, as part of both operational and safety hazard management systems, is reviewed for compliance with legislation and industry practice.
	G6.5.2 The health and hygiene training program / content is audited for currency, relevance and compliance.
	G6.5.3 Recording and reporting systems and audited for compliance with legislation, industry and mine requirements.

### **Range of Variables**

1. The causal chain and focus of disease may include basic cell structure, basic DNA, sites where toxic substances can cause disease, routes of entry, routes of exit and physical injuries.
2. Routes of entry for disease may include the mechanisms covering inhalation, absorption and ingestion.
3. Common disease may include the fundamental causes and effects of lung disease, chronic bronchitis, emphysema, heart disease, pulmonary oedema, pulmonary fibrosis, cancers, hypersensitivity, occupational asthma, alveolitis, dermatitis, allergic contact dermatitis, skin cancer, poisoning, nervous system disease and circulatory system disease.
4. Common disease related to routes of exit may include those involving liver, kidney, bladder, reproductive systems and cover the latency potential.
5. Stressors (causes of stress) may include environmental factors, bad workplace design, work hazards, job design, job monotony, contractual conditions, esteem values, relationship difficulties, lack of control and physical impairments.
6. Stress effects may include fatigue, anxiety, hypertension, depression, hostility and aggression, psychosomatic complaints, neuroses and may be associated / linked with bronchial asthma, nervous rashes, diabetes and some cancers.
7. Shiftwork responses are related to circadian rhythms (24 hour rhythms) and may result in disturbed or inadequate sleep, fatigue, depression and neuroses, dependence on drugs, susceptibility to sickness and disturbed family and social life.
8. Drugs and substances may include alcohol, nicotine, drugs of prescription, other medicinal drugs, illicit drugs and substances.
9. Mine and mine working planning may include health and hygiene factors related to historical area/ region data, mine plans (currency, comprehensiveness, accuracy, surveys,

reporting systems, dangerous occurrences, conditions, incidents), materials handling systems and capacities, hung pass / chutes / bins systems, confined spaces and trenches and similar hazardous constructions.

10. Health and hygiene factors for inclusion in safety systems and plans may include policy, accountability, supervision, workforce involvement, physical environment, risk assessment practices, work planning, external information, medical / first-aid rehabilitation.

**Range of Variables (continued)**

11. Work injury recording and reporting systems may include definitions (occupational injury, fatal injury, work days lost, employees, time frames), data management, reporting parameters, reporting and investigation.
12. Sanitation and hygiene infrastructure may include systems for water (potable) and waste water, maintenance of cleanliness and sanitation, toilets, washing facilities, hand basins, crib rooms / dining areas, shower / changing facilities, vermin control and eradication, drainage of stagnant water, waste / decaying wood, refuse disposal, sheltered reception areas and regular checking processes.
13. Chemical and hazardous substances in mines may include industrial chemicals, diesel, hydraulics, oils, liquefied petroleum gas, polyurethane and asbestos.
14. Chemical and hazardous substance control measures may include elimination, substitution, isolation and protection, engineering controls (ventilation, containment, etc.), safe work practices, personal protective equipment and new product management measures (need, assessment, controls, surveillance, induction and training).
15. Atmosphere and ventilation measures may include identification of air standards (oxygen, impurities, contaminants, dust), establishment of appropriate evaluation and air quality control systems, assessment of protection needs, authorisation for nominated activities and the maintenance of adequate records of air quality levels. (See CULP 106 for further detail).
16. Dust control measures may include establishment of a dust control program, monitoring and analysis of dust, identification and responses to dust problems, selection and application of appropriate methods to determine dust concentrations.
17. Mine transport networks and rules may include routes, speed limits, controls, signage.
18. Medical matters may include common medical examination requirements, frequency of examinations and hot / cold work replacement assessment.
19. Common medical examination coverage may include medical history, physical characteristics (height, weight, blood pressure, vision, hearing), physical examination (central nervous system, digestive system, heart and lungs, muscular-skeletal system), biological measurement (urinalysis, blood tests), electrocardiograms and stress tests.
20. Training and re-training may include induction, on-the-job discussions, safety meetings, OH&S committees, circulars, safety training sessions, encouragement / incentives, input into developments, health and hygiene inspections.
21. Personal protection may include those for hearing, eyes (industrial, radiation, ultra-violet, infra-red radiation), respiratory protective devices, hand (gloves), head, feet (boots), long hair, protective clothing, safety belts and harnesses, and safety signs.
22. Mine lighting requirements may include general work areas, personal lighting for underground use, machinery mounted lighting systems, visual displays and emergency lighting systems.

23. Vibration hazards may contribute to, or result in, bone damage, stomach and digestive problems, heart problems, varicose veins, varicocle, piles, disruption to the nervous system resulting in weakness, fatigue, loss of appetite, irritability, headache, insomnia and impotence.
24. Vibration hazard analysis may include extent of damage factors (time of exposure, vibration frequency rate, amplitude of vibration), types of vibration (whole body vibration, VLF whole body vibration, LF whole body vibration, hand-arm vibration (vibration white fingers)).
25. Vibration controls may include vibration surveys, establishment of vibration limits, establishment of targets for vibration limits, provision of training in vibration measurement, and the establishment, implementation and monitoring of vehicle / equipment design criteria (operation, seating, mountings, portable machinery).
26. Noise management controls may include establishment of noise limits, regular measurement and recording of noise, engineering / design of noise controls, establishment of noise protection zones, identification, provision and testing of noise protection equipment, adequate training of personnel, and an appropriate audiometric testing regime.

**MNC.G6.A                    INCORPORATE HEALTH AND HYGIENE FACTORS INTO MINE MANAGEMENT**

**Range of Variables (continued)**

27. Heat exposure protection may include adequate training of personnel, measurements of heat stress index, monitoring of index and employees, establishment of cool rest areas, provision of cool water, provision of canopies, cabins and appropriate clothing.
28. Equipment and materials safety strategies may include selection and acquisition procedures, material safety data sheets (MSDS), risk assessment, health and safety audits, work procedures, training requirements for operation and maintenance procedures.
29. Explosive control systems may include legislative requirements, selection and procurement, storage, conveyance, handling, handling of old / deteriorated stock, misfires, entry after blasting, charging, inspections, initiation, storms and electronic risks.

Evidence of Guide

**1.            Context of Assessment**

The ultimate competency outcome is for the candidate to be able to incorporate appropriate and comprehensive health and hygiene coverage within the mine's operational and safety hazard management activities and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Health and hygiene circumstances and requirements will differ markedly between mine sites. Therefore, there are some limitations on the extent to which the practical establishment of health and hygiene systems may be assessed in the workplace. To bridge this potential gap

and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following requirements:

- A. Theory and knowledge underpinning the competency
- B. Application of theory to a generic practical situation / simulation
- C. Practical implementation of an occupational health and safety system

## 2. **Inter-dependant Assessment of Units**

Element G6.1, Identify the Fundamentals of Human Disease and Injury, is a unique competency which needs a particular assessment focus.

The remaining elements have much in common with the range of competencies which require the establishment of safety management plans (e.g. Ventilation, Gas, Spontaneous Combustion, etc.) and functional / operation plans. Depending on the individual requirements of mines, it should be possible to create common and inter-dependant assessment of these related competencies.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. interpreting and communicating information on health and hygiene matters
- b. identifying, explaining and responding to the fundamentals of human disease and injury
- c. identifying, explaining, anticipating and responding to situations involving stress, shiftwork effects and drug and substance abuse
- d. identifying, anticipating and responding to health and hygiene hazards
- e. incorporating health and hygiene coverage into the mine's human resource recruitment, management and administrative systems and processes

### **MNC.G6.A INCORPORATE HEALTH AND HYGIENE FACTORS INTO MINE MANAGEMENT**

3. **Critical Aspects of Evidence.** (continued)

- f. incorporating health and hygiene coverage into mining and operational infrastructure, plans and management processes
- g. incorporating health and hygiene coverage into the mine's equipment / materials procurement, management and maintenance systems and procedures
- h. incorporating health and hygiene coverage into safety hazard management plans and processes
- i. establishing the mine's health and hygiene training systems and programs

4. **Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Health



and hygiene coverage within Operational and Safety Management System and its implementation is to meet Legislative and Industry standards.

**5. Underpinning Knowledge.** A knowledge of:

- legislative and industry health and hygiene standards and compliance requirements
- health and hygiene policy development processes and techniques
- procedures and techniques for establishing health and hygiene objectives, targets, performance indicators and criteria
- health and hygiene management systems information support requirements and options
- risk management and control theory and processes
- continuous improvement processes and techniques
- fundamentals of human disease and injury
- causes, symptoms and impacts of stress on employees
- potential impacts of drug and substance abuse
- individual medical standards and examination systems
- rehabilitation options, processes and techniques
- personnel protective equipments and measures
- manual handling codes and practices
- sanitation and hygiene infrastructure and operational requirements
- mine hazards associated with hazardous substances and the likely impacts on personnel
- chemical information management systems
- mine hazards associated with atmosphere and the likely impacts on personnel
- atmosphere and dust control and protection systems
- mine hazards associated with mining processes and the likely impacts on personnel
- health hazards associated with exposure to heat / cold conditions
- hazards associated with explosives
- health hazards associated with radiation and radiation sources
- mine hazards associated with equipment and plant and the likely impacts on personnel
- equipment / plant safeguarding options and techniques
- equipment / plant isolation techniques
- health hazards associated with lighting
- health hazards associated with vibration
- health hazards associated with noise
- mine transport network design and planning requirements
- conventional signage techniques
- area isolation techniques
- health and hygiene training requirements and systems

**MNC.G6.A            INCORPORATE HEALTH AND HYGIENE FACTORS INTO  
MINE MANAGEMENT**

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- communicate ideas and information
- plan and organise activities
- prepare and document policy, plans and procedures
- apply risk management processes and techniques
- conduct enquiries / investigations and prepare reports
- access, evaluate and apply data from monitoring systems and equipment / plant
- work with others and in teams
- validate training analysis results
- apply review and audit processes and techniques

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information	2
Communicating ideas and information	2
Planning and organising activities	2
Working with others and in teams	2
Solving problems	2
Using mathematical ideas and techniques	1
Using technology	1

**MNC.G7.A IMPLEMENT AND APPLY HEALTH AND HYGIENE MANAGEMENT MEASURES**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Description:** This unit covers the operational management functions and underpinning knowledge required for the implementation of health and hygiene measures.

<u>Element</u>	<u>Performance Criteria</u>
<p>G7.1 Identify the Fundamentals of Human Disease and Injury</p>	<p>G7.1.1 The causal chain and focus of common diseases are identified.</p> <p>G7.1.2 The causes, symptoms and impacts of stress on employee health and effectiveness are identified.</p> <p>G7.1.3 The potential impacts of shiftwork on employee health and effectiveness are identified.</p> <p>G7.1.4 The potential impacts of drug and substance abuse on employee health and effectiveness are identified.</p>
<p>G7.2 Identify Health and Hygiene Standards and Systems</p>	<p>G7.2.1 Legislative and industry standards for health and hygiene are identified, analysed and interpreted.</p> <p>G7.2.2. Health and hygiene requirements within the mine operational planning and management systems are identified and interpreted.</p> <p>G7.2.3 Health and hygiene requirements within the mine safety management plans are identified and interpreted.</p> <p>G7.2.4 Work injury recording systems are implemented and reviewed regularly.</p> <p>G7.2.5 Sanitation and hygiene systems are implemented and reviewed regularly.</p> <p>G7.2.6 Chemical and hazardous substances control</p>

	<p>systems are implemented and reviewed regularly.</p> <p>G7.2.7 Atmospheric and dust control measures are implemented in accordance with the ventilation management plan.</p> <p>G7.2.8 Mine transport networks and rules are implemented and maintained.</p>
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**MNC.G7.A IMPLEMENT AND APPLY HEALTH AND HYGIENE MANAGEMENT MEASURES**

<u>Element</u>	<u>Performance Criteria</u>
<p>G7.3 Establish Health and Hygiene Protection Measures for Individuals</p>	<p>G7.3.1 Individual medical recruitment and re-appraisal measures are implemented and results are monitored and responded to.</p> <p>G7.3.2 Health and hygiene training systems and programs are implemented, supported and reviewed.</p> <p>G7.3.3 Personal protection equipment systems and measures are implemented and the effectiveness of protection is monitored.</p> <p>G7.3.4 Systems and procedures for manual and assisted handling are resourced, implemented and monitored.</p>
<p>G7.4 Implement and Apply Control Measures for Operational Health and Hygiene Hazards</p>	<p>G7.4.1 Control measures and standards related to mine lighting are identified, implemented and monitored.</p> <p>G7.4.2 Control measures and standards related to vibration are identified, implemented and monitored.</p> <p>G7.4.3. Control measures and standards related to noise are identified, implemented and monitored.</p> <p>G7.4.4 Control measures and standards associated with exposure to extremes of heat / cold are identified, implemented and monitored.</p> <p>G7.4.5 Control measures associated with equipment and materials are identified, implemented and monitored.</p> <p>G7.4.6 Air quantity and quality control measures are identified, implemented and monitored.</p> <p>G7.4.7 Control measures and standards related to the handling, storage and conveyance of explosives are identified, implemented and monitored.</p> <p>G7.4.8 Control measures and standards related to</p>

		radiation and radiation sources are identified, implemented and monitored.
G7.5	Contribute to mine audit and review systems in respect of health and hygiene measures.	<p>G7.5.1 The effectiveness of health and hygiene management, as part of both operational and safety hazard management systems, is reviewed for compliance with legislation, industry practice and the appropriate mine management plan.</p> <p>G7.5.2 Circumstances which give rise to or threaten the health and hygiene of individuals are investigated and responded to, or referred to the appropriate authority for response.</p> <p>G7.5.3 The health and hygiene training program / content is audited and / or reviewed for currency, relevance and compliance.</p> <p>G7.5.4 Recording and reporting systems are reviewed and / or audited for compliance with legislation, industry and mine requirements.</p>

**MNC.G7.A IMPLEMENT AND APPLY HEALTH AND HYGIENE MANAGEMENT MEASURES**

**Range of Variables**

1. The causal chain and focus of disease may include basic cell structure, basic DNA, sites where toxic substances can cause disease, routes of entry, routes of exit and physical injuries.
2. Routes of entry for disease may include the mechanisms covering inhalation, absorption and ingestion.
3. Common disease may include the fundamental causes and effects of lung disease, chronic bronchitis, emphysema, heart disease, pulmonary oedema, pulmonary fibrosis, cancers, hypersensitivity, occupational asthma, alveolitis, dermatitis, allergic contact dermatitis, skin cancer, poisoning, nervous system disease and circulatory system disease.
4. Common disease related to routes of exit may include those involving liver, kidney, bladder, reproductive systems and cover the latency potential.
5. Stressors (causes of stress) may include environmental factors, bad workplace design, work hazards, job design, job monotony, contractual conditions, esteem values, relationship difficulties, lack of control and physical impairments.
6. Stress effects may include fatigue, anxiety, hypertension, depression, hostility and aggression, psychosomatic complaints, neuroses and may be associated / linked with bronchial asthma, nervous rashes, diabetes and some cancers.

7. Shiftwork responses are related to circadian rhythms (24 hour rhythms) and may result in disturbed or inadequate sleep, fatigue, depression and neuroses, dependence on drugs, susceptibility to sickness and disturbed family and social life.
8. Drugs and substances may include alcohol, nicotine, drugs of prescription, other medicinal drugs, illicit drugs and substances.
9. Mine and mine working planning may include health and hygiene factors related to historical area / region data, mine plans (currency, comprehensiveness, accuracy, surveys, reporting systems, dangerous occurrences, conditions, incidents), materials handling systems and capacities, hung pass / chutes / bins systems, confined spaces and trenches and similar hazardous constructions.
10. Health and hygiene factors for inclusion in safety systems and plans may include policy, accountability, supervision, workforce involvement, physical environment, risk assessment practices, work planning, external information, medical / first-aid rehabilitation.
11. Work injury recording and reporting systems may include definitions (occupational injury, fatal injury, work days lost, employees, time frames), data management, reporting parameters, reporting and investigation.
12. Sanitation and hygiene infrastructure may include systems for water (potable) and waste water, maintenance of cleanliness and sanitation, toilets, washing facilities, hand basins, crib rooms / dining areas, shower / changing facilities, vermin control and eradication, drainage of stagnant water, waste / decaying wood, refuse disposal, sheltered reception areas and regular checking processes.
13. Chemical and hazardous substances in mines may include industrial chemicals, diesel, hydraulics, oils, liquefied petroleum gas, polyurethane and asbestos.
14. Chemical and hazardous substance control measures may include elimination, substitution, isolation and protection, engineering controls (ventilation, containment, etc.), safe work practices, personal protective equipment and new product management measures (need, assessment, controls, surveillance, induction and training).
15. Atmosphere and ventilation measures may include identification of air standards (oxygen, impurities, contaminants, dust), establishment of appropriate evaluation and air quality control systems, assessment of protection needs, authorisation for nominated activities and the maintenance of adequate records of air quality levels. (See CULP 107 / 8 for further detail).
16. Dust control measures may include establishment of a dust control program, monitoring and analysis of dust, identification and responses to dust problems, selection and application of appropriate methods to determine dust concentrations.
17. Mine transport networks and rules may include routes, speed limits, controls, signage.

**MNC.G7.A IMPLEMENT AND APPLY HEALTH AND HYGIENE MANAGEMENT MEASURES**

**Range of Variables**

18. Medical matters may include common medical examination requirements, frequency of examinations and hot / cold work replacement assessment.

19. Common medical examination coverage may include medical history, physical characteristics (height, weight, blood pressure, vision, hearing), physical examination (central nervous system, digestive system, heart and lungs, muscular-skeletal system), biological measurement (urinalysis, blood tests), electrocardiograms and stress tests.
20. Training and re-training may include induction, on-the-job discussions, safety meetings, OH&S committees, circulars, safety training sessions, encouragement / incentives, input into developments, health and hygiene inspections.
21. Personal protection may include those for hearing, eyes, (industrial, radiation, ultra-violet, infra-red radiation), respiratory protective devices, hand (gloves), head, feet (boots), long hair, protective clothing, safety belts and harnesses, and safety signs.
22. Mine lighting requirements may include general work areas, personal lighting for underground use, machinery mounted lighting systems, visual displays and emergency lighting systems.
23. Vibration hazards may contribute to, or result in, bone damage, stomach and digestive problems, heart problems, varicose veins, varicocle, piles, disruption to the nervous system resulting in weakness, fatigue, loss of appetite, irritability, headache, insomnia and impotence.
24. Vibration hazard analysis may include extent of damage factors (time of exposure, vibration frequency rate, amplitude of vibration), types of vibration (whole body vibration, VLF whole body vibration, LF whole body vibration, hand-arm vibration (vibration white fingers)).
25. Vibration controls may include vibration surveys, establishment of vibration limits, establishment of targets for vibration limits, provision of training in vibration measurement, and the establishment, implementation and monitoring of vehicle / equipment design criteria (operation, seating, mountings, portable machinery).
26. Noise management controls may include establishment of noise limits, regular measurement and recording of noise, engineering / design of noise controls, establishment of noise protection zones, identification provision and testing of noise protection equipment, adequate training of personnel, and an appropriate audiometric testing regime.
27. Heat exposure protection may include adequate training of personnel, measurements of heat stress index, monitoring of index and employees, establishment of cool rest areas, provision of cool water, provision of canopies, cabins and appropriate clothing.
28. Equipment and materials safety strategies may include selection and acquisition procedures, material safety data sheets (MSDS), risk assessment, health and safety audits, work procedures, training requirements for operation and maintenance procedures.
29. Explosive control systems may include legislative requirements, selection and procurement, storage, conveyance, handling, handling of old / deteriorated stock, misfires, entry after blasting, charging, inspections, initiation, storms and electronic risks.



## **MNC.G7.A IMPLEMENT AND APPLY HEALTH AND HYGIENE MANAGEMENT MEASURES**

Evidence of Guide

### **1. Context of Assessment**

The ultimate competency outcome is for the candidate to be able to implement appropriate health and hygiene measures as part of the mine's operational and safety hazard management activities and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Health and hygiene circumstances and requirements will differ markedly between mine sites. Therefore, there are some limitations on the extent to which the practical establishment of health and hygiene systems may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following requirements:

- A. Theory and knowledge underpinning the competency
- B. Application of theory to a generic practical situation / simulation
- C. Practical implementation of an occupational health and safety system

### **2. Inter-dependant Assessment of Units**

Element G7.1, Identify the Fundamentals of Human Disease and Injury, is a unique competency which needs a particular assessment focus.

The remaining elements have much in common with the range of competencies which require the implementation and application of safety management plans (e.g. Ventilation, Gas, Spontaneous Combustion, etc.) and functional / operation plans. Depending on the individual requirements of mines, it should be possible to create common and inter-dependant assessment of these related competencies.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:-

- a. interpreting and communicating information on health and hygiene matters
- b. identifying, explaining and responding to the fundamentals of human disease and injury
- c. identifying, explaining, anticipating and responding to situations involving stress, shiftwork effects and drug and substance abuse
- d. identifying, anticipating and responding to health and hygiene hazards
- e. implementing health and hygiene measures within the mine's human resource recruitment, management and administrative systems and processes

- f. implementing health and hygiene measures within mining and operational infrastructure, planning and management process
- g. implementing health and hygiene measures within the mine's equipment / materials procurement, management and maintenance systems and procedures
- h. implementing health and hygiene measures within safety hazard management plans and processes
- i. implementing the mine's health and hygiene training systems and programs

**4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Health and hygiene coverage within Operational and Safety Management Systems and its implementation is to meet Legislative and Industry standards.

## **MNC.G7.A IMPLEMENT AND APPLY HEALTH AND HYGIENE MANAGEMENT MEASURES**

### **5. Underpinning Knowledge.** A knowledge of:

- legislative and industry health and hygiene standards and compliance requirements
- health and hygiene systems development processes and techniques
- procedures and techniques for establishing health and hygiene objectives and criteria
- health and hygiene management systems information procedures
- risk management and control theory and processes
- continuous improvement processes and techniques
- fundamentals of human disease and injury
- causes, symptoms and impacts of stress on employees
- potential impacts of drug and substance abuse
- individual medical standards and examination systems
- rehabilitation processes and techniques
- personnel protective equipments and measures
- manual handling codes and practices
- sanitation and hygiene systems and procedures
- mine hazards and controls associated with hazardous substances
- chemical information management systems (MSDS or equivalent)
- mine hazards associated with atmosphere and the likely impacts on personnel
- atmosphere and dust control and protection systems
- mine hazards and controls associated with mining processes and the likely impacts on personnel
- health hazards and controls associated with exposure to heat / cold conditions
- hazards associated with explosives
- health hazards and controls associated with radiation and radiation sources
- mine hazards and controls associated with equipment and plant
- equipment / plant safeguarding options and techniques
- equipment / plant isolation techniques
- health hazards and controls associated with lighting
- health hazards and controls associated with vibration
- health hazards associated with noise
- mine transport network systems and procedures
- conventional signage techniques
- area isolation techniques
- health and hygiene training requirements and systems

### **6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- communicate ideas and information
- plan and organise activities
- prepare and document systems and procedures
- apply risk management processes and techniques
- conduct enquiries / investigations and prepare reports
- access, evaluate and apply data from monitoring systems and equipment / plant

- work with others and in teams
- validate training analysis results
- apply review and audit processes and techniques

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information	2
Communicating ideas and information	2
Planning and organising activities	2
Working with others and in teams	2
Solving problems	2
Using mathematical ideas and techniques	1
Using technology	1

## NATIONAL MINING ITAB

## BLACK COAL : GENERAL COMPETENCY STANDARDS

Descriptor This unit covers mine surveying in both underground and open cut mines

<u>Element</u>	<u>Performance criteria</u>
G10.1 Plan surveying processes	G10.1.1 Key activities and time lines are scheduled
	G10.1.2 Stakeholders are identified and contacted according to organisation's guidelines
	G10.1.3 Risk management and statutory requirements and standards are researched, considered and adhered to.
G.10.2 Gather data	G10.2.1 Equipment is operated according to manufacturer's specification, statutory and organisation's guidelines
	G10.2.2 Identified spatial components are correctly measured.
	G10.2.3 Measurements are validated and recorded in accordance with the project specifications.
	G10.2.4 Measured spatial data is reduced to project spatial reference system for comparison against design.
	G10.2.5 Inconsistencies in information are identified.
	G10.2.6 Uses and limitations of base data are determined.
	G10.2.7 Digital spatial information is produced.
G10.3 Organise data	G10.3.1 Maps, plans and charts are compiled and produced.
	G10.3.2 Data is formatted according to organisational standards.

- G1.4 Produce models
  - G10.4.1 Models of natural or cultural entities and phenomena are created.
  - G10.4.2 Model files are created and integrated with other data.
  - G10.4.3 Model files are transferred between various media.
- G1.5 Complete documentation
  - G10.5.1 Data is recorded according to accepted industry standards.
  - G10.5.2 Omissions and gaps in spatial data are followed through to resolution with relevant personnel.
  - G10.5.3 All required documentation is completed promptly and accurately according to organisational requirements.
  - G10.5.4 All documentation is stored according to organisational requirements.

<b><u>Range Of Variables</u></b>
1. Survey tools include: Single shot survey instruments, Multi-shot instruments, Core Barrel Systems, Core Orientation systems.
2. Measurement may include use of theodolite, EDM, GPS, tape, level, photogrammetry, remote sensing, tide gauge, current meter, echo sounder.
3. Plans, policies and procedures may include: organisational commitment, corporate and environment policy, environmental impact assessment, community consultation and involvement, objectives and targets, surveying program, documentation and records, operational and emergency procedures, responsibility and reporting structure, environmental impact, regulatory and legal compliance, survey review audits, emission and performance monitoring and measurement, land reclamation practices.
4. Legislation, codes, regulations and standards may include: Australian standards, environmental agencies regulations, environmental protection acts, isolation procedures, manufacturers' specifications and recommendations, Coal Mining Acts and regulations, occupational health and safety legislation, mine managers' rules, mine legislation.
5. Spatial components may include position, dimension, height, direction, depth, slope, volume, flow rates.
6. Stakeholders may include client, client representatives, government authorities, community groups, geologists, engineers, architects, contractors.
7. Design may be represented by hard copy plans or maps or digital information.
8. Contingencies may include equipment failure, observation errors, movement, weather, injury, obstructions.

## EVIDENCE GUIDE

1. **Context of assessment.** Competencies should be assessed, wherever possible, during real work activities being completed by the candidate.

Summative assessment of underpinning knowledge, to the extent as required, and formative assessment of application skills may be conducted through simulations.

2. Interdependence of units

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. Critical aspects of evidence

Assessment should confirm competency in activities relevant to mine site operations such as:

- a. conducting an activity safely and efficiently
- b. achieving quality and productivity targets
- c. adhering to and understanding relevant legislative (state and federal) requirements and mine manager's rules
- d. adhering to and understanding environmental and heritage issues.



4. **Consistency of performance.** Consistency of performance will in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or physical cost/benefits and to other variable factors. The assessment must satisfy the critical aspects expressed in the units. The dimensions of assessment required to attain and maintain the competencies as current, unless established elsewhere by appropriate authority, should be determined following consideration of the local factors.

5. **Knowledge would include:**

- measurement techniques
- accuracy and precision requirements
- limitations of equipment, measuring and analysis guidelines
- project reporting guidelines
- spatial reference systems
- spatial data reduction and manipulation techniques
- risk management principles
- company organisation
- work role definitions
- reporting methods and alternatives
- relevant regulations, licenses and permits
- emergency procedures and obligations
- community expectations
- consultative strategies
- alternative documentation systems for procedures.

6. **Skills demonstrated would include:**

- development of responsibility/motivation
- policy management skills
- interpersonal skills
- liaison with other parties
- coordination of others
- information management
- problem solving
- analysis
- use of measuring equipment
- clear report writing
- meeting facilitation.

**Key Competencies**

<i>Key competency</i>	<i>Level</i>
Collecting, analysing, organising ideas and information.	3
Communicating ideas and information.	3

Planning and organizing activities.	3
Working with others in teams.	3
Solving problems.	3
Using mathematical ideas and techniques.	2
Using technologies.	2

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NATIONAL MINING ITAB

BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the accessing, updating and retrieval of data held in a computer using a keyboard.

<u>Element</u>	<u>Performance Criteria</u>
G25.1 Prepare for Work.	<p>G25.1.1 Work requirement is identified, analysed and confirmed.</p> <p>G25.1.2 Occupational health and safety requirements for screen based equipment and ergonomic work stations are observed.</p>
G25.2 Access and Update Information.	<p>G25.2.1 Computer is turned on and system accessed in accordance with manufacturer's instructions to eliminate the risk of equipment malfunction.</p> <p>G25.2.2 Keyboard is operated using appropriate typing techniques.</p> <p>G25.2.3 Appropriate software is selected from the menu to access designated program.</p> <p>G25.2.4 Files are correctly identified and opened.</p> <p>G25.2.5 Information is updated against pre-set formats and fields</p> <p>G25.2.6 Information is saved</p>
G25.3 Retrieve Information.	<p>G25.3.1 Information to be retrieved is located in the file.</p> <p>G25.3.2 Information is retrieved using prescribed systems, sequences and appropriate keyboard techniques.</p> <p>G25.3.3 Information is checked to ensure it meets the original requirements.</p>

G25.4 Close File.	G25.4.1 File is closed in accordance with systems instructions.
G25.5 Shut Down Equipment.	G25.4.2 Program is exited in accordance with designated procedures.
	G25.5.1 System is exited following prompts in order to preserve the data.
	G25.5.2 General housekeeping, including cleaning, covering and, where necessary, securing of equipment is carried out.
	G25.5.3 Software and disks are stored in accordance with approved procedures where used.

**Range of Variables:**

- 1 Computer system access may require the use of passwords for security.
- 2 Information retrieval may include that from stores/supply system, maintenance management systems, training records, personnel administration files or safety information.
- 3 Keyboards may include standard keyboards, equipment keypads, mouse, joystick and touch screens.
- 4 Information retrieval may be by screen reading, printing (to the pre-set print station) and audio.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on computer operations
- c. completing start-up and shut-down procedures

Completing essential functions including:

- d. accessing and updating information
- e. retrieving information
- f. closing files
  
- g. completing operator maintenance

**Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- occupational health and safety standards and requirements for keyboard and screen based equipment
- basic functions and components of a typical computing system
- the major computerised information systems relevant to the work area, their purpose and external appearance
- basic systems access and exit information
- site computer system security measures

- keyboard functions
- site computing systems general housekeeping procedures

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information related to this function
- apply keyboard and screen based occupational health and safety requirements and practices
- access the computing system using a keyboard and password
- identify and access the specific file required using system documentation or help menu functions
- input against pre-set fields
- exit the system
- load and unload disk based information (where relevant)

**7. Key Competencies****Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	0
Planning and organising activities.	1
Working with others and in teams.	0
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1



**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:** This unit covers the input, editing and printing of simple computer word processing documents and formatted reports.

**Pre-requisites:** Unit MNC.G25.A Access and Retrieve Computerised Information

<u>Element</u>	<u>Performance Criteria</u>
G26.1 Create File.	<p>G26.1.1 Work requirements are identified, analysed and confirmed.</p> <p>G26.1.2 Computer is turned on in accordance with manufacturer's instructions.</p> <p>G26.1.3 New disk is formatted using correct procedure if necessary.</p> <p>G26.1.4 Appropriate software is loaded or selected from the menu.</p> <p>G26.1.5 Appropriate directory is selected or created.</p> <p>G26.1.6 New file is correctly opened and named.</p> <p>G26.1.7 OHS guidelines relating to screen based equipment and ergonomic workstations are observed, throughout keyboard operations.</p>
G26.2 Produce Document From Written Text Using Standard Format.	<p>G26.2.1 Keyboard/mouse is operated within the designated speed and accuracy requirements.</p> <p>G26.2.2 Document produced is an accurate reflection of the written notes provided.</p> <p>G26.2.3 Document is produced in required style and format.</p>

G26.2.4 Document is produced within designated timelines.

G26.2.5 Document is saved regularly to avoid loss of data.

<u>Element</u>	<u>Performance Criteria</u>
G26.3 Edit Information.	G26.3.1 Data to be edited is identified.
	G26.3.2 Data is entered, changed or deleted using keyboard/mouse.
	G26.3.3 Document is saved regularly to avoid loss of data.
	G26.3.4 Edited information is checked against original for accuracy of contents.
	G26.3.5 Spelling and grammar is checked.
	G26.3.6 Draft is proof-read prior to final print out.
G26.4 Print Document.	G26.4.1 Print preview used to check document for format and layout.
	G26.4.2 Document is printed as required.
	G26.4.3 Appropriate stationery is loaded into the printer.
	G26.4.4 Defaults altered to suit document if necessary.
G26.5 Save, Exit and Shutdown.	G26.5.1 Files are saved, closed and programs are exited in accordance with specified procedures.
	G26.5.2 Disks/data are filed and stored in accordance with site procedures.
	G26.5.3 Back up files are made in accordance with specified procedures if required.

**Range of Variables:**

- 1 Routine documents may include formatted proformas and reports, electronic mail and general correspondence.

- 2 Documents may also include word-processing, databases (edit/print only) and spreadsheets (edit/print only).
- 3 Speed and accuracy may be to AS2708.
- 4 Occupational health and safety issues may include but not be limited to posture, lighting, work stations set-up, glare, noise and temperature.
- 5 Printing may be required to a range of available printers within a network.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on computer operations
- c. completing start-up and shut-down procedures

Completing essential functions including:

- d. creating a file
- e. producing a document
- f. editing information
- g. printing a document
- h. saving a document
  
- i. completing operator maintenance

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- occupational health and safety requirements for keyboard and screen based equipment
- the site computing environment
- information processing facilities generally available within the work area
- the printer support options available for use and systems for direction to printer
- file storage options and procedures

- site file management requirements and procedures
- types and uses of standard layout and templates

**6. Underpinning Skills.** The ability to:

- apply keyboard and screen based occupational health and safety requirements and practices
- access, read, interpret and apply relevant technical information
- perform simple word processing
- create new documents
- format documents
- apply formatting enhancements
- use available spell and grammar check facilities
- back up information
- save information to file
- exit the software
- print documents
- replenish consumables/paper in printer

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the establishment of document structures, and the production and saving of complex computerised documents. It requires the use of a range of functions within the software package.**

<u>Element</u>	<u>Performance Criteria</u>
G27.1 Establish Document Structure.	<p>G27.1.1 Appropriate software is selected.</p> <p>G27.1.2 Default format is specified if necessary.</p> <p>G27.1.3 The structure and style of the document is suitable for the type of information provided.</p> <p>G27.1.4 OHS guidelines relating to screen based equipment and ergonomic workstations are observed.</p>
G27.2 Produce Documents.	<p>G27.2.1 Keyboard/mouse is operated within the designated speed and accuracy requirements.</p> <p>G27.2.2 Data is entered and edited accurately.</p> <p>G27.2.3 A range of advanced functions is used to ensure the accurate completion of the task within the designated timelines.</p> <p>G27.2.4 Information from other computer files and/or printed documents is inserted as required.</p> <p>G27.2.5 Spelling and grammar are checked.</p> <p>G27.2.6 Documents are proof read for accuracy of contents.</p> <p>G27.2.7 Documents are proof read for consistency of</p>



layout and style.

G27.2.8 Modifications are made to meet required specifications.

G27.2.9 Documents are presented to the nominated person/section for approval prior to completion and/or final printing where necessary.

G27.2.10 Print preview function is used to check layout/format.

G27.2.11 Documents are printed as required.

**USE KEYBOARD SKILLS AND ADVANCED  
FUNCTIONS OF SOFTWARE TO PRODUCE  
COMPLEX DOCUMENTS**

<p>G27.3 Save, Exit and Shutdown Equipment.</p>	<p>G27.3.1 Files/documents are saved, closed and program is exited in accordance with screen prompts to preserve the data.</p> <p>G27.3.2 Disks/data are filed and stored in accordance with site procedures.</p> <p>G27.3.3 Back-up files are made in accordance with site procedures if necessary.</p>
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**Range of Variables:**

- 1 Complex document production in this unit requires the application of a range of advanced functions and the insertion of information from other computer files within the same software package. (It does not require or involve the integration of information from other software packages(See Unit G28).
- 2 Applications may include statistical information in graph form, projections, flow charts, charting diagrams, payroll and accounts payable.
- 3 Complexity of software package functions utilised may include tables, columns, cut and paste, and merge.
- 4 Software packages may include word-processing, data-bases and spreadsheets.
- 5 Speed and accuracy may be to AS2708.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on computer operations
- c. completing start-up and shut-down procedures

Completing essential functions including:

- d. establishing the document structure
- e. using software advanced functions
- f. producing the document
  
- g. completing operator maintenance

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- occupational health and safety standards and requirements relating to keyboard and screen based equipment
- site computing environment
- file management requirements and procedures
- software characteristics, capabilities and limitations
- computer systems security requirements
- types and uses of standard templates

**6. Underpinning Skills.** The ability to:

- apply screen based and ergonomic occupational health and safety requirements
- access, read, interpret and apply technical information related to computing
- interpret and clarify draft materials
- effectively proof materials/outcomes
- effectively communicate with the author/client
- operate within agreed timeframes

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	2

MNC.G28.A

**USE ADVANCED FUNCTIONS OF SOFTWARE  
PACKAGES TO PRODUCE DOCUMENTS,  
REPORTS AND WORKSHEETS**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:** This unit covers the determination of presentation format and the production and saving of complex computerised documents. It requires the integration of materials between software packages.

<u>Element</u>	<u>Performance Criteria</u>
G28.1 Determine Presentation and Format of Document.	G28.1.1 Presentation and information requirements of the document are reflected in the layout and style. G28.1.2 Document design is consistent with guidelines. G28.1.3 Appropriate software is selected for the task. G28.1.4 Document is set up ready for the entry of information. G28.1.5 OHS guidelines relating to screen based equipment and ergonomic workstations are observed.
G28.2 Produce Document.	G28.2.1 Keyboard/mouse is operated within the designated speed and accuracy requirements. G28.2.2 All information is clearly and accurately presented. G28.2.3 A broad range of software package functions are accessed to ensure the accurate completion of the task within the designated timelines. G28.2.4 A broad range of advanced software package functions is used to display information clearly. G28.2.5 Information from other documents within same software packages, or printed material is inserted as required.

G28.2.6 Information from other software packages is integrated as required.

G28.2.7 Documents are proof read for accuracy and consistency.

G28.2.8 Document is edited as required.

G28.2.9 Layout is modified to improve appearance and meet required specifications.

**USE ADVANCED FUNCTIONS OF SOFTWARE  
PACKAGES TO PRODUCE DOCUMENTS,  
REPORTS AND WORKSHEETS**

G28.3 Save, Exit and Shutdown Equipment.	<p>G28.3.1 Files/documents are saved, closed and program is exited in accordance with screen prompts to preserve the data.</p> <p>G28.3.2 Disks/data are filed and stored in accordance with site procedures.</p> <p>G28.3.3 Back-up files are made in accordance with site procedures if necessary.</p>
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**Range of Variables:**

- 1 Complex document production in this unit requires the application of a range of advanced functions, the integration of information between software package, procedures and policies, eg.: systems security, site formats and protocols, and back-up procedures.
- 2 Applications may include statistical information in graph form, projections, flow charts, charting, diagrams, payroll and accounts payable.
- 3 Software packages may include word-processing, data-bases and spreadsheets, graphics and desk-top publishing.
- 4 Complexity of software package functions utilised may include importing and exporting of files and documents and integration of different applications.



**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on computer operations
- c. completing start-up and shut-down procedures

Completing essential functions including:

- d. establishing the document structure
- e. integrating the functions of complex software
- f. producing the document

- g. completing operator maintenance

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- Occupational health and safety requirements related to the use of computers and ergonomic work stations
- site computing environment
- site computing systems and software and the capabilities and operations of these
- site document formats and protocols

**6. Underpinning Skills.** The ability to:

- apply screen based and ergonomic occupational health and safety requirements
- access, read, interpret and apply technical information related to computing
- interpret and clarify draft materials
- use and integrate the functions of complex software
- effectively proof materials/outcomes
- effectively communicate with the author/client
- operate within agreed timeframes

MNC.G28.A

**USE ADVANCED FUNCTIONS OF SOFTWARE  
PACKAGES TO PRODUCE DOCUMENTS,  
REPORTS AND WORKSHEETS**

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	2
Using technology.	

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the transfer of information by electronic mail, the internet and intranet.**

<u>Elements</u>	<u>Performance Criteria</u>
G29.1 Plan and Prepare for Transfer.	<p>G29.1.1 Transfer requirement is identified, analysed and confirmed.</p> <p>G29.1.2 Occupational health and safety requirements for screen based equipment and ergonomic work stations are observed.</p> <p>G29.1.3 Computer is turned on and the system accessed in accordance with the site and manufacturer's instructions.</p> <p>G29.1.4 Computer system security is maintained throughout work in accordance with site requirements.</p>
G29.2 Send and Receive Electronic Mail.	<p>G29.2.1 Email message is entered into the software as required.</p> <p>G29.2.2 Documents are selected and attached to the email as required.</p> <p>G29.2.3 Email messages are transmitted and/or received in accordance with manufacturer's/site requirements.</p> <p>G29.2.4 Messages are printed, filed, stored or deleted as required in accordance with site requirements.</p>

<p>G29.3 Access and Use the Internet / Intranet.</p>	<p>G29.3.1 Information provider's internet / intranet address is identified and confirmed.</p> <p>G29.3.2 Information provider's web site is accessed in accordance with software procedures.</p> <p>G29.3.3 Information is identified, downloaded and/or printed in accordance with software procedures.</p> <p>G29.3.4 Information is filed, stored or deleted as required.</p>
<p>G29.4 Finalise Transfer Procedures.</p>	<p>G29.4.1 File management is carried out in accordance with manufacturer's and site requirements.</p> <p>G29.4.2 System software is exited and logoff procedures are applied in accordance with site procedures.</p>

**Range of Variables**

- 1 Occupational health and safety issues may include, but are not limited to, posture, lighting, seating, workstation setup, glare, noise and temperature.
- 2 System access may require the use of logon identification and passwords.
- 3 Attachments may include word-processing, data-bases, spreadsheets and graphics.
- 4 Identification of internet addresses may require internet browsing.
- 5 File management may require deletion, downloading onto disk or movement to other directories.
- 6 Computer security may include protection of screenbased or hardcopy sensitive information, not leaving workstation unattended whilst logged on.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on computer operations
  - c. completing start-up and shut-down procedures

Completing essential functions including:

- d. transmitting and receiving email
  - e. accessing and downloading information
  - f. completing file management
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
  5. **Underpinning Knowledge.** A knowledge of:
    - Occupational health and safety requirements related to the use of computers and ergonomic work stations
    - site computing environment
    - site computing systems and software and the capabilities and operations of these
    - site file management procedures

**6. Underpinning Skills.** The ability to:

- apply screen based and ergonomic occupational health and safety requirements
- access, read, interpret and apply technical information related to computing
- receive and transmit email messages
- use and integrate the functions of complex software

**7. Key Competencies.** The following are the levels of national key competencies required to support the application of this unit.

	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	0
Planning and organising activities.	1
Working with others and in teams.	0
Solving problems.	1
Using mathematical ideas and techniques.	0
Using technology.	1



**NATIONAL MINING ITAB****BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:** **This unit covers the direct purchasing of goods and materials by non-purchasing personnel.**

<u>Elements</u>	<b>Performance Criteria</b>
G30.1 Plan and Prepare for Purchasing.	<p>G30.1.1 Purchasing requirements are identified from work requests and confirmed, if necessary, with the appropriate authority in accordance with site procedures.</p> <p>G30.1.2 Quantities, specifications, price limitations and delivery requirements are determined in accordance with site requirements.</p> <p>G30.1.3 The purchase order/list is completed in accordance with site requirements.</p>
G30.2 Purchase Materials.	<p>G30.2.1 The supplier/vendor is advised of the requirements and specifications in accordance with site requirements.</p> <p>G30.2.2 Purchasing schedules are adjusted where appropriate in accordance with site requirements.</p> <p>G30.2.3 Materials are checked/inspected on receipt in accordance with site requirements.</p>
G30.3 Complete Purchasing Sequence.	<p>G30.3.1 Purchase materials are accounted for in accordance with site requirements.</p> <p>G30.3.2 All records/reports are maintained in accordance with site requirements.</p>

<b><u>Range of Variables :</u></b>
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1. Purchased materials can include, but are not limited to, components, spare parts, raw materials.
2. Specifications are obtained from drawings, manufacturer's specifications, data sheets or other site information.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the normal work environment and in accordance with site procedures.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. interpreting and communicating information on purchasing operations
- b. identifying purchase requirements
- c. completing purchasing documentation
- d. accounting for purchased materials

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site purchasing procedures
- materials requirements
- available vendors/suppliers

**6. Underpinning Skills.** The ability to:

- communicate effectively
- determine purchasing requirements
- maintain records

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.

1  
1

Communicating ideas and information.	1
Planning and organising activities.	0
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

NATIONAL MINING ITAB

BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the maintenance skills which are appropriate for application by operators, servicemen and trades support personnel.

<u>Elements</u>	<b>Performance Criteria</b>
G35.1 Select, Use and Care for Tools.	<p>G35.1.1 Tools required for the work are correctly identified and obtained.</p> <p>G35.1.2 Tools are inspected for serviceability and prepared for use.</p> <p>G35.1.3 Tools are used correctly and safely for their intended purpose.</p> <p>G35.1.4 Tool maintenance requirements are identified and responded to in accordance with manufacturer's instructions and work procedures.</p> <p>G35.1.5 Tools are cleaned after use and returned/stored in accordance with site procedures and practices.</p>
G35.2 Identify and Respond to Basic Faults in Mechanical Systems.	<p>G35.2.1 Site safety principles and procedures, including isolation procedures, are applied when working with mechanical systems.</p> <p>G35.2.2 General components of mechanical systems, and their functions, are identified.</p> <p>G35.2.3 Basic diagnostic techniques are applied to identify and respond to faults.</p> <p>G35.2.4 Faults are rectified or referred to others in accordance with site procedures.</p>
G35.3 Identify and Respond to Basic Faults in Electrical Systems.	<p>G35.3.1 Site safety principles and procedures, including isolation procedures, are applied when working with electrical systems.</p>

G35.3.2 Components and functions of basic electrical circuitry are identified.

G35.3.3 Basic diagnostic techniques are applied to identify and respond to faults.

G35.3.4 Faults are rectified or referred to others in accordance with site procedures.

<b>Elements</b>	<u>Performance Criteria</u>
G35.4 Identify, Select and Use Fasteners	<p>G35.4.1 Site safety systems and procedures, including isolation procedures, are applied when working with fasteners.</p> <p>G35.4.2 Fasteners are correctly identified and matched with the work requirements.</p> <p>G35.4.3 Fasteners are used / applied in accordance with manufacturer's instructions and site procedures / practices.</p> <p>G35.4.4 Discarded materials are disposed of in accordance with site procedures.</p>

**Range Of Variables:**

Operational maintenance procedures are those established and authorised at the mine.

Site safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management systems and plans, managers rules, OH&S policy, codes of practice, safe working procedures and safe job procedures(or equivalent).

Tools may include hand, power-tools and measuring devices.

Hand tools may include spanners, hammers, files, screwdrivers, saws, knives and pipe cutters.

Power-tools may include grinders, drills, saws, jacks, hydraulic spreaders and pneumatic powered tools.

Measuring devices may include rulers, callipers, verniers, gauges and feeler gauges.

Basic mechanical systems may be hydraulic, lubrication and pneumatic.

Basic electrical systems may cover low and medium voltage and include equipment batteries, ignition and operational circuits including lighting circuits.

Fasteners may include screws, bolts, staples, clamps, rivets and adhesives.





**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work, or simulated work, environment within the bounds of safety and authorisations established at the site.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

This unit is also applicable to, and underpins or contributes to, the ‘operator maintenance’ element which appears in many functional units.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety measures
- b. interpreting and communicating information on operational maintenance functions
- c. identifying, selecting, preparing, using and maintaining hand tools
- d. identifying, selecting, preparing, using and maintaining power tools
- e. identifying and responding to basic faults in mechanical systems
- f. identifying and responding to basic faults in hydraulic systems
- g. identifying and responding to basic faults in pneumatic systems
- h. identifying and responding to basic faults in lubrication systems
- i. identifying and responding to basic faults in electrical systems
- j. identifying, selecting and using a range of fasteners.

**4. Consistency of Performance.**

Aspects of this unit are also applicable to, and underpin or contribute to, the operator maintenance element which appears in a range of functional units. However, the fact that a candidate has been assessed as competent in this unit should not remove the need for the candidate to be assessed in the particular applications required within the functional unit.

Consistency of performance will, in many cases be determined in relation to local conditions, to the critically of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- types and uses of oils, greases, hydraulic fluids, brake fluid and other commonly used servicing materials
- site isolation procedures
- site operational and safety procedures
- site procedures relating to operational maintenance
- site maintenance systems and procedures
- types, characteristics, uses and limitations of hand tools
- types, characteristics, uses and limitations of measuring devices
- hand tool maintenance, care and storage procedures
- types, characteristics, uses and limitations of power tools
- power tool maintenance, care and storage procedures
- the functions of major components of common mechanical systems

**5. Underpinning Knowledge. ( continued):** A knowledge of:

- the functions of major components of common hydraulic systems
- the functions of major components of common pneumatic systems
- the functions of major components of common lubrication systems
- basic diagnostic processes/techniques of mechanical systems
- major components within common electrical systems
- electrical system basic circuit diagnostic processes and techniques
- types, uses, grades and limitations of fasteners
- environmental constraints and requirements related to operational maintenance

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access and interpret manufacturer's and site technical information
- match tools with work needs
- apply hand-eye coordination
- apply site isolation procedures
- respond to faults
- apply diagnostic techniques to systems
- complete reporting systems
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information	1
Communicating ideas and information	1
Planning and organising activities	1
Working with others and in teams	1
Solving problems	1
Using mathematical ideas and techniques	1
Using technology	1

**MNC.G36.A  
(TOTRADESPERSON)**

**PROVIDE ELECTRICAL SUPPORT**

**NATIONAL MINING ITAB**

**BLACK COAL: GENERAL COMPETENCY STANDARDS**

**Descriptor: This unit covers the support provided to an electrical tradesperson during normal duties and emergency situations.**

<b>Elements</b>	<u>Performance Criteria</u>
G36.1 Plan and Prepare for Support.	G36.1.1 Details of support required is received from tradesperson and clarified. G36.1.2 Safety information and procedures are accessed and applied throughout the work. G36.1.2 Work requirement is analysed and immediate planning/organising completed. G36.1.4 Commonly used parts/stores are identified and selected according to work requirements G36.1.5 Parts/stores and equipment are packed, loaded and transported to worksite in accordance with the work plan
G36.2 Support Tradesperson.	G36.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity. G36.2.2 Support tasks are carried out in accordance with the tradesperson directions
G36.3 Apply Emergency Procedures.	G36.3.1 Emergency isolation and shut-down procedures are applied in accordance with mine managers rules G36.3.2 Notification of emergency is carried out in accordance with mine managers rules. G36.3.3 Emergency first-aid appropriate to the situation is applied in accordance with site procedures. G36.3.4 Information/reports required by site emergency procedures is provided to appropriate authorities.

**Range of Variables :**

- 1 Support requirement details may include nature and scope of work, locations, timings, equipment/plant to be used (including any defects), system being worked on, specific safety requirements, hazards and potential hazards and coordination requirements/issues.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Electrical support may include tagging, emergency HV switching, operation/re-setting circuit-breakers, greasing motors and jointing cables.
- 4 Equipment may include ladders, safety equipment, hazardous chemicals, oxyacetylene, air compressors and others as designated at sites.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work or simulated environment within the bounds of safety and in accordance with the Tradesperson instructions.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating operational information
- c. preparation and layout of worksite
- d. complying with isolation/work permit procedures
- e. applying emergency procedures
- f. applying initial response first aid and rescue procedures
- g. complying with environmental awareness

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site and equipment safety procedures
- site operational and maintenance procedures
- basic electrical theory
- major electrical componentry
- switching (for emergency purposes)
- earthing
- hazard identification and response procedures

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- work at heights
- identify electrical system components
- identify electrical spares
- apply operational maintenance diagnostic techniques
- use relevant hand tools
- maintain equipment records

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**MNC.G37.A  
EQUIPMENT**

**SERVICE MINE PLANT AND**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the scheduled servicing of mine plant and equipment additional to that covered by operator maintenance.**



<b>Elements</b>	<u>Performance Criteria</u>
G37.1 Plan and Prepare for Servicing.	<p>G37.1.1 Shift servicing requirements and plans are received, interpreted and clarified.</p> <p>G37.1.2 Safety information and procedures are accessed and applied throughout the work.</p> <p>G37.1.3 Pre-start checks on service vehicle is conducted in accordance with manufacturer's and/or site authorised procedures.</p> <p>G37.1.4 Service vehicle levels of fuel, lubricants and water are checked and topped up as necessary for the servicing plan.</p> <p>G37.1.5 Service bay is maintained.</p> <p>G37.1.6 Replacement parts and servicing tools are identified from servicing schedule and obtained from appropriate stores area.</p>
G37.2 Service Plant and Equipment.	<p>G37.2.1 Coordination and liaison is effected to arrange details of preparatory activities, timings and locations for servicing.</p> <p>G37.2.2 Start-up, park-up, shut-down procedures carried out on service vehicles in accordance with manufacturer's and/or site specific requirements.</p> <p>G37.2.3 Service vehicle is operated in accordance to manufacturer's and/or site requirements.</p> <p>G37.2.4 Servicing of plant and equipment is carried out in accordance with the service schedule, manufacturer's specifications and site requirements.</p> <p>G37.2.5 Used oils and lubricants are disposed of in accordance with environmental regulations and mine rules.</p> <p>G37.2.6 Servicing schedule is completed and/or records are maintained in accordance with site requirements.</p>

**Range of Variables:**

- 1 Shift details may include number and types of plant and equipment to be serviced, description of servicing required, specific servicing priority and achievement targets, location of plant and equipment, site lighting arrangements, hazards and potential hazards, and coordination details.
- 2 Service bay maintenance requirements may include clearing and cleaning of access ways, monitoring and maintaining fuel and lubricant levels, checking and maintenance of service bay equipment and applying authorised sampling schedule.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include isolation of plant/equipment, creation and maintenance of a safe work environment, the handling of hazardous chemicals and substances, and tagging procedures.
- 5 Service vehicle may be any vehicle that is designed or modified to carry and operate service equipment.
- 6 Service equipment may be compressors, filters, 'O' rings, gaskets, jump start equipment, compressed air start equipment, tools, fire fighting equipment, waste disposal equipment, records, cleaning agents.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety **and in accordance with service schedules.**

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on servicing operations
- c. completing servicing equipment pre-start, start-up and shut-down procedures
- d. completing housekeeping requirements
- e. following and applying authorised servicing procedures
- f. disposing of environmentally sensitive oils, fluids and materials
- g. materials handling and storage procedures

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- isolation and tag-out procedures
- emergency fire procedures
- equipment characteristics, technical capabilities and limitations
- fuel and lubricants applications and specifications
- filters application and specifications
- additives - applications/specifications
- Hazchem systems
- hazard identification and response procedures
- site environmental requirements and constraints related to servicing

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- read, interpret and apply technical information
- apply diagnostic techniques
- use relevant hand tools
- carry out oil sampling operations
- carry out basic operation of equipment to be serviced
- apply environmental constraints in servicing operations
- maintain equipment records
- dispose of environmentally sensitive fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**MNC.G38.A  
WELDING**

**PERFORM BASIC CUTTING AND**

**NATIONAL MINING ITAB**

**BLACK COAL: GENERAL COMPETENCY STANDARDS**

**Descriptor:** This unit covers the cutting and non load-bearing welding of materials using manual metal arc welding, oxyacetylene and cutting equipment and systems.

<b>Elements</b>	<u>Performance Criteria</u>
G38.1 Plan and Prepare for Welding.	<p>G38.1.1 Weld and cutting requirements are identified from work orders, specifications drawings and/or verbal instruction and confirmed.</p> <p>G38.1.2 Welding and cutting equipment, consumables and appropriate tools are identified, selected and assembled in accordance with job requirements/welding specifications and site procedures.</p> <p>G38.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
G38.2 Cut and Weld Materials.	<p>G38.1.4 Material is prepared and aligned to job specification.</p> <p>G38.2.1 Test runs are undertaken and verified in accordance with manufacturer's instructions and site specifications.</p> <p>G38.2.2 Welding and cutting is carried out in accordance with requirements.</p> <p>G38.2.3 Welds are cleaned using appropriate tools and techniques.</p>
G38.3 Complete the Work.	<p>G38.2.4 Weld and cut specifications are confirmed by visual inspection and defects identified and repaired.</p> <p>G38.3.1 Equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>G38.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>G38.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>G38.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>G38.3.5 Records are processed in accordance with site requirements.</p>



**Range of Variables :**

- 1 Welding covered by this unit is non-load bearing tack, fillet or butt welding using MMAW or oxyacetylene processes.
- 2 Cutting covered by this unit may include the application of profile cutters, pipe cutters, grinders and plasma cutters as well as oxyacetylene.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Standards operating procedures may refer to manufacturer's, workshop/worksite requirements, enterprise procedures.
- 5 Drawings may be plans, sketch or schematic.
- 6 Materials may include carbon steel and galvanised pipe.
- 7 Servicing may include cleaning and replacing tips, lubrication and replacing filter.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.



### Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work or simulated environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on cutting and welding operations
  - c. selecting and preparing cutting and welding equipment

Completing essential functions including:

- d. preparing the work site
  - e. welding (both butt and fillet)
  - f. scutting using oxyacetylene and one other method
  - g. restoration of the work site
  - h. completing operator maintenance
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
  5. **Underpinning Knowledge.** A knowledge of:
    - site and equipment safety procedures
    - basic/introductory metallurgy
    - welding processes, techniques and procedures
    - welding equipment characteristics, uses and limitations
    - cutting processes, techniques and procedures
    - cutting equipment characteristics, uses and limitations

- hazard identification and response procedures
- site environmental constraints related to welding and cutting

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- apply hand-eye coordination
- read sketches or basic drawings
- identify and select from a range of welding equipment and accessories
- identify and match cutting equipment with specified tasks
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**MNC.G39.A  
WHEELS**

**FIT AND MAINTAIN TYRES AND**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:                   This unit covers the removal, maintenance, repairing and refitting of tyres and wheels.**

<b>Elements</b>	<b>Performance Criteria</b>
G39.1 Plan for Work.	<p>G39.1.1 Maintenance schedule based on tyre usage, wear or condition is maintained according to manufacturers and/or site specifications.</p> <p>G39.1.2 Wheel rotation and tyre changes are planned based on information provided from the schedule and actual performance.</p> <p>G39.1.3 Safety information and procedures are accessed and applied throughout the operations.</p>
G39.2 Prepare for Work.	<p>G39.2.1 Safe working area is prepared or selected in accordance to manufacturers and/or site requirements.</p> <p>G39.2.2 Wheels or tyres are identified, cleaned and inspected in accordance to legislative, manufacturers and/or site requirements.</p> <p>G39.2.3 Tools and equipment are selected in accordance to site specific requirements.</p>
G39.3 Remove, Repair and Fit Tyres and Wheels.	<p>G39.3.1 Equipment and plant pre-start, start up, park up and shutdown procedures are carried out in accordance to manufacturers and/or site requirements.</p> <p>G39.3.2 Emergency procedures are carried out in accordance with manufacturers and/or mine requirements.</p> <p>G39.3.3 Vehicle is immobilised according to manufacturers and/or site requirements.</p> <p>G39.3.4 Wheel/tyre removal equipment is operated in accordance with legislative, manufacturers and/or site requirements.</p>

<b>Elements</b>	<u>Performance Criteria</u>
G39.3 Remove, Repair and Fit Tyres and Wheels (continued)	<p>G39.3.5 Wheel/tyre is removed according to legislative, manufacturers and/or site requirements.</p> <p>G39.3.6 Wheel/tyre is repaired and/or replaced in accordance with legislative, manufacturers and/or site requirements.</p> <p>G39.3.7 Wheel/tyre is fitted in accordance with legislative, manufacturers and/or site requirements.</p> <p>G39.3.8 Vehicle is prepared for operations in accordance with legislative, manufacturers and/or site requirements.</p>
G39.4 Carry Out Operator Maintenance.	<p>G39.3.9 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.</p> <p>G39.4.1 Inspection and fault finding on tyre / wheel handling and maintenance equipment are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>G39.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>G39.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>G39.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>G59.4.5 Records are processed in accordance with site requirements.</p>

**Range of Variables:**

- 1 Wheels may be rim or hub mounted split rim and safety lock rim.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management systems and plans, manager's rules, OH&S policy, codes of practice, safe working procedures and safe job procedures (or equivalent).
- 3 Equipment may include forklift, tyre manipulator, compressor, vehicle loading crane, jacks, tread gauge, stands, tyre press, air impact guns, porta powers, torque wrench, tyre balancer, bead breaker, vehicle chocks, pressure gauge, nitrogen gas equipment, rubber grease and other chemicals.
- 4 Information on tyre conditions may be gained from on-board vehicle computer systems.
- 5 Maintenance schedule may be manual or computerised.
- 6 Records which may be required by legislation, may be kept on each individual tyre and may be manual or computerised.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on fitting and maintenance operations
- c. completing equipment/plant pre-start, start-up, park-up and shut-down procedures

Completing essential functions including:

- d. deflating tyre
- e. removing wheel or tyre
- f. repair or replacement of tyres
- g. refitting wheel
- h. settings and sequencing wheel torque
- i. inflating tyres
- j. maintaining wheel/tyre records



**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- isolation procedures
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures
- tyre types, codings and applications
- tyre pressures and temperatures
- wheel torque settings and sequences
- environmental requirements and constraints related to tyres and wheels
- chemicals used with tyre fitting
- hazards such as tyre fires, separation and high pressure fluids

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- read, interpret and apply technical information
- apply diagnostic techniques
- use relevant hand tools
- operate tyre handling equipment
- maintain wheel/tyre records
- apply environmental constraints and procedures
- dispose of environmentally sensitive oils, fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	



**MNC.G40.A**

**OPERATE GANTRY CRANE**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the lifting and positioning of loads using a gantry crane.**

<b>Elements</b>	<u>Performance Criteria</u>
G40.1 Plan and Prepare for Operations.	<p>G40.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G40.1.2 Safety information and procedures are accessed and applied throughout the work.</p> <p>G40.1.3 Work is prepared for in accordance with AS2550 and manufacturers/site requirements.</p> <p>G40.1.4 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p>
G40.2 Operate Gantry Crane.	<p>G40.2.1 Load is prepared for lift in accordance with crane limitations and rigging requirements.</p> <p>G40.2.2 Pre-start, start-up, park-up and shutdown procedures are carried out in accordance with Australian Standards, manufacturer's and/or site requirements.</p> <p>G40.2.3 Work area is confirmed as clear and safe prior to commencing the lift.</p> <p>G40.2.4 Controls are operated to lift, transfer and lower loads in accordance with manufacturer's instructions and mine procedures.</p> <p>G40.2.5 Lift operations are monitored to ensure compliance with equipment limitations.</p>
G40.3 Carry Out Operator Maintenance.	<p>G40.3.1 Gantry crane inspections and fault finding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>G40.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p>

<b>Elements</b>	<u>Performance Criteria</u>
G40.3 Carry Out Operator Maintenance(Continued).	<p>G40.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>G40.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>G40.3.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Australian Standard AS2550, Cranes and State based Legislation and Regulations must be consulted and applied.
- 2 Work briefings may include crane equipment to be used, nature and scope of tasks, details of load chart/factors, achievement targets, working conditions, site lighting arrangements, defects on equipment, hazards and potential hazards and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures
- 4 Specific safety requirements are to include control and safety of travelling speed, selection and observance of safe working levels and angles, boarding and disembarking procedures, communications and signalling procedures.
- 5 Work preparation may include avoidance of hazards, identification of load, identification and selection of lifting equipment, inspection and certification of lifting equipment and management of permits and tags.
- 6 Site hazards may include facilities, other equipment and dangerous materials.
- 7 Signals for load moving are given using methods which may include verbal, hand signals to Australian Standards, whistles/hooters to Australian Standards, two-way radio/telephones and light signals to Australian Standards.

8 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on overhead crane operations

Completing essential functions including:

- c. moving the crane
- d. setting up the crane
- e. lifting and positioning loads
- f. avoidance of hazards
  
- g. completing operator maintenance
- h. disposing of environmentally sensitive oils, fluids and materials

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- Australian Standards related to cranes/lifting
- site and equipment safety requirements
- crane equipment characteristics, technical capabilities and limitations
- crane operational procedures
- crane maintenance systems and procedures
- basic rigging and slinging requirements

- hand and whistle signals
- site environmental requirements and constraints related to gantry cranes
- hazchem relevant to gantry cranes



**6. Underpinning Skills.** The ability to:

- apply eye-hand co-ordination
- calculate volume weights
- access interpret and apply technical information
- maintain equipment records
- use relevant hand tools
- apply diagnostic techniques
- comply with environmental requirements
- dispose of environmentally sensitive fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

**MNC.G41.A  
OPERATIONS**

**CONDUCT NON-SLEWING CRANE**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:                    This unit covers the lifting and positioning of loads using  
a non-slewing crane other than Gantry Cranes.**

<b>Elements</b>	<b>Performance Criteria</b>
G41.1 Plan and Prepare for Operations.	<p>G41.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G41.1.2 Safety information and procedures are accessed and applied throughout the work.</p> <p>G41.1.3 Work is prepared for in accordance with AS2550 and manufacturers/site requirements.</p> <p>G41.1.4 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p>
G41.2 Operate Non-Slewing Crane.	<p>G41.2.1 Pre-start, start-up, park-up and shutdown procedures are carried out in accordance with Australian Standards, manufacturer's and/or site requirements.</p> <p>G41.2.2 Crane is positioned safely prior to commencement of lift operations in accordance with Australian Standards, manufacturers specifications and approved man-basket operation procedures.</p> <p>G41.2.3 Relevant crane controls and functions are used within manufacturer's specifications to effectively lift and position loads or personnel as required.</p> <p>G41.2.4 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p>

**MNC.G41.A  
OPERATIONS**

**CONDUCT NON-SLEWING CRANE**

<u>Elements</u>	<u>Performance Criteria</u>
G41.3 Travel Crane.	<p>G41.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer’s instructions and site procedures.</p> <p>G41.2.6 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.</p> <p>G41.3.1 Route to be travelled is planned to ensure that crane traverses firm and level surfaces.</p> <p>G41.3.2 Necessary hazard identification and control measures are in place.</p> <p>G41.3.3 Crane is travelled in accordance with Australian Standards, manufacturer’s instructions and site requirements.</p>
G41.4 Carry Out Operator Maintenance.	<p>G41.4.1 Non slewing crane inspections and fault finding are carried out in accordance with manufacturer’s instructions and site requirements.</p> <p>G41.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer’s instructions and site authorised procedures and practices.</p> <p>G41.4.3 Minor maintenance is carried out to manufacturer’s instructions and site requirements.</p> <p>G41.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p>

**Range of Variables :**

- 1 Australian Standard AS2550, Cranes and State based Legislation and Regulations must be consulted and applied.
- 2 Work briefings may include crane equipment to be used, nature and scope of tasks, details of load chart/factors, achievement targets, working conditions, site lighting arrangements, defects on equipment, hazards and potential hazards and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures
- 4 Specific safety requirements are to include control and safety of travelling speed, selection and observance of safe working levels and angles, boarding and disembarking procedures, communications and signalling procedures.
- 5 Work preparation may include selection of stable base, avoidance of obstacles and hazards, identification of load, identification and selection of lifting equipment, inspection and certification of lifting equipment and management of permits and tags.
- 6 Site hazards may include power lines, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, other equipment, dangerous material, earthworks, underground services.
- 7 Signals for load moving are given using methods which may include verbal, hand signals to Australian Standards, whistles/hooters to Australian Standards, two-way radio/telephones and light signals to Australian Standards.
- 8 Crane controls and functions may include boom up, boom down, boom extensions, hoist up, hoist down and manual jib extensions.
- 9 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on non slewing crane operations
- c. preparing a stable base
- d. completing pre-start, start-up and shut-down procedures

Completing essential functions including:

- e. relocating the crane
- f. avoidance of obstacles and hazards
- g. setting up the crane
- h. lifting and positioning loads
  
- i. completing operator maintenance
- j. disposing of environmentally sensitive oils, fluids and materials

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- Australian Standards related to cranes/lifting
- site and equipment safety requirements
- crane equipment characteristics, technical capabilities and limitations

- crane operational procedures
- crane maintenance systems and procedures
- basic geological and survey data related to non-slew cranes
- basic rigging and slinging requirements
- hand and whistle signals
- site environmental requirements and constraints related to non-slew cranes
- hazchem relevant to non-slewing cranes

**6. Underpinning Skills.** The ability to:

- apply eye-hand co-ordination
- calculate volume weights
- access interpret and apply technical information
- maintain equipment records
- use relevant hand tools
- apply diagnostic techniques
- comply with environmental requirements
- dispose of environmentally sensitive fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1



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**MNC.G42.A  
OPERATIONS**

**CONDUCT SLEWING CRANE**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:                   This unit covers the lifting and positioning of loads using  
a slewing crane.**

<b>Elements</b>	<b>Performance Criteria</b>
G42.1 Plan and Prepare for Operations.	<p>G42.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G42.1.2 Safety information and procedures are accessed and applied throughout the work.</p> <p>G42.1.3 Work is prepared for in accordance with Australian Standards and manufacturer's/site requirements.</p> <p>G42.1.4 Assembly and dismantling of boom/jib is carried out in accordance with Australian Standards, manufacturer's instructions and site requirements.</p>
G42.2 Operate Crane.	<p>G42.1.5 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>G42.2.1 Pre-start, start-up, park-up and shutdown procedures are carried out in accordance with Australian Standards, manufacturer's and/or site specific requirements.</p> <p>G42.2.2 Crane is positioned, stabilised and levelled prior to commencement of lift operations in accordance with Australian Standards, manufacturer's specifications and approved man-basket operation procedures.</p> <p>G42.2.3 Load is prepared for lift in accordance with crane limitations and rigging requirements.</p> <p>G42.2.4 Work area is confirmed as clear and safe prior to commencing the lift.</p>

<b>Elements</b>	<u>Performance Criteria</u>
G42.2 Operate Crane (Continued).	<p>G42.2.5 Relevant crane controls and functions are used within manufacturers specifications to effectively lift and position loads or personnel as required.</p> <p>G42.2.6 Monitoring systems and alarms are acted on or reported in accordance with site instructions/requirements.</p> <p>G42.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer’s instructions and site procedures.</p> <p>G42.2.8 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>
G42.3 Travel Crane	<p>G42.3.1 Route to be travelled is planned to ensure that crane traverses firm and level surfaces.</p> <p>G42.3.2 Necessary hazard identification and control measures are in place.</p> <p>G42.3.3 Crane is travelled in accordance with AS 2550, manufacturer’s instructions and site requirements.</p>

<p>G42.4 Carry Out Operator Maintenance.</p>	<p>G42.4.1 Slewing crane inspections and fault finding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>.</p> <p>G42.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>.</p> <p>G42.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>G42.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p>
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**Range of Variables :**

- 1 Australian Standard AS2550, cranes and State based Legislation and Regulations must be consulted and applied.
- 2 Work briefings may include selection of stablebase, avoidance of obstacles and hazards, identification of load, identification and selection of lifting equipment, inspection and certification of lifting equipment, fitting of optional implements/accessories and management of permits and tools.
- 3 Work preparation may include selection of stable base, avoidance of obstacles/hazards, identification of load, identification and selection of lifting equipment, inspection and certification of lifting equipment, fitting of optional implements/accessories and management of permits and tags.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures
- 5 Specific safety requirements are to include control and safety of slewing speed, selection and observance of safe working levels and angles, avoidance of obstacles and hazards, boarding and disembarking procedures, observation of wind restrictions, communications and signalling procedures.
- 6 Site hazards may include power lines, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, other equipment, dangerous material, earthworks, underground services and time of day.
- 7 Signals for load moving are given using methods which may include verbal, hand signals to Australian Standards, whistles/hooters to Australian Standards, two-way radio/telephones and light signals to Australian Standards.
- 8 Crane controls and functions may include boom up, boom down, boom extensions, hoist up, hoist down, manual jib and fly-jib extensions and slew.
- 9 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on slewing crane operations
- c. preparing a stable base
- d. completing pre-start, start-up and shut-down procedures

Completing essential functions including:

- e. relocating the crane
- f. avoidance of obstacles and hazards
- g. setting up the crane
- h. lifting and positioning loads
- i. completing operator maintenance
- j. disposing of environmentally sensitive oils, fluids and materials

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- Australian Standards related to cranes/lifting
- site and equipment safety requirements
- crane equipment characteristics, technical capabilities and limitations
- crane operational procedures

- crane maintenance systems and procedures
- basic geological and survey data related to slewing cranes
- basic rigging and slinging requirements
- hand and whistle signals
- site environmental requirements and constraints related to slewing cranes
- Hazchem relevant to slewing cranes



**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- calculate volume weights
- maintain equipment records
- apply eye-hand co-ordination to control functions
- use relevant hand tools
- apply diagnostic techniques
- apply environmental constraints and procedures
- dispose of environmentally sensitive fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the directing of the crane/hoist operator in the movement of the load including when the load is out of view of the operator.**

<b>Elements</b>	<u>Performance Criteria</u>
G43.1 Plan for Dogging.	<p>G43.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G43.1.2 A preliminary dogging plan and site sketch is developed taking account of essential information.</p> <p>G43.1.3 Job feasibility and schedule are checked and confirmed with the load designer and other persons as appropriate.</p> <p>G43.1.4 Hazards associated with the use of cranes and other load moving equipment are confirmed and measures to eliminate or control these hazards are identified and checked with appropriate parties.</p> <p>G43.1.5 Dogging plan including the scheduling of required resources finalised and confirmed as meeting the applicable Australian Standards, codes of practice and equipment manufacturers specifications.</p>
G43.2 Prepare for Dogging.	<p>G43.2.1 Dogging equipment, materials and tools required for the plan are identified, selected, inspected, assembled and certified as serviceable in accordance with Australian Standards and codes of practice.</p> <p>G43.2.2 Unserviceable equipment, materials and tools are labelled and repaired or destroyed in accordance with Mine Managers Rules and Schemes.</p>
G43.3 Move Loads	<p>G43.3.1 Appropriate safe working loads and centre gravity are calculated and confirmed using load charts and standard calculation rules prior to load moving.</p> <p>G43.3.2 Load moving is performed in accordance with the plan, acceptable safe work practices and appropriate Australian Standards, codes of practice and manufacturers specifications.</p>

<b>Elements</b>	<u>Performance Criteria</u>
G43.3 Move Loads (continued)	<p>G43.3.3 Work is performed safely at heights, within uncompleted structures and/or in confined and enclosed spaces.</p> <p>G43.3.4 Lifting gear is connected to load to Australian Standards and manufacturers specifications.</p> <p>G43.3.5 Load is connected to movement device using appropriate and certified equipment in accordance with the Australian Standards and manufacturers specifications.</p> <p>G43.3.6 Stability of the load is ensured by application of load movement procedure, temporary bracing and/or load support appropriate to the task and related manufacturers specifications.</p> <p>G43.3.7 Appropriate designers specifications are followed during the placement and securing of the load.</p>

**Range of Variables :**

- 1 Unless otherwise specified, dogging is to conform with the requirements of the National Occupational Health and Safety Certification Standards for Users and Operators of Industrial Equipment (NOHSC : 1006).
- 2 Equipment range is to include slings, ropes, shackles, eye bolts and spreader beams.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures
- 4 Signals for load moving are to include those which are communicated verbally, with hand signals, whistles/hooters and light signals to Australian Standards and with two-way radio/telephones.

- 5 Work briefings may include site plans and drawings, work specifications, basic working plans and material schedules, the confirmed mass and dimensions of loads and the capacities and availability of load shifting equipment.
- 6 Preliminary dogging plan may include confirmed details of dogging requirement, confirmed dimensions, site access and egress, suitability and availability of materials, tools and equipment, identification of potential hazards, probable control measures and identification of site coordination requirements.

### Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment **by day and night and in all weather conditions** within the bounds of safety **and in accordance with approved Australian Standards and site specifications.**

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on dogging operations

Completing essential functions including:

- c. site preparation
- d. assess and select appropriate certified equipment
- e. inspection of lifting gear
- f. connection of loads to lifting gear
- g. moving loads
- h. direction of crane/hoist operation
- i. equipment maintenance
- j. restoring the site

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- appropriate National Certification Standards
- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations

- operational and maintenance procedures
- hand and whistle signals
- potential hazards



**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply eye-hand co-ordination
- use relevant hand tools
- ability to identify hazards

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	0
Using technology.	

NATIONAL MINING ITAB

BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor :** This unit covers work involving the use of mechanical load shifting equipment and associated gear to move, place or secure a load

<b>Elements</b>	<u>Performance Criteria</u>
G44.1 Plan for Rigging.	<p>G44.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G44.1.2 A preliminary rigging plan and site sketch is developed taking account of essential information.</p> <p>G44.1.3 Job feasibility and schedule are checked and confirmed with the client, the load designer and other persons as appropriate.</p> <p>G44.1.4 Hazards associated with the use of cranes and other load moving equipment are confirmed and measures to eliminate or control these hazards are identified and checked with appropriate parties.</p> <p>G44.1.5 Rigging plan including the scheduling of required resources finalised and confirmed as meeting the applicable Australian Standards, codes of practice and equipment manufacturers specifications.</p>
G44.2 Prepare for Rigging.	<p>G44.2.1 Rigging equipment, materials and tools required for the plan are identified, selected, inspected, assembled and certified as serviceable in accordance with Australian Standards and codes of practice.</p> <p>G44.2.2 Unserviceable equipment, materials and tools are labelled and repaired or destroyed in accordance with Mine Managers Rules and Schemes.</p>



<b>Elements</b>	<u>Performance Criteria</u>
G44.3 Move Loads	<p>G44.3.1 Appropriate safe working loads and centre gravity are calculated and confirmed using load charts and standard calculation rules prior to load moving.</p> <p>G44.3.2 Load moving is performed in accordance with the plan, acceptable safe work practices and appropriate Australian Standards, codes of practice and manufacturers specifications.</p> <p>G44.3.3 Work is performed safely at heights, within uncompleted structures and/or in confined and enclosed spaces.</p> <p>G44.3.4 Lifting gear is connected to load to Australian Standards and manufacturers specifications.</p> <p>G44.3.5 Load is connected to movement device using appropriate and certified equipment in accordance with the Australian Standards and manufacturers specifications.</p> <p>G44.3.6 Stability of the load is ensured by application of load movement procedure, temporary bracing and/or load support appropriate to the task and related manufacturers specifications.</p> <p>G44.3.7 Appropriate designers specifications are followed during the placement and securing of the load.</p> <p>G44.3.8 Load shifting equipment is dismantled and removed/restored in accordance with site requirements.</p>

**Range of Variables:**

- 1 Unless otherwise specified, rigging is to conform with the requirements of the National Occupational Health and Safety Certification Standards for Users and Operators of Industrial Equipment (NOHSC : 1006).
- 2 Basic equipment range is to include steel erection, particular hoists, placement of pre-cast concrete, safety nets and static lines, mast climbers, perimeter safety screens and shutters and cantilevered crane loading platforms.  
  
**but excludes the following;** slinging and directing of loads, rigging of cranes, hoists, conveyors, dredges and excavators, tilt-slabs, rigging work associated with demolition, dual lifts, rigging or gin poles, shear legs, flying foxes and cableways, guyed derricks and structures, suspended and hung scaffolds.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures.
- 5 Signals for load moving are to include those which are communicated verbally, with hand signals, whistles/hooters and light signals to Australian Standards and with two-way radio/telephones.
- 6 Work briefings may include site plans and drawings, work specifications, basic working plans and material schedules, the confirmed mass and dimensions of loads and the capacities and availability of load shifting equipment.
- 7 Preliminary rigging plan may include confirmed details of rigging requirement, confirmed dimensions, site access and egress, suitability and availability of materials, tools and equipment, identification of potential hazards and probably control measures and identification of site coordination requirements.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety and in accordance with approved Australian Standards and site specifications.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on basic rigging operations
- c. completion of plan or sketch
- d. assessment and selection of appropriate certified equipment
- e. site preparation
- f. movement of loads (using basic equipment)
- g. calculation of safe working loads/centre of gravity
- h. connection of lifting gear
- i. stabilising of load
- j. placement of load
- k. coordination of work
- l. operator maintenance and storage

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- the appropriate National Certification Standards
- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures
- hand and whistle signals

**6. Underpinning Skills.** The ability to:

- apply operation safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply eye-hand co-ordination
- use relevant hand tools
- apply diagnostic techniques
- identify potential hazards

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	0
Using technology.	



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**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor :**                    **This unit covers work involving the use of mechanical load shifting equipment and associated gear to move, place or secure a load**

<b>Elements</b>	<u>Performance Criteria</u>
G45.1 Plan for Rigging.	<p>G45.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G45.1.2 A preliminary rigging plan and site sketch is developed taking account of essential information.</p> <p>G45.1.3 Job feasibility and schedule are checked and confirmed with the client, the load designer and other persons as appropriate.</p> <p>G45.1.4 Hazards associated with the use of cranes and other load moving equipment are confirmed and measures to eliminate or control these hazards are identified and checked with appropriate parties.</p> <p>G45.1.5 Rigging plan including the scheduling of required resources finalised and confirmed as meeting the applicable Australian Standards, codes of practice and equipment manufacturer's specifications.</p>
G45.2 Prepare for Rigging.	<p>G45.2.1 Rigging equipment, materials and tools required for the plan are identified, selected, inspected, assembled and certified as serviceable in accordance with Australian Standards and codes of practice.</p> <p>G45.2.2 Unserviceable equipment, materials and tools are labelled and repaired or destroyed in accordance with Mine Manager's Rules and Schemes.</p>



<b>Elements</b>	<u>Performance Criteria</u>
G45.3 Move Loads	<p>G45.3.1 Appropriate safe working loads and centre gravity are calculated and confirmed using load charts and standard calculation rules prior to load moving.</p> <p>G45.3.2 Load moving is performed in accordance with the plan, acceptable safe work practices and appropriate Australian Standards, codes of practice and manufacturer's specifications.</p> <p>G45.3.3 Work is performed safely at heights, within uncompleted structures and/or in confined and enclosed spaces.</p> <p>G45.3.4 Lifting gear is connected to load to Australian Standards and manufacturer's specifications.</p> <p>G45.3.5 Load is connected to movement device using appropriate and certified equipment in accordance with the Australian Standards and manufacturer's specifications.</p> <p>G45.3.6 Stability of the load is ensured by application of load movement procedure, temporary bracing and/or load support appropriate to the task and related manufacturer's specifications.</p> <p>G45.3.7 Appropriate designers specifications are followed during the placement and securing of the load.</p> <p>G45.3.8 Load shifting equipment is dismantled and removed/restored in accordance with site requirements.</p>

**Range of Variables :**

- 1 Unless otherwise specified, rigging is to conform with the requirements of the National Occupational Health and Safety Certification Standards for Users and Operators of Industrial Equipment (NOHSC : 1006).
- 2 Basic equipment range is to include; steel erection, all hoists, placement of pre-cast concrete, safety nets and static lines, mast climbers, perimeter safety screens and shutters and cantilevered crane loading platforms.
- 3 Intermediate equipment range is to include slinging and directing of loads, rigging of cranes, hoists, conveyors, dredges and excavators, tilt-slabs, rigging work associated with demolition and dual lifts.  
  
**but excludes the following;** rigging or gin poles, shear legs, flying foxes and cableways, guyed derricks and structures, suspended and hung scaffolds.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures
- 5 Signals for load moving are to include those which are communicated verbally, with hand signals, whistles/hooters and light signals to Australian Standards and with two-way radio/telephones.
- 6 Work briefings may include site plans and drawings, work specifications, basic working plans and material schedules, the confirmed mass and dimensions of loads and the capacities and availability of load shifting equipment.
- 7 Preliminary rigging plan may include confirmed details of rigging requirement, confirmed dimensions, site access and egress, suitability and availability of materials, tools and equipment, identification of potential hazards and probably control measures and identification of site coordination requirements.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety and in accordance with approved Australian Standards and site specifications.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on intermediate rigging operations
- c. completion of plan or sketch
- d. assessment and selection of appropriate certified equipment
- e. site preparation
- f. movement of loads (using intermediate equipment)
- g. calculation of safe working loads/centre of gravity
- h. connection of lifting gear
- i. stabilising of load
- j. placement of load
- k. coordination of work
- l. operator maintenance and storage

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- the appropriate National Certification Standards
- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures
- hand and whistle signals

**6. Underpinning Skills.** The ability to:

- apply operation safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply eye-hand co-ordination
- use relevant hand tools
- apply diagnostic techniques
- identify potential hazards

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	0
Using technology.	



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**MNC.G46.A  
OPERATIONS**

**CONDUCT BASIC SCAFFOLDING**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the erection, alteration or dismantling of a temporary structure, specifically erected to support work platforms.**

<b>Elements</b>	<u>Performance Criteria</u>
G46.1 Plan for Operations.	<p>G46.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G46.1.2 A preliminary scaffolding plan and site sketch is developed taking account of essential information.</p> <p>G46.1.3 Job feasibility and schedule are checked and confirmed with other persons as appropriate.</p> <p>G46.1.4 Hazards associated with scaffolding are confirmed and measures to eliminate or control these hazards are identified and checked with the appropriate parties.</p> <p>G46.1.5 The scaffolding plan including the scheduling of required resources are finalised and confirmed as meeting the applicable Australian Standards, codes of practice and manufacturer's requirements.</p>
G46.2 Prepare for Scaffolding.	<p>G46.2.1 Scaffolding equipment, materials and tools required for the job are identified, selected, inspected and certified as serviceable in accordance with codes of practice and guides.</p> <p>G46.2.2 Unserviceable scaffolding equipment, materials and tools are labelled and repaired or destroyed in accordance with mine manager's rules and schemes.</p> <p>G46.2.3 Scaffolding/equipment gear is prepared in accordance with codes of practice and guides.</p> <p>G46.2.4 Transportation of equipment and tooling to the worksite is arranged and coordinated in accordance with the scaffolding plan.</p> <p>G46.2.5 The site is prepared for scaffolding.</p>

<b>Elements</b>	<u>Performance Criteria</u>
G46.3 Erect Scaffolding.	<p>G46.3.1 Erection is carried out for appropriate types of scaffolding in accordance with hazard prevention and control measures and to Australian Standards and manufacturer's requirements.</p> <p>G46.3.2 Work is performed safely at heights, on incompletd structures and in confined spaces.</p> <p>G46.3.3 On completion, the site is left clean of all surplus components, equipment, tools and debris and the scaffolding/equipment is inspected for safety in compliance with design and statutory requirements.</p>
G46.4 Maintain Scaffolding.	<p>G46.4.1 Critical structural and safety areas of the scaffolding/equipment are inspected to identify any variation from the plan.</p> <p>G46.4.2 Alteration or repair is performed with due regard for the critical safety and structural areas of the scaffolding/equipment to manufacturer's requirements and Australian Standards.</p>
G46.5 Dismantle Scaffolding.	<p>G46.5.1 Scaffolding is dismantled in a safe and orderly manner.</p> <p>G46.5.2 Equipment is inspected, classified and labelled, and removed from the site in accordance with the Australian Standards and enterprise procedures.</p>

**Range of Variables :**

- 1 Unless otherwise specified, scaffolding is to conform with the requirements of the National Occupational Health and Safety Certification Standards for Users and Operators of Industrial Equipment NOHSC : 1006.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures.
- 3 Work briefings may include work tasks, site plans and drawings, scaffolding/equipment designs and work specifications.
- 4 Basic scaffolding equipment range **is to include** free standing prefabricated scaffolds, cantilevered hoists with a working load limit not exceeding 500kg (materials only), ropes, gin wheels, safety nets and static lines and bracket scaffolds (tank and formwork).  
  
**but** is to exclude cantilevered crane loading platforms, cantilevered and spurred scaffolds, barrow ramps and sloping platforms, scaffolding associated with perimeter safety screens and shutters, mast climbers, tube and coupler scaffolds (including tube and coupler covered ways and gantries), hung scaffolds, including scaffolds hanging from tubes, wire ropes and chains, and suspended scaffolds. (See Intermediate Scaffolding, U47, if these are to be used).
- 5 Preliminary scaffolding plan may include confirmed details of scaffolding requirement, scaffolding/equipment configuration, identification of potential hazards and probable control measures, site access and egress, estimate of types and quantities of components and identification of scaffolding coordination requirements.
- 6 Site preparation may include site isolation, erection of barriers, installation of signage, assembly and erection of lifting devices and establishment of footings.
- 7 Critical structural and safety areas to be inspected may include damage, corrosion, wear, stability, current usage checked against type of scaffolding / equipment and identify any changes to the plan / scaffolding through the inspection log.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety and in accordance with approved Australian Standards and site specifications.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on basic scaffolding operations
- c. site preparation and planning
- d. assessment and selection of appropriate certified equipment

Completing essential functions including:

- e. handling procedures
- f. erecting procedures
- g. dismantling procedures
- h. maintenance and storage of equipment

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- appropriate National Certification Standards
- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply eye-hand co-ordination
- use relevant hand tools
- ability to identify hazards

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	0
Using technology.	



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**MNC.G47.A  
OPERATIONS**

**CONDUCT INTERMEDIATE SCAFFOLDING**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the erection, alteration or dismantling of a temporary structure, specifically erected to support work platforms.**

<b>Elements</b>	<u>Performance Criteria</u>
G47.1 Plan for Operations.	<p>G47.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G47.1.2 A preliminary scaffolding plan and site sketch is developed taking account of essential information.</p> <p>G47.1.3 Job feasibility and schedule are checked and confirmed with other persons as appropriate.</p> <p>G47.1.4 Hazards associated with scaffolding are confirmed and measures to eliminate or control these hazards are identified and checked with the appropriate parties.</p> <p>G47.1.5 The scaffolding plan including the scheduling of required resources are finalised and confirmed as meeting the applicable Australian Standards, codes of practice and manufacturer's requirements.</p>
G47.2 Prepare for Scaffolding.	<p>G47.2.1 Scaffolding equipment, materials and tools required for the job are identified, selected, inspected and certified as serviceable in accordance with codes of practice and guides.</p> <p>G47.2.2 Unserviceable scaffolding equipment, materials and tools are labelled and repaired or destroyed in accordance with mine manager's rules and schemes.</p> <p>G47.2.3 Scaffolding/equipment gear is prepared in accordance with codes of practice and guides.</p> <p>G47.2.4 Transportation of equipment and tooling to the worksite is arranged and coordinated in accordance with the scaffolding plan.</p> <p>G47.2.5 The site is prepared for scaffolding.</p>

<b>Elements</b>	<u>Performance Criteria</u>
G47.3 Erect Scaffolding.	<p>G47.3.1 Erection is carried out for appropriate types of scaffolding in accordance with hazard prevention and control measures and to Australian Standards and manufacturer's requirements.</p> <p>G47.3.2 Work is performed safely at heights, on incompletd structures and in confined spaces.</p> <p>G47.3.3 On completion, the site is left clean of all surplus components, equipment, tools and debris and the scaffolding/equipment is inspected for safety in compliance with design and statutory requirements.</p>
G47.4 Maintain Scaffolding.	<p>G47.4.1 Critical structural and safety areas of the scaffolding/equipment are inspected to identify any variation from the plan.</p> <p>G47.4.2 Alteration or repair is performed with due regard for the critical safety and structural areas of the scaffolding/equipment to manufacturer's requirements and Australian Standards.</p>
G47.5 Dismantle Scaffolding.	<p>G47.5.1 Scaffolding is dismantled in a safe and orderly manner.</p> <p>G47.5.2 Equipment is inspected, classified and labelled, and removed from the site in accordance with the Australian Standards and enterprise procedures.</p>

**Range of Variables :**

- 1 Unless otherwise specified, scaffolding is to conform with the requirements of the National Occupational Health and Safety Certification Standards for Users and Operators of Industrial Equipment NOHSC : 1006.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures.
- 3 Basic scaffolding equipment range is to include free standing prefabricated scaffolds, cantilevered hoists with a working load limit not exceeding 500kg (materials only), ropes, gin wheels, safety nets and static lines and bracket scaffolds (tank and formwork).
- 4 Intermediate scaffolding equipment range **is to include** cantilevered crane loading platforms, cantilevered and spurred scaffolds, barrow ramps and sloping platforms, scaffolding associated with perimeter safety screens and shutters, and mast climbers,  
  
**but** excludes work including hung scaffolds (including scaffolds hanging from tubes, wire ropes and chains) and suspended scaffolds.
- 5 Work briefings may include work tasks, site plans and drawings, scaffolding/equipment designs and work specifications.
- 6 Preliminary scaffolding plan may include confirmed details of scaffolding requirement, scaffolding/equipment configuration, identification of potential hazards and probable control measures, site access and egress, estimate of types and quantities of components and identification of scaffolding coordination requirements.
- 7 Site preparation may include site isolation, erection of barriers, installation of signage, assembly and erection of lifting devices and establishment of footings.
- 8 Critical structural and safety areas to be inspected may include damage, corrosion, wear, stability, current usage checked against type of scaffolding / equipment and identify any changes to the plan / scaffolding through the inspection log.

### Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety and in accordance with approved Australian Standards and site specifications.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on basic scaffolding operations
- c. site preparation and planning
- d. assessment and selection of appropriate certified equipment

Completing essential functions including:

- e. handling procedures
- f. erecting procedures
- g. dismantling procedures
- h. maintenance and storage of equipment

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- appropriate National Certification Standards
- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures

6. **Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply eye-hand co-ordination
- use relevant hand tools
- ability to identify hazards

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	0
Using technology.	



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**MNC.G48.A  
OPERATIONS**

**CONDUCT FORKLIFT**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:                    This unit covers the lifting and relocating of loads using a commercial forklift, generally in a surface situation.**

<b>Elements</b>	<u>Performance Criteria</u>
G48.1 Plan and Prepare for Operations.	<p>G48.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding..</p> <p>G48.1.2 Safety information and procedures are accessed and applied throughout the operations.</p> <p>G48.1.3 Attachments are fitted and removed in accordance with manufacturer's specifications and site requirements.</p>
G48.2 Operate Forklift.	<p>G48.1.4 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>G48.2.1 Pre-start, start-up, park-up and shutdown procedures are carried out in accordance with manufacturers and/or site specific requirements.</p> <p>G48.2.2 Traffic flow and work area conditions are monitored and anticipated to facilitate safe operations and to ensure the most efficient route of travel is selected and used.</p> <p>G48.2.3 Forklift is manoeuvred and positioned smoothly in accordance with manufacturer's and site procedures.</p> <p>G48.2.4 Load is secured, lifted, transferred and placed in accordance with manufacturer's instructions and site procedures.</p> <p>G48.2.5 Attachments are used in accordance with manufacturer's specifications and site requirements.</p> <p>G48.2.6 Monitoring systems and alarms are acted on or reported in accordance with site instruction/requirements.</p>

<u>Elements</u>	<u>Performance Criteria</u>
G48.2 Operate Forklift (continued).	<p>G48.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer’s instructions and site procedures.</p> <p>G48.2.8 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>
G48.3 Carry Out Operator Maintenance.	<p>G48.3.1 Forklift inspections and fault finding are carried out in accordance with manufacturer’s instructions and site requirements.</p> <p>G48.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer’s instructions and site authorised procedures and practices.</p> <p>G48.3.3 Minor maintenance is carried out to manufacturer’s instructions and site requirements.</p> <p>G48.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>G48.3.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Forklifts may be fixed or traversing and be diesel, gas or electric powered.
- 2 Forklift attachments may include tyre handler, lifting device and slipper forks.
- 3 Work briefings may include nature and scope of tasks, details and loads, achievement targets, working conditions, site lighting arrangements, defects on equipment, hazards and potential hazards and coordination requirements/issues.

- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures
- 5 Specific safety requirements are to include load safety and security, traffic clearance, working within limits and specifications, and operational signal procedures.
- 6 Site hazards may include power lines, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, other equipment, dangerous material, earthworks and underground services.
- 7 Operator (operational) maintenance procedures are those established and authorised for the site.

### Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on forklift operations
- c. completing forklift pre-start, start-up and shut-down procedures

Completing essential functions including:

- d. smooth manoeuvring and positioning of forklift
- e. lifting, securing, transferring and positioning of loads
- f. applying emergency procedures
- g. completing operator maintenance
- h. disposing of environmentally sensitive oils, fluids and materials

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- forklift equipment characteristics, technical capabilities and limitations
- forklift operational procedures
- forklift maintenance systems and procedures
- basic geological and survey data related to forklift operations
- site environmental requirements and constraints related to forklift operations

6. **Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply hand-eye coordination in the control of forklift
- use relevant hand tools
- apply diagnostic techniques
- apply site environmental constraints
- dispose of environmentally sensitive oils, fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1



**MNC.G49.A  
PLATFORM**

**OPERATE ELEVATING WORK**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:                    This unit covers the elevation, relocation and positioning  
of personnel and equipment using an EWP.**

<b>Elements</b>	<u>Performance Criteria</u>
G49.1 Plan and Prepare for Operations.	<p>G49.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G49.1.2 Safety information and procedures are accessed and applied throughout the operations.</p> <p>G49.1.3 Equipment pre-operational checks are performed according to manufacturer's specifications and/or authorised site procedures.</p> <p>G49.1.4 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p>
G49.2 Position and Set-up Platform.	<p>G49.2.1 Pre-start, start-up, park-up and shut-down procedures are carried out in accordance with manufacturer's specifications and site procedures.</p> <p>G49.2.2 Equipment is operated within recommended speed, engine capability and limitations according to manufacturer's specifications.</p> <p>G49.2.3 Equipment is manoeuvred to maximise efficiency and ensure safety of other equipment and personnel.</p>
G49.3 Conduct Work Activities From Elevated Platform.	<p>G49.3.1 Work platform is stabilised and attachments selected according to site conditions, manufacturer's specifications and site procedures.</p> <p>G49.3.2 Approved safety devices are used ensuring safety of personnel and surround site in accordance with site procedure and legislative requirements.</p> <p>G49.3.3 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p>

**MNC.G49.A  
PLATFORM**

**OPERATE ELEVATING WORK**

<u>Elements</u>	<u>Performance Criteria</u>
	<p>G49.3.4 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>G49.3.5 Work is completed in accordance with agreed work plan, site procedures and regulations.</p>
<p>G49.4 Carry Out Operator Maintenance.</p>	<p>G49.4.1 Work platform inspections and fault finding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>G49.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>G49.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>G49.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p>

**Range of Variables**

- 1 Unless otherwise specified, EWP operations are to conform with the requirements of the National Occupational Health and Safety Certifications Standards for Users and Operators of Industrial Equipment (NOHSC : 1006).
- 2 Elevating work platforms may be titled locally as cherry pickers, skyworkers, scissor lift, trailer-mounted lifts or sky-cranes. The definition of equipments to be covered by this unit will need to be made by the mine in accordance with appropriate legislative and regulatory requirements.
- 3 Work briefings may include equipment to be used, nature and scope of tasks, load details, achievement targets, working conditions, site lighting arrangements, defects on equipment, hazards and potential hazards and coordination requirements.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures
- 5 Specific safety requirements are to include control and safety of raising and lowering booms, slewing and telescoping, deployment of outriggers, stabilisers and preparation of safety harnesses and blocking.
- 6 Work preparation may include selection of stable base, avoidance of obstacles and hazards, identification of load, inspection and certification of equipment and management of permits and tags.
- 7 Site hazards may include, power lines, facilities, trees, other equipment, overhead service lines, dangerous materials, bridges, underground services, surrounding buildings, recently filled trenches, obstructions and structures.
- 8 Authorised equipment capacities require calculation/recognition of permissible loads, radii and height limitations.
- 9 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on elevating work platform operations
- c. ground selection and preparation
- d. completing pre-start, start-up and shut-down procedures

Completing essential functions including:

- e. deploying outriggers, stabilisers and blocking
- f. raising, lowering, slewing and telescoping the boom
- g. completing operator maintenance
- h. disposing of environmentally sensitive oils, fluids and materials

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- the appropriate National Certification Standards
- site and equipment safety requirements
- equipment characteristics, technical capabilities and limitations
- elevating work platform operational procedures
- elevating work platform maintenance systems and procedures
- basic geological and survey data related to elevating work platforms

- site environmental requirements and constraints related to elevating work platforms

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- identify hazards and potential hazards
- apply eye-hand co-ordination to control functions
- access, interpret and apply technical information
- maintain equipment records
- use relevant hand tools
- apply diagnostic techniques
- apply environmental constraints and procedures
- dispose of environmentally sensitive oils, fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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**MNC.G50.A  
CRANE**

**OPERATE VEHICLE LOADING**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:                    This unit covers the lifting and positioning of loads using  
a vehicle loading crane.**

<b>Elements</b>	<b>Performance Criteria</b>
G50.1 Plan and Prepare for Operations.	<p>G50.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G50.1.2 Safety information and procedures are accessed and applied throughout the work.</p> <p>G50.1.3 Work is prepared for in accordance with Australian Standards and manufacturers/site requirements.</p> <p>G50.1.4 Assembly and dismantling of attachment is carried out in accordance with Australian Standards, manufacturer's instructions and site requirements.</p>
G50.2 Operate Vehicle Loading Crane.	<p>G50.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>G50.2.2 Pre-start, start-up, park-up and shutdown procedures are carried out in accordance with Australian Standards and manufacturer's instructions and site procedures.</p> <p>G50.2.3 Vehicle is positioned, stabilised and levelled prior to commencement of lift operations in accordance with Australian Standards and manufacturer's specifications.</p> <p>G50.2.4 Load is prepared for lift in accordance with vehicle limitations and rigging requirements.</p> <p>G50.2.5 Work area is confirmed as clear and safe prior to commencing the lift.</p>

<u>Elements</u>	<u>Performance Criteria</u>
<p>G50.2 Operate Vehicle Loading Crane (Cont...).</p>	<p>G50.2.6 Relevant vehicle controls and functions are used within manufacturers specifications to effectively lift and position loads or personnel as required.</p> <p>G50.2.7 Monitoring systems and alarms are acted on or reported in accordance with site instructions/requirements.</p> <p>G50.2.8 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer’s instructions and site procedures.</p> <p>G50.2.9 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>
<p>G50.3 Carry Out Operator Maintenance.</p>	<p>G50.3.1 Vehicle inspections and fault finding are carried out in accordance with manufacturer’s instructions and site requirements.</p> <p>G50.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer’s instructions and site authorised procedures and practices.</p> <p>G50.3.3 Minor maintenance is carried out to manufacturer’s instructions and site requirements.</p> <p>G50.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>G50.3.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Australian Standard AS2550, vehicles and State based Legislation and Regulations must be consulted and applied.
- 2 Work briefings may include selection of stablebase, avoidance of obstacles and hazards, identification of load, identification and selection of lifting equipment, inspection and certification of lifting equipment, fitting of optional implements/accessories and management of permits and tools.
- 3 Work preparation may include selection of stable base, avoidance of obstacles/hazards, identification of load, identification and selection of lifting equipment, inspection and certification of lifting equipment, fitting of optional implements/accessories and management of permits and tags.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures
- 5 Specific safety requirements are to include control and safety of slewing speed, selection and observance of safe working levels and angles, avoidance of obstacles and hazards, boarding and disembarking procedures, observation of wind restrictions, communications and signalling procedures.
- 6 Site hazards may include power lines, trees, overhead service lines, bridges, surrounding buildings, obstructions, structures, facilities, other equipment, dangerous material, earthworks, underground services and time of day.
- 7 Signals for load moving are given using methods which may include verbal, hand signals to Australian Standards, whistles/hooters to Australian Standards, two-way radio/telephones and light signals to Australian Standards.
- 8 Vehicle controls and functions may include boom up, boom down, boom extensions, hoist up, hoist down, manual jib and fly-jib extensions and slew.
- 9 Attachments may include tyre manipulation, forks and any other commercially or site produced attachment.
- 10 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

**Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

### 2. Inter-dependent Assessment of Units

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on vehicle loading crane operations
- c. completing pre-start, start-up and shut-down procedures

Completing essential functions including:

- d. avoidance of obstacles and hazards
- e. setting up the vehicle
- f. lifting and positioning loads
- g. completing operator maintenance.

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- Australian Standards related to vehicles/lifting
- site and equipment safety requirements
- vehicle equipment characteristics, technical capabilities and limitations
- vehicle operational procedures
- vehicle maintenance systems and procedures
- basic geological and survey data related to vehicle loading cranes

- basic rigging and slinging requirements
- hand and whistle signals
- site environmental requirements and constraints related to slewing vehicles
- Hazchem relevant to vehicle loading cranes

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- calculate volume weights
- maintain equipment records
- apply eye-hand co-ordination to control functions
- use relevant hand tools
- apply diagnostic techniques
- apply environmental constraints and procedures
- dispose of environmentally sensitive fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor: This unit covers the installation, retraction and maintenance of belt conveyor componentry.**

<u>Elements</u>	<u>Performance Criteria</u>
G55.1 Plan and Prepare.	<p>G55.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G55.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures..</p> <p>G55.1.3 Safety information and procedures are accessed and applied throughout the work..</p> <p>G55.1.4 Materials and resources required for the work are obtained, transported and prepared in accordance with the plan and relevant manufacturers or site requirements.</p> <p>G55.1.5 The work site is prepared in accordance with site requirements.</p>
G55.2 Install and Retract Belt Conveyor Componentry	<p>G55.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>G55.2.2 Safe work environment is established and monitored throughout the job.</p> <p>G55.2.3 Auxiliary componentry is isolated and connected in accordance with the manufacturer's and site procedures.</p> <p>G55.2.4 Belt conveyor componentry is installed/retracted in accordance with manufacturer's and/or site requirements and legislative regulations.</p> <p>G55.2.5 Conveyor is inspected for line and level and</p>

tested to ensure functionality, safety and compliance with specifications.

G55.2.6 Conveyor equipment is recovered systematically, in accordance with authorised mine procedures and with minimal loss and damage to the recovered equipment.

G55.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.

<b>Elements</b>	<u>Performance Criteria</u>
G55.3 Carry Out Conveyor Maintenance.	<p>G55.3.1 Inspection and fault finding are conducted in accordance with manufacturers recommendations and site requirements.</p> <p>G55.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>G55.3.3 Minor maintenance is carried out to manufacturers and/or site requirements and legislative requirements.</p> <p>G55.3.4 Operator support is provided during preparation for and conduct of major maintenance tasks, in accordance with site requirements.</p> <p>G55.3.5 Records are maintained in accordance with site requirements/agreements and legislation.</p>

**Range of Variables:**

- 1 Machinery may include load haul dump, multipurpose vehicle, skid steer loader, winch and associated attachments such as mobile boot end, belt reeler.
- 2 Conveyor componentry may include: belt, rollers, structures, lock-outs, belt control equipment, safety equipment and hand tools
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures
- 4 Communication may include phone, DAC (tace), verbal, hand signals and two-way radio.
- 5 Work briefing may include nature and scope of the job, hazards and work environment, related work activities, sequencing and site access.

- 6 Safe work environment includes isolation, tagging, restoration after isolation and dust suppression.
- 7 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on conveyor operations
- c. completing pre-start, start-up and shut-down procedures

Completing essential functions including:

- d. preparing site and equipment
- e. isolating the work area
- f. assembling and positioning of componentry
- g. extending and retracting conveyors
- h. maintaining conveyor systems
- i. restoring sites

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- operational safety requirements
- mine operational procedures
- conveyor operations and componentry
- relevant conveyor assembly procedures
- relevant geological and survey information
- conveyor maintenance requirements
- site environment requirements and constraints related to conveyor work

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical and safety information
- interpret and apply survey information and plans
- operate relevant plant and machinery
- communicate and co-ordinate activities with others
- apply diagnostic/faultfinding techniques
- use relevant hand tools
- maintain equipment records
- comply with environmental requirements

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

MNC.G56.A

**INSTALL, COMMISSION AND MAINTAIN MAJOR  
CONVEYOR EQUIPMENT AND SYSTEMS**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:** **This unit covers the installation, commissioning and maintenance of major conveyor equipment and systems for underground and surface operations.**

<u>Elements</u>	<u>Performance Criteria</u>
G56.1 Plan and Prepare for Work.	<p>G56.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G56.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>G56.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>G56.1.4 Materials and resources required for the work are obtained, transported and prepared in accordance with the plan and relevant manufacturers or site requirements.</p>
G56.2 Install Conveyor Equipment.	<p>G56.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>G56.2.2 Isolation procedures are applied and monitored to establish and maintain a safe work environment throughout the job.</p> <p>G56.2.3 Conveyor equipment and systems are installed in accordance with manufacturer's specifications and site procedures.</p> <p>G56.2.4 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site</p>



procedures.

G56.2.5 Work is performed in accordance with agreed plan and outcomes and within the operating capacities of the allocated equipment.

## INSTALL, COMMISSION AND MAINTAIN MAJOR CONVEYOR EQUIPMENT AND SYSTEMS

<u>Elements</u>	<u>Performance Criteria</u>
G56.3 Commission Conveyor Systems.	<p>G56.3.1 Inspection of conveyors and belts and auxiliary componentry is carried out to ensure compliance with relevant technical specifications.</p> <p>G56.3.2 Start-up and shut-down procedures are carried out in accordance with site requirements.</p> <p>G56.3.3 Equipment is tested and test run to ensure compliance with manufacturer's instructions and site procedures.</p> <p>G56.3.4 Equipment is returned to service in accordance with site procedures and practices, and environmental requirements.</p>
G56.4 Carry Out Operator Maintenance.	<p>G56.4.1 Conveyor equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>G56.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>G56.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>G56.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>G56.4.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Major componentry may include drive heads, belt starter, guarding items, loop take-ups, weight towers, transfer points, surge bins, clamping stations, mobile stacker and magnets.
- 2 Work requirement details may include nature and scope of task, sequencing, equipment/plant allocation (including any defects), locations and essential survey data, working conditions, geological data, ventilation systems information, hazards and potential hazards and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include isolation of existing systems and services, observance of safety tagging procedures and restoration after isolation.
- 5 Conveyor installation may include fixing on concrete slab, dirt floor, between floor and roof and suspended from roof.
- 6 Tools may include hand tools, air and power tools, tension wrenches, pullers and specialist manufacturer's tools, clipping machines, belt clamps, laser aligning spirit level, tension meter, various testing instruments.
- 7 Lifting equipment may include mobile cranes, forklifts, block and tackle, jacks and a range of rigging equipment.
- 8 Drive heads may include multi-roller, motorised pulley and pneumatic fluid drives.
- 9 Loop take up equipment may be auto with either pneumatic or Eddie current winches, manual, single/multi-roller carriages, counterweights and hydraulic take ups.
- 10 Structure may be bolted, pinned or tahmoor (key holed) construction.
- 11 Idlers may include impact, bolted trough, clip on trough, return and belt inverter.
- 12 Types of conveyors may include belt, chain, roller link and cable belt.
- 13 Belts may be cable, steel core, canvas woven or rubber or PVC which may be clipped, hot spliced or cold spliced joined.
- 14 Installation may include disassembly prior to installation to allow transportation of components to assembly location.

15 Installation and repair may include skirts, scrapers, snubber drums, weighers, tracking and tensioning equipment.

16 Installation may include pulley lagging.

**Range of Variables (Continued):**

17 Machinery may include load haul dump, multipurpose vehicles, skid steer, winch and associated attachments and ram car.

18 Equipment may include chain blocks, airbags, bolters, borers, drills and bits, hand tools, levelling equipment, pulley blocks and cables and chains.

19 Communication may be by two-way radio, hand signals, phone and Dacs.

20 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety requirements
- b. interpreting and communicating information on conveyor systems
- c. preparing the site including surveying
- d. prefabricating where appropriate
- e. transporting and layout of equipments and materials on site
- f. assembling, positioning and installing componentry
- g. inspecting and finalising adjustments
- h. returning the system to service
- i. restoring the site

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- operational safety procedures
- mine operational procedures related to conveyors
- mine communication procedures
- conveyor equipment characteristics, uses and limitations
- conveyor equipment installation procedures
- site mechanical/technical maintenance systems and procedures
- relevant geological and survey information
- equipment maintenance/lubrication requirements
- site environmental requirements and constraints related to conveyor systems

**6. Underpinning Skills.** The ability to:

- apply operational safety procedures
- access, interpret and apply technical and safety information
- interpret and apply survey information and plans
- operate relevant plant and machinery
- communicate and co-ordinate activities with others
- maintain equipment records
- apply diagnostic/faultfinding techniques:
- use relevant hand tools
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2 1
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

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**NATIONAL MINING ITAB**

**BLACK COAL: GENERAL COMPETENCY STANDARDS**

**Descriptor:** This unit covers the repair and installation of conveyor belting using hot and cold vulcanising techniques.

<u>Elements</u>	<u>Performance Criteria</u>
G57.1 Plan and Prepare for Work.	<p>G57.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G57.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>G57.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>G57.1.4 Resources, including appropriate technical manuals and information, equipment, materials and tools required for the work, are identified and obtained.</p> <p>G57.1.5 Belting to be worked on is located, positioned, made safe and cleaned in preparation for work.</p> <p>G57.1.6 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p>
G57.2 Carry Out Splicing Operations.	<p>G57.2.1 Tools and equipment selected are appropriate to the task and are correctly used and applied throughout the task.</p> <p>G57.2.2 Splicing operation or belt repairs are completed without damage to adjacent structures or equipment, and in accordance with the manufacturer's/site procedures and practices.</p>

<p>G57.3 Return Conveyor to Service.</p>	<p>G57.3.1 Inspection of conveyor and auxiliary equipment is carried out to ensure compliance with relevant technical specifications.</p> <p>G57.3.2 Conveyor belting is tested and test run to ensure compliance with manufacturer's/site performance specifications.</p> <p>G57.3.3 Conveyor is returned to service in accordance with site procedures and practices.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
G57.4 Complete the Work Sequence	G57.4.1 Equipment and tools are cleaned, serviced and stored in accordance with site standards.  G57.4.2 Worksite is restored in accordance with site standards.  G57.4.3 Records and documents are completed in accordance with manufacturer's/site procedures.

**Range of Variables :**

- 1 Belts may include steel cord, PVC, fabric and composite carcass.
- 2 Work requirements may include type of belt to be repaired/spliced, method of repair/splice, location of work and hazards, and work environment.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Splices may include both cold and hot vulcanising and mechanical splices/clips/joints.
- 5 Repairs may include edge repairs, lateral and longitudinal splits and inlays.
- 6 Equipment may include cutting, sanding, clamping, pulling, lifting and vulcanising equipment.
- 7 Tools may include hand tools, air and power tools and pulling gear.
- 8 Lifting equipment may include mobile cranes, gantry cranes, truck mounted hoist, forklifts and general rigging equipment.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.
2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.
3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying operational safety
  - b. complying with statutory requirements
  - c. interpreting and communicating information on conveyor belting
  - d. isolating equipment/systems
  - e. start-up/shut-down procedures
  - f. observation of fire hazards
  - g. making safe the vulcaniser while pressurised
  - h. maintaining ventilation when using solvents
  - i. inspecting and returning conveyor systems to service
  - j. recording procedures
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge.** A knowledge of:
  - legislative and site operational safety requirements and procedures
  - site operational rules and procedures
  - operations, characteristics, capabilities and limitations of vulcanising presses
  - specialised cutting tools and conveyor belt types
  - slinging and lifting procedures and related safety requirements
  - hazardous chemicals
  - site equipment and maintenance documentation and procedures

- site inventory (parts) systems
- marking out procedures
- site environmental requirements and constraints related to conveyor belting

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- apply site safety procedures
- use hand and power tools
- use marking out techniques
- sharpen knives
- operate pulling and lifting equipment
- dispose of environmentally sensitive oils, fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**MNC.G60.A**

**OPERATE SUPPORT EQUIPMENT**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:**

**This unit covers the operation of commercially available cross industry equipment used to perform a wide variety of support tasks on site.**

<u>Elements</u>	<u>Performance Criteria</u>
G60.1 Plan and Prepare for Operations.	<p>G60.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G60.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>G60.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
G60.2 Operate Support Equipment.	<p>G60.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>G60.2.2 Pre-start, start-up, park-up and shut-down procedures are carried out in accordance with manufacturer's and/or site procedures.</p> <p>G60.2.3 Ancillary attachments to the support equipment are changed and operated in accordance with manufacturer's instructions and site procedures.</p> <p>G60.2.4 Support equipment is operated with or without ancillary attachments in accordance with manufacturer's instructions and site procedures.</p> <p>G60.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>G60.2.6 Work is completed in accordance with the agreed plan and outcomes and within the operating capacity of the equipment.</p>



<u>Elements</u>	<u>Performance Criteria</u>
G60.3 Carry Out Operator Maintenance.	<p>G60.3.1 Equipment inspections and fault finding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>G60.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>G60.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>G60.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>G60.3.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Support equipment may include skid steer vehicle, tractor, backhoe, excavator, small front end loader, vibrator roller and sheafs foot roller.
- 2 Ancillary equipment may include buckets, auger, grasscutter, brush cutter, chain saw, slasher, pneumatic hammer, shovel, plough, rotary hoe and any other commercially or site produced attachment.
- 3 Shift details may include support equipment identification/allocation, nature and scope of the task, achievement targets, working conditions, site lighting arrangements, defects to equipment, hazards and potential hazards and coordination requirements/issues.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures
- 5 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

- 1. Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

This unit covers a diverse range of support equipment. Candidates may be granted the unit on the basis of satisfying the competency in respect of a single item of support equipment **but** the assessment and recognition records should clearly specify the equipment for which the competency is granted.

- 2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- applying operational safety procedures
- interpreting and communicating operational information
- completing pre-start, start-up, park-up and shut-down procedures
- operating the support equipment for its specified purpose
- operating the support equipment within manufacturer's instructions/constraints
- attaching and operating ancillary equipment
- applying environmental requirements
- operator maintenance

- 4. Consistency of Performance.**

Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

- 5. Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- equipment and ancillary attachment characteristics, technical capabilities and limitations,

- specified support equipment operational procedures
- specified support equipment maintenance systems and procedures
- basic geological and survey data related to the specified operation
- site environmental requirements and constraints related to the support equipment

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- match appropriate equipment with tasks
- maintain equipment records
- use relevant hand tools
- apply eye-hand co-ordination
- apply diagnostic techniques
- apply environmental constraints related to the specified operations
- dispose of environmentally sensitive fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

## NATIONAL MINING ITAB

## BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the operation of light vehicles (up to 4.5 tonnes) including the starting, driving and stopping and the conduct of operator checks and actions.

<u>Elements</u>	<u>Performance Criteria</u>
G61.1 Prepare for Operations.	<p>G61.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G61.1.2 Safety information and procedures are accessed and applied throughout the operations.</p> <p>G61.1.3 Pre-start checks on vehicle and ancillary equipment are conducted in accordance with legislative, manufacturer's and site requirements.</p> <p>G61.1.4 Vehicle records are prepared and log-on procedures are carried out to mine site requirements.</p> <p>G61.1.5 Vehicle operations are tested in accordance with manufacturer's and mine site procedures and faults which affect the safety of the operation are reported to the appropriate authority.</p> <p>G61.1.6 Engine is started in accordance with manufacturer's guidelines and start-up procedures and systems are checked against operational criteria.</p>

<p>G61.2 Steer, Manoeuvre and Position Vehicle.</p>	<p>G61.2.1 Vehicle is steered, manoeuvred and positioned in accordance with traffic regulations and mine manager's rules.</p> <p>G61.2.2 Movements are within limits of vehicle and road dimensions and in accordance with manufacturer's specifications.</p> <p>G61.2.3 Centrifugal forces are confined to load configuration and driving environment.</p> <p>G61.2.4 Movements are smooth and controlled.</p> <p>G61.2.5 Contact with obstacles is avoided.</p> <p>G61.2.6 Movements are to be carried out ensuring no injury to personnel or damage to property, equipment or facilities, and load.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
G61.3 Manage Engine Power.	G61.3.1 Engine power is managed to ensure efficiency of vehicle movement and to minimise damage to the engine and drive line.  G61.3.2 Operation is within manufacturer's specified torque range and temperature.  G61.3.3 Engine power is coordinated with gear selection to maintain torque range.  G61.3.4 Smooth transition in gear changes necessary to maintain engine power and torque range is effected.

G61.4 Monitor and Anticipate Traffic and Road Conditions.	G61.4.1 Traffic and road condition are constantly monitored and anticipated to allow a safe operation and ensure no injury to people or damage to property, equipment, loads and facilities.
	G61.4.2 Vehicle speed and safety is achieved using the accelerator, engine gears and brakes.
	G61.4.3 Traffic flows are anticipated to ensure the most efficient route of travel is taken to destinations without backtracking.
	G61.4.4 Account is taken of road and traffic conditions, road standards, distance and load.
G61.5 Monitor Vehicle Efficiency.	G61.5.1 The vehicle's performance is constantly monitored to ensure maximum efficiency of operation and fuel consumption.
	G61.5.2 Account is taken of warning devices that indicate engine or vehicle performance is hindered.
	G61.5.3 Vehicle is constantly monitored for any malfunctions or factors which may affect vehicle performance.
	G61.5.4 Any faults or damage to vehicle are reported to the appropriate authority.
G61.6 Park and Secure the Vehicle.	G61.6.1 Vehicle is brought to a halt through the use of brakes using straight line braking techniques.
	G61.6.2 Vehicle is parked and locked/secured in accordance with manufacturer's specifications, site and legal requirements.
	G61.6.3 Vehicle is parked in an area that is safe and legal in line with traffic regulations.



<b>Elements</b>	<u>Performance Criteria</u>
G61.7 Carry out Post-Operational Activities.	<p>G61.7.1 Engine shut-down is carried out in accordance with approved procedures.</p> <p>G61.7.2 Post-operational checks are completed and faults reported in accordance with approved procedures.</p> <p>G61.7.3 Vehicle records are maintained/updated and information is processed in accordance with site requirements.</p>

**Range of Variables:**

- 1 Vehicle Records may include manual or electronic data collection systems and cover log-on / off, activity recording, trip records and refuelling information.
- 2 Pre-start checks may include:
  - fluid levels including fuel, engine oil, brake fluid, coolant, clutch/transmission fluid and windscreen washer fluid
  - windows and mirrors for clear visibility
  - tyres and wheels (air pressure, tyre damage, illegal tread depth and condition, abnormal wear pattern and tyre compatibility)
  - fan belts
  - seat belts
  - door hatches and latches
  - battery and connections
  - visible and current registration and licences
  - spare wheel.
  - wheel nuts
  - rear guards
  - warning horn
- 3 Start-up checks may include:
  - lights (headlights, clearance lights, indicators, hazard lights, reversing lights)
  - brakes
  - heating and ventilation
  - instruments and gauges
  - windscreen washers and wipers
- 4 Manufacturer's specifications may include:
  - Engine crank/start

- Idling
  - Engine RPM
  - Operating temperatures
  - Torque range
- 5 Engine power may be managed by:
- selecting gear ratio to achieve smooth take-off
  - changing gears to maintain specified torque range at all speeds
  - utilising engine retarder

**Range of Variables (continued):**

- 6 Engine start-up checks to include:
- electrical charging
  - oil pressure
  - coolant temperature
  - exhaust temperature (if applicable)
  - engine oil temperature
  - gearbox oil temperature (if applicable)
  - drive axle(s) oil temperature (if applicable)
  - coolant level, coolant temperature and low engine oil pressure audible warning device (if applicable)
  - air brake pressure
  - fuel quantity
  - ancillary monitors
- 7 Road conditions to be taken account may include:
- effects of weather conditions on road
  - road surface
  - road gradient
  - degree of visibility
- 8 Traffic conditions to be taken account may include:
- speed limits
  - approved routes
  - legal parking areas
  - parking distances
  - traffic pattern and density
- 9 Warning devices may include:
- Audible reversing buzzer
  - Warning lights/messages
  - Speedometer
  - Tachometer
  - Oil pressure
  - Air pressure
  - Temperature gauges/warning lights
  - Brake warning light
  - Fuel quantity
  - Electrical charging
  - Ancillary systems indicators (e.g. high beam, turn signals, parking brake)
- 10 Notice should be taken of uncharacteristic engine noises, vibrations and smells
- 11 Engine malfunctions may include:

- Overheating
  - coolant
  - exhaust
  - drive-line
- Low oil temperature
- Electrical discharge/overcharge
- Ancillary systems
- Abnormal emissions

**Range of Variables (continued):**

- 12 Vehicle malfunctions may include:
- loose covers or lashings
  - open hatches.
  - wheel / tyre faults.
- 13 Safety considerations may include:
- use of seat belts
  - security of door
  - condition of brakes and braking system (air pressure)
  - load characteristics
  - vehicle speed
  - fluid levels
- 14 Site requirements may include:
- use of authorised cargo restraining equipment
  - observing authorised parking areas
  - correct distances between vehicles
  - observing mine traffic rules

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the normal work environment by day and night and in all weather conditions within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on light vehicle operations and minesite traffic rules
- c. completing pre-start, start-up and shut-down procedures

Completing essential functions including:

- d. driving, stopping and parking
- e. monitoring vehicle performance
- f. identifying vehicle faults and damage
- g. reporting and recording
- h. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- fire fighting equipment
- operational safety requirements
- mine geological and survey data
- mine operational procedures
- equipment characteristics, technical capabilities and limitations
- maintenance requirements/procedures
- vehicle record system

- communication system
- warning and directional signals
- mine environment conditions
- loading/offloading procedures
- relevant aspects of mine manager's rules

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- interpret geological conditions and survey indicators
- communicate effectively
- apply operator maintenance techniques and procedures
- use relevant hand tools
- apply diagnostic techniques
- maintain equipment records
- use fire fighting equipment

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1



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NATIONAL MINING ITAB

BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the operation of medium vehicles including the starting, driving and stopping and the conduct of operator checks and actions.

<u>Elements</u>	<u>Performance Criteria</u>
G62.1 Prepare for Operations.	<p>G62.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G62.1.2 Safety information and procedures are accessed and applied throughout the operations.</p> <p>G62.1.3 Pre-start checks on vehicle and ancillary equipment are conducted in accordance with legislative, manufacturer's and site requirements.</p> <p>G62.1.4 Vehicle records are prepared and log-on procedures are carried out to mine site requirements.</p> <p>G62.1.5 Vehicle operations are tested in accordance with manufacturer's and mine site procedures and faults which affect the safety of the operation are reported to the appropriate authority.</p> <p>G62.1.6 Engine is started in accordance with manufacturer's guidelines and start-up procedures and systems are checked against operational criteria.</p>

<p>G62.2 Steer, Manoeuvre and Position Vehicle.</p>	<p>G62.2.1 Vehicle is steered, manoeuvred and positioned in accordance with traffic regulations and mine manager's rules.</p> <p>G62.2.2 Movements are within limits of vehicle and road dimensions and in accordance with manufacturer's specifications.</p> <p>G62.2.3 Centrifugal forces are confined to load configuration and driving environment.</p> <p>G62.2.4 Movements are smooth and controlled.</p> <p>G62.2.5 Contact with obstacles is avoided.</p> <p>G62.2.6 Movements are to be carried out ensuring no injury to personnel or damage to property, equipment or facilities, and load.</p>
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<b>Elements</b>	<u>Performance Criteria</u>
G62.3 Manage Engine Power.	G62.3.1 Engine power is managed to ensure efficiency of vehicle movement and to minimise damage to the engine and drive line.  G62.3.2 Operation is within manufacturer's specified torque range and temperature.  G62.3.3 Engine power is coordinated with gear selection to maintain torque range.  G62.3.4 Smooth transition in gear changes necessary to maintain engine power and torque range is effected.

G62.4 Monitor and Anticipate Traffic and Road Conditions.	G62.4.1 Traffic and road condition are constantly monitored and anticipated to allow a safe operation and ensure no injury to people or damage to property, equipment, loads and facilities.
	G62.4.2 Vehicle speed and safety is achieved using the accelerator, engine gears and brakes.
	G62.4.3 Traffic flows are anticipated to ensure the most efficient route of travel is taken to destinations without backtracking.
	G62.4.4 Account is taken of road and traffic conditions, road standards, distance and load.
G62.5 Monitor Vehicle Efficiency.	G62.5.1 The vehicle's performance is constantly monitored to ensure maximum efficiency of operation and fuel consumption.
	G62.5.2 Account is taken of warning devices that indicate engine or vehicle performance is hindered.
	G62.5.3 Vehicle is constantly monitored for any malfunctions or factors which may affect vehicle performance.
	G62.5.4 Any faults or damage to vehicle are reported to the appropriate authority.
G62.6 Park and Secure the Vehicle.	G62.6.1 Vehicle is brought to a halt through the use of brakes using straight line braking techniques.
	G62.6.2 Vehicle is parked and locked/secured in accordance with manufacturer's specifications, site and legal requirements.
	G62.6.3 Vehicle is parked in an area that is safe and legal in line with traffic regulations.

<u>Elements</u>	<u>Performance Criteria</u>
G62.7 Carry out Post-Operational Activities.	<p>G62.7.1 Engine shut-down is carried out in accordance with approved procedures.</p> <p>G62.7.2 Post-operational checks are completed and faults reported in accordance with approved procedures.</p> <p>G62.7.3 Vehicle records are maintained/updated and information is processed in accordance with site requirements.</p>

**Range of Variables:**

- 1 Vehicles may include fuel and service vehicles, crane truck (vehicle loading crane), table top, highway tipper, water tankers, maintenance, pump truck, fire engine, rescue vehicle, explosive carriers, bucket truck and EWP truck.
- 2 Vehicle Records may include manual or electronic data collection systems and cover log-on / off, activity recording, trip records and refuelling information.
- 3 Pre-start checks may include:
  - fluid levels including fuel, engine oil, brake fluid, coolant, clutch/transmission fluid and windscreen washer fluid
  - windows and mirrors for clear visibility
  - tyres and wheels (air pressure, tyre damage, illegal tread depth and condition, abnormal wear pattern and tyre compatibility)
  - fan belts
  - seat belts
  - door hatches and latches
  - battery and connections
  - visible and current registration and licences
  - draining air tanks
  - spare wheel
  - wheel nuts
  - rear guards
  - warning horn
  - power take off (PTO)
- 4 Start-up checks may include:
  - lights (headlights, clearance lights, indicators, hazard lights, reversing lights)
  - brakes
  - heating and ventilation

- instruments and gauges
  - windscreen washers and wipers
- 5 Manufacturer's specifications may include:
- Engine crank/start
  - Idling
  - Engine RPM
  - Operating temperatures
  - Torque range

**Range of Variables (continued):**

- 6 Engine power may be managed by:
- selecting gear ratio to achieve smooth take-off
  - changing gears to maintain specified torque range at all speeds
  - utilising engine retarder
- 7 Engine start-up checks to include:
- electrical charging
  - oil pressure
  - coolant temperature
  - exhaust temperature (if applicable)
  - engine oil temperature
  - gearbox oil temperature (if applicable)
  - drive axle(s) oil temperature (if applicable)
  - coolant level, coolant temperature and low engine oil pressure audible warning device (if applicable)
  - air brake pressure
  - fuel quantity
  - ancillary monitors
- 8 Road conditions to be taken account may include:
- effects of weather conditions on road
  - road surface
  - road gradient
  - degree of visibility
- 9 Traffic conditions to be taken account may include:
- speed limits
  - approved routes
  - legal parking areas
  - parking distances
  - traffic pattern and density
- 10 Warning devices may include:
- Audible reversing buzzer
  - Warning lights/messages
  - Speedometer
  - Tachometer
  - Oil pressure
  - Air pressure
  - Temperature gauges/warning lights
  - Brake warning light
  - Fuel quantity



- Electrical charging
- Ancillary systems indicators (e.g. high beam, turn signals, parking brake)

11 Notice should be taken of uncharacteristic engine noises, vibrations and smells

**Range of Variables (continued):**

- 12 Engine malfunctions may include:
- Overheating
    - coolant
    - exhaust
    - drive-line
  - Low oil temperature
  - Electrical discharge/overcharge
  - Ancillary systems
  - Abnormal emissions
- 13 Vehicle malfunctions may include:
- loose covers or lashings
  - open hatches.
  - wheel / tyre faults.
- 14 Safety considerations may include:
- vehicle height
  - use of seat belts
  - security of door
  - condition of brakes and braking system (air pressure)
  - load characteristics
  - vehicle speed
  - fluid levels
- 15 Site requirements may include:
- use of authorised cargo restraining equipment
  - observing authorised parking areas
  - correct distances between vehicles
  - observing mine traffic rules

### Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the normal work environment by day and night and in all weather conditions within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on medium vehicle operations and minesite traffic rules
- c. completing pre-start, start-up and shut-down procedures

Completing essential functions including:

- d. driving, stopping and parking
- e. monitoring vehicle performance
- f. identifying vehicle faults and damage
- g. reporting and recording
- h. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- fire fighting equipment
- operational safety requirements
- mine geological and survey data
- mine operational procedures
- equipment characteristics, technical capabilities and limitations
- maintenance requirements/procedures
- vehicle record system

- communication system
- warning and directional signals
- mine environment conditions
- loading/offloading procedures
- relevant aspects of mine manager's rules

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- interpret geological conditions and survey indicators
- communicate effectively
- apply operator maintenance techniques and procedures
- use relevant hand tools
- apply diagnostic techniques
- maintain equipment records
- use fire fighting equipment

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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NATIONAL MINING ITAB

BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the operation of heavy rigid vehicles (over 13.9 tonnes) including the starting, driving and stopping and the conduct of operator checks and actions.

<u>Elements</u>	<u>Performance Criteria</u>
G63.1 Prepare for Operations.	<p>G63.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G63.1.2 Safety information and procedures are accessed and applied throughout the operations.</p> <p>G63.1.3 Pre-start checks on vehicle and ancillary equipment are conducted in accordance with legislative, manufacturer's and site requirements.</p> <p>G63.1.4 Vehicle records are prepared and log-on procedures are carried out to mine site requirements.</p> <p>G63.1.5 Vehicle operations are tested in accordance with manufacturer's and mine site procedures and faults which affect the safety of the operation are reported to the appropriate authority.</p> <p>G63.1.6 Engine is started in accordance with manufacturer's guidelines and start-up procedures and systems are checked against operational criteria.</p>

<p>G63.2 Steer, Manoeuvre and Position Vehicle.</p>	<p>G63.2.1 Vehicle is steered, manoeuvred and positioned in accordance with traffic regulations and mine manager's rules.</p> <p>G63.2.2 Movements are within limits of vehicle and road dimensions and in accordance with manufacturer's specifications.</p> <p>G63.2.3 Centrifugal forces are confined to load configuration and driving environment.</p> <p>G63.2.4 Movements are smooth and controlled.</p> <p>G63.2.5 Contact with obstacles is avoided.</p> <p>G63.2.6 Movements are to be carried out ensuring no injury to personnel or damage to property, equipment or facilities, and load.</p>
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<b>Elements</b>	<b>Performance Criteria</b>
G63.3 Manage Engine Power.	G63.3.1 Engine power is managed to ensure efficiency of vehicle movement and to minimise damage to the engine and drive line.  G63.3.2 Operation is within manufacturer's specified torque range and temperature.  G63.3.3 Engine power is coordinated with gear selection to maintain torque range.  G63.3.4 Smooth transition in gear changes necessary to maintain engine power and torque range is effected.

G63.4 Monitor and Anticipate Traffic and Road Conditions.	G63.4.1 Traffic and road condition are constantly monitored and anticipated to allow a safe operation and ensure no injury to people or damage to property, equipment, loads and facilities.
	G63.4.2 Vehicle speed and safety is achieved using the accelerator, engine gears and brakes.
	G63.4.3 Traffic flows are anticipated to ensure the most efficient route of travel is taken to destinations without backtracking.
	G63.4.4 Account is taken of road and traffic conditions, road standards, distance and load.
G63.5 Monitor Vehicle Efficiency.	G63.5.1 The vehicle's performance is constantly monitored to ensure maximum efficiency of operation and fuel consumption.
	G63.5.2 Account is taken of warning devices that indicate engine or vehicle performance is hindered.
	G63.5.3 Vehicle is constantly monitored for any malfunctions or factors which may affect vehicle performance.
	G63.5.4 Any faults or damage to vehicle are reported to the appropriate authority.
G63.6 Park and Secure the Vehicle.	G63.6.1 Vehicle is brought to a halt through the use of brakes using straight line braking techniques.
	G63.6.2 Vehicle is parked and locked/secured in accordance with manufacturer's specifications, site and legal requirements.
	G63.6.3 Vehicle is parked in an area that is safe and legal in line with traffic regulations.

<u>Elements</u>	<u>Performance Criteria</u>
G63.7 Carry out Post-Operational Activities.	<p>G63.7.1 Engine shut-down is carried out in accordance with approved procedures.</p> <p>G63.7.2 Post-operational checks are completed and faults reported in accordance with approved procedures.</p> <p>G63.7.3 Vehicle records are maintained/updated and information is processed in accordance with site requirements.</p>

**Range of Variables:**

- 1 Vehicles may include fuel and service vehicles, crane truck, water tankers, maintenance, explosive carriers, traybacks and drills.
- 2 Vehicle Records may include manual or electronic data collection systems and cover log-on / off, activity recording, trip records and refuelling information.
- 3 Pre-start checks may include:
  - fluid levels including fuel, engine oil, brake fluid, coolant, clutch/transmission fluid and windscreen washer fluid
  - windows and mirrors for clear visibility
  - tyres and wheels (air pressure, tyre damage, illegal tread depth and condition, abnormal wear pattern and tyre compatibility)
  - fan belts
  - seat belts
  - door hatches and latches
  - battery and connections
  - visible and current registration and licences
  - draining air tanks
  - spare wheel
  - wheel nuts
  - rear guards
  - warning horn
  - power take off (PTO)
- 4 Start-up checks may include:
  - lights (headlights, clearance lights, indicators, hazard lights, reversing lights)
  - brakes
  - heating and ventilation
  - instruments and gauges
  - windscreen washers and wipers

5 Manufacturer's specifications may include:

- engine crank/start
- idling
- engine rpm
- operating temperatures
- torque range

**Range of Variables (continued):**

- 6 Engine power may be managed by:
- selecting gear ratio to achieve smooth take-off
  - changing gears to maintain specified torque range at all speeds
  - utilising engine retarder
- 7 Engine start-up checks to include:
- electrical charging
  - oil pressure
  - coolant temperature
  - exhaust temperature (if applicable)
  - engine oil temperature
  - gearbox oil temperature (if applicable)
  - drive axle(s) oil temperature (if applicable)
  - coolant level, coolant temperature and low engine oil pressure audible warning device (if applicable)
  - air brake pressure
  - fuel quantity
  - ancillary monitors
- 8 Road conditions to be taken account may include:
- effects of weather conditions on road
  - road surface
  - road gradient
  - degree of visibility
- 9 Traffic conditions to be taken account may include:
- speed limits
  - approved routes
  - legal parking areas
  - parking distances
  - traffic pattern and density
- 10 Warning devices may include:
- Audible reversing buzzer
  - Warning lights/messages
  - Speedometer
  - Tachometer
  - Oil pressure
  - Air pressure
  - Temperature gauges/warning lights
  - Brake warning light
  - Fuel quantity

- Electrical charging
  - Ancillary systems indicators (e.g. high beam, turn signals, parking brake)
- 11 Notice should be taken of uncharacteristic engine noises, vibrations and smells

**Range of Variables (continued):**

- 12 Engine malfunctions may include:
- Overheating
    - coolant
    - exhaust
    - drive-line
  - Low oil temperature
  - Electrical discharge/overcharge
  - Ancillary systems
  - Abnormal emissions
- 13 Vehicle malfunctions may include:
- loose covers or lashings
  - open hatches.
  - wheel / tyre faults.
- 14 Safety considerations may include:
- vehicle height
  - use of seat belts
  - security of door
  - condition of brakes and braking system (air pressure)
  - load characteristics
  - vehicle speed
  - fluid levels
- 15 Site requirements may include:
- use of authorised cargo restraining equipment
  - observing authorised parking areas
  - correct distances between vehicles
  - observing mine traffic rules

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the normal work environment by day and night and in all weather conditions within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on heavy rigid vehicle operations and minesite traffic rules
- c. completing pre-start, start-up and shut-down procedures

Completing essential functions including:

- d. driving, stopping and parking
- e. monitoring vehicle performance
- f. identifying vehicle faults and damage
- g. reporting and recording
- h. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- fire fighting equipment
- operational safety requirements
- mine geological and survey data
- mine operational procedures
- equipment characteristics, technical capabilities and limitations
- maintenance requirements/procedures
- vehicle record system



- communication system
- warning and directional signals
- mine environment conditions
- loading/offloading procedures
- relevant aspects of mine manager's rules

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- interpret geological conditions and survey indicators
- communicate effectively
- apply operator maintenance techniques and procedures
- use relevant hand tools
- apply diagnostic techniques
- maintain equipment records
- use fire fighting equipment

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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**MNC.G64.A  
VEHICLE**

**OPERATE ARTICULATED**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the operation of articulated vehicles including the pre-start inspections and checks, the starting driving and stopping and the conduct of operator maintenance.**

<u>Elements</u>	<u>Performance Criteria</u>
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G64.1 Prepare for Operations.	<p>G64.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G64.1.2 Safety information and procedures are accessed and applied throughout the operations.</p> <p>G64.1.3 Vehicle records are prepared and log-on procedures carried out to site requirements.</p>
G64.2 Couple and Uncouple Trailers.	<p>G64.2.1 Prime mover and trailer are coupled or uncoupled and checked in accordance with manufacturer's and site instructions and procedures.</p>
G64.3 Conduct Vehicle Checks.	<p>G64.3.1 Pre-start checks on vehicle, trailer and ancillary equipment are conducted in accordance with manufacturer's and site requirements.</p> <p>G64.3.2 Vehicle and trailer operations are tested in accordance with manufacturer's and site procedures and faults which affect the safety of the operation are reported to the appropriate authority.</p> <p>G64.3.3 Engine is started in accordance with manufacturer's guidelines and start-up procedures and systems are checked against operational criteria.</p>
G64.4 Steer, Manoeuvre and Position Vehicle.	<p>G64.4.1 Vehicle is steered, manoeuvred and positioned in accordance with traffic regulations and mine manager's rules.</p> <p>G64.4.2 Movements are within limits of vehicle and road dimensions and in line with manufacturer's specifications.</p> <p>G64.4.3 Centrifugal forces are confined to load configuration and driving environment.</p> <p>G64.4.4 Movements are smooth and controlled.</p> <p>G64.4.5 Contact with obstacles is avoided.</p>

**MNC.G64.A  
VEHICLE**

**OPERATE ARTICULATED**

<u>Elements</u>	<u>Performance Criteria</u>
G64.4 Steer, Manoeuvre and Position Vehicle (continued).	G64.4.6 Movements are to be carried out ensuring no injury to personnel or damage to property, equipment or facilities, and load.  G64.4.7 Available road area is utilised to increase radius of turn and swept path.

G64.5 Manage Engine Power.	<p>G64.5.1 Engine power is managed to ensure efficiency of vehicle movement and to minimise damage to the engine and drive line.</p> <p>G64.5.2 Operation is within manufacturer's specified torque range and temperature.</p> <p>G64.5.3 Engine power is co-ordinated with gear selection to maintain torque range.</p> <p>G64.5.4 Smooth transition in gear changes necessary to maintain engine power and torque range is effected.</p>
G64.6 Monitor and Anticipate Traffic and Road Conditions	<p>G64.6.1 Traffic and road condition are constantly monitored and anticipated to allow a safe operation and ensure no injury to people or damage to property, equipment, loads and facilities.</p> <p>G64.6.2 Vehicle speed and safety is achieved using the accelerator, gears, brakes and speed retarding devices.</p> <p>G64.6.3 Traffic flows are anticipated to ensure the most efficient route of travel is taken to destinations without backtracking.</p>
G64.7 Monitor Vehicle Efficiency.	<p>G64.7.4 Account is taken of road and traffic conditions, road standards, distance and load.</p> <p>G64.7.1 The vehicle's performance is constantly monitored to ensure maximum efficiency of operation and fuel consumption.</p> <p>G64.7.2 Account is taken of warning devices that indicate engine or vehicle performance is hindered.</p> <p>G64.7.3 Vehicle is constantly monitored for any malfunctions or factors which may affect vehicle performance.</p> <p>G64.7.4 Any faults or damage to vehicle are reported to the appropriate authority.</p>

<u>Elements</u>	<u>Performance Criteria</u>
G64.8 Park and Secure the Vehicle	G64.8.1 Vehicle is brought to a halt through the use of brakes using straight line braking techniques.
	G64.8.2 Vehicle is parked and locked/secured in accordance with manufacturer's specifications, site procedures and legal requirements.
	G64.8.3 Vehicle is parked in an area that is safe and legal in line with traffic regulations.
G64.9 Carry out Post-Operational Activities.	G64.9.1 Engine shut-down is carried out in accordance with approved procedures.
	G64.9.2 Post-operational checks are completed in accordance with approved procedures and faults
	G64.9.3 Vehicle records are maintained/updated and information is processed in accordance with site requirements.

**Range of Variables:**

- 1 Vehicle Records may include manual or electronic data collection systems and cover log-on / off, activity recording, trip records and refuelling information.
- 2 Pre-start checks may include:
  - fluid levels including fuel, engine oil, brake fluids, coolant, clutch / transmission fluid and windscreen washer fluid.
  - windows and mirrors for clear visibility
  - tyres and wheels (air pressure, tyre damage, illegal tread depth and condition, abnormal wear pattern and tyre compatibility)
  - fan belts
  - seat belts
  - door hatches and latches
  - battery and connections
  - visible and current registration and licences



- spare wheel
- wheel nuts
- wheel chocks and wedges
- rear guards
- warning horn
- trailer king pin
- ancillary drive belt(s)
- turn-table
- pneumatic system including draining as required
- skid plate block

**Range of Variables (continued):**

- 3 Start-up checks may include:
- lights (headlights, clearance lights, indicators, hazard lights, reversing lights)
  - brakes
  - heating and ventilation
  - instruments and gauges
  - windscreen washers and wipers
  - pneumatic system including hydraulic hoses and hose connections
- 4 Trailer coupling, uncoupling procedures may include:
- selection of an appropriately firm and level parking area
  - apply parking brakes
  - ensure turn-table jaw release is locked/unlocked
  - turn-table lock and trailer wheel chocks
  - compatibility of turn-table and trailer ring pin
  - alignment of prime-mover, turn-table and trailer skid-pad
  - connections or brake service, emergency lines, auxiliary air and electrical lines
  - inspection and testing of air brakes, trailer brakes, lock status of turn-table jaw release
  - securing and testing trailer landing legs
- 5 Engine power may be managed by:
- selecting gear ratio to achieve smooth take-off
  - changing gears to maintain specified torque range at all speeds
  - utilising engine retarder
- 6 Manufacturer's specifications may include:
- Engine crank
  - Idling
  - Engine RPM
  - Operating temperatures
  - Torque range
- 7 Faults that may affect the safety and efficiency of the operation include the following:
- Excessive wear on King Pins
  - Loose/leaking air brake and hose fitting
  - Excessive wear in suspension system

8 Road conditions and safety conditions to be taken account of include:

- effects of weather conditions on road
- road surface
- road gradient
- degree of visibility

**Range of Variables (continued):**

9 Traffic conditions to be taken account of include:

- speed limits
- approved routes
- legal parking areas
- parking distances
- traffic pattern and density

10 Warning devices may include:

- audible reversing buzzer
- warning lights
- speedometer
- tachometer
- oil pressure
- air pressure
- temperature gauges/warning lights
- brake warning light
- fuel quantity
- electrical charging
- ancillary systems indicators (e.g. high beam, turn signals, parking brake)

11 Engine malfunctions may include:

- overheating
  - coolant
  - exhaust
  - drive-line
- low oil temperature
- electrical discharge/overcharge
- low air pressure
- ancillary systems
- abnormal emissions

12 Safety considerations may need to include:

- vehicle height
- condition of brakes and braking system (air pressure)
- load characteristics
- vehicle speed
- prime mover/trailer load weight ratio
- use of authorised cargo restraining equipment

- fluid levels

13 Site requirements include:

- observing mine traffic rules
- observing authorised parking areas
- correct distances between vehicles

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on articulated vehicle operations
- c. completing pre-start, start-up and shut-down procedures

Completing essential functions including:

- d. coupling and uncoupling trailers
- e. steering, manoeuvring and positioning the articulated vehicle
- f. monitoring and anticipating road and traffic conditions
- g. maintaining vehicle records
- h. completing operator maintenance

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site requirements related to articulated vehicle operations
- occupational health and safety requirements related to articulated vehicle operations
- vehicle road codes and regulations
- site transport operations
- operations, characteristics and limitations of articulated vehicles, trailers and ancillary equipment
- pre-start, start-up and shut down procedures

- operator level mechanical principles
- site vehicle related records and documentation system

**6. Underpinning Skills.** The ability to:

- apply relevant occupational health and safety requirements
- operate within relevant statutory requirements
- access, read and interpret technical information including manufacturers manuals related to articulated vehicles/trailers, and their operations
- carry-out pre-start, start-up and shut-down procedures on articulated vehicles and trailers
- operate vehicles within specifications and limitations
- steer, manoeuvre and position vehicles and trailers
- couple and uncouple trailers
- carry out reverse parking
- park and secure vehicle and trailer
- identify and report faults in vehicles and ancillary equipment
- check load configuration and security
- change wheels
- complete appropriate vehicle records and documentation

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1



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**MNC.G65.A  
VEHICLE**

**OPERATE DOUBLE**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:** This unit covers the operation of B-Double vehicles including the pre-start inspections and checks, the starting driving and stopping and the conduct of operator maintenance.

<u>Elements</u>	<u>Performance Criteria</u>
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G65.1 Prepare for Operations.	<p>G65.1.1 work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified/confirmed before proceeding.</p> <p>G65.1.2 Safety information and procedures are assessed and applied throughout the operations.</p> <p>G65.1.3 Vehicle records are prepared and log-on procedures carried out to site requirements.</p>
G65.2 Couple and Uncouple Trailers.	<p>G65.2.1 Prime mover and trailer are coupled or uncoupled and checked in accordance with manufacturer's and site instructions and procedures.</p>
G65.3 Conduct Vehicle Checks.	<p>G65.3.1 Pre-start checks on vehicle, trailer and ancillary equipment are conducted in accordance with manufacturer's and site requirements.</p> <p>G65.3.2 Vehicle and trailer operations are tested in accordance with manufacturer's and site procedures and faults which affect the safety of the operation are reported to the appropriate authority.</p> <p>G65.3.3 Engine is started in accordance with manufacturer's guidelines and start-up procedures and systems are checked against operational criteria.</p>
G65.4 Steer, Manoeuvre and Position Vehicle	<p>G65.4.1 Vehicle is steered, manoeuvred and positioned in accordance with traffic regulations and mine manager's rules.</p> <p>G65.4.2 Movements are within limits of vehicle and road dimensions and in line with manufacturer's specifications.</p> <p>G65.4.3 Centrifugal forces are confined to load configuration and driving environment.</p> <p>G65.4.4 Movements are smooth and controlled.</p> <p>G65.4.5 Contact with obstacles is avoided.</p> <p>G65.4.6 Movements are to be carried out ensuring no injury to personnel or damage to property, equipment or facilities, and load.</p> <p>G65.4.7 Available road area is utilised to increase radius of turn and swept path.</p>

**MNC.G65.A  
VEHICLE**

**OPERATE DOUBLE**

G65.5 Manage Engine Power.	G65.5.1 Engine power is managed to ensure efficiency of vehicle movement and to minimise damage to the engine and drive line.
	G65.5.2 Operation is within manufacturer's specified torque range and temperature.
	G65.5.3 Engine power is co-ordinated with gear selection to maintain torque range.
	G65.5.4 Smooth transition in gear changes necessary to maintain engine power and torque range is effected.
G65.6 Monitor and Anticipate Traffic and Road Conditions	G65.6.1 Traffic and road condition are constantly monitored and anticipated to allow a safe operation and ensure no injury to people or damage to property, equipment, loads and facilities.
	G65.6.2 Vehicle speed and safety is achieved using the accelerator, gears, brakes and speed retarding devices.
	G65.6.3 Traffic flows are anticipated to ensure the most efficient route of travel is taken to destinations without backtracking.
G65.7 Monitor Vehicle Efficiency.	G65.7.4 Account is taken of road and traffic conditions, road standards, distance and load.
	G65.7.1 The vehicle's performance is constantly monitored to ensure maximum efficiency of operation and fuel consumption.
	G65.7.2 Account is taken of warning devices that indicate engine or vehicle performance is hindered.
	G65.7.3 Vehicle is constantly monitored for any malfunctions or factors which may affect vehicle performance.
	G65.7.4 Any faults or damage to vehicle are reported to the appropriate authority.

<u>Elements</u>	<u>Performance Criteria</u>
G65.8 Park and Secure the Vehicle	<p>G65.8.1 Vehicle is brought to a halt through the use of brakes using straight line braking techniques.</p> <p>G65.8.2 Vehicle is parked and locked/secured in accordance with manufacturer's specifications, site procedures and legal requirements.</p> <p>G65.8.3 Vehicle is parked in an area that is safe and legal in line with traffic regulations.</p>
G65.9 Carry out Post-Operational Activities.	<p>G65.9.1 Engine shut-down is carried out in accordance with approved procedures.</p> <p>G65.9.2 Post-operational checks are completed in accordance with approved procedures and faults</p> <p>G65.9.3 Vehicle records are maintained/updated and information is processed in accordance with site requirements.</p>

**Range of Variables:**

- 1 Vehicle Records may include manual or electronic data collection systems and cover log-on / off, activity recording, trip records and refuelling information.
- 2 Pre-start checks may include:
  - fluid levels including fuel, engine oil, brake fluids, coolant, clutch / transmission fluid and windscreen washer fluid.
  - windows and mirrors for clear visibility
  - tyres and wheels (air pressure, tyre damage, illegal tread depth and condition, abnormal wear pattern and tyre compatibility)
  - fan belts
  - seat belts
  - door hatches and latches
  - battery and connections
  - visible and current registration and licences
  - spare wheel
  - wheel nuts
  - wheel chocks and wedges

- rear guards
- warning horn
- trailer king pin
- ancillary drive belt(s)
- turn-table
- pneumatic system including draining as required
- skid plate block

**Range of Variables (continued):**

- 3 Start-up checks may include:
- lights (headlights, clearance lights, indicators, hazard lights, reversing lights)
  - brakes
  - heating and ventilation
  - instruments and gauges
  - windscreen washers and wipers
  - pneumatic system including hydraulic hoses and hose connections
- 4 Trailer coupling, uncoupling procedures may include:
- selection of an appropriately firm and level parking area
  - apply parking brakes
  - ensure turn-table jaw release is locked/unlocked
  - turn-table lock and trailer wheel chocks
  - compatibility of turn-table and trailer ring pin
  - alignment of prime-mover, turn-table and trailer skid-pad
  - connections or brake service, emergency lines, auxiliary air and electrical lines
  - inspection and testing of air brakes, trailer brakes, lock status of turn-table jaw release
  - securing and testing trailer landing legs
- 5 Engine power may be managed by:
- selecting gear ratio to achieve smooth take-off
  - changing gears to maintain specified torque range at all speeds
  - utilising engine retarder
- 6 Manufacturer's specifications may include:
- Engine crank
  - Idling
  - Engine RPM
  - Operating temperatures
  - Torque range
- 7 Faults that may affect the safety and efficiency of the operation include the following:
- Excessive wear on King Pins
  - Loose/leaking air brake and hose fitting
  - Excessive wear in suspension system

8 Road conditions and safety conditions to be taken account of include:

- effects of weather conditions on road
- road surface
- road gradient
- degree of visibility



**Range of Variables (continued):**

9 Traffic conditions to be taken account of include:

- speed limits
- approved routes
- legal parking areas
- parking distances
- traffic pattern and density

10 Warning devices may include:

- audible reversing buzzer
- warning lights
- speedometer
- tachometer
- oil pressure
- air pressure
- temperature gauges/warning lights
- brake warning light
- fuel quantity
- electrical charging
- ancillary systems indicators (e.g. high beam, turn signals, parking brake)

11 Engine malfunctions may include:

- overheating
  - coolant
  - exhaust
  - drive-line
- low oil temperature
- electrical discharge/overcharge
- low air pressure
- ancillary systems
- abnormal emissions

12 Safety considerations may need to include:

- vehicle height
- condition of brakes and braking system (air pressure)
- load characteristics
- vehicle speed
- prime mover/trailer load weight ratio
- use of authorised cargo restraining equipment

- fluid levels

13 Site requirements include:

- observing mine traffic rules
- observing authorised parking areas
- correct distances between vehicles

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on B-Double vehicle operations
- c. completing pre-start, start-up and shut-down procedures

Completing essential functions including:

- d. coupling and uncoupling trailers
- e. steering, manoeuvring and positioning the B-Double vehicle
- f. monitoring and anticipating road and traffic conditions
- g. maintaining vehicle records
- h. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site requirements related to B-Double vehicle operations
- occupational health and safety requirements related to B-Double vehicle operations
- vehicle road codes and regulations
- site transport operations
- operations, characteristics and limitations of B-Double vehicles, trailers and ancillary equipment
- pre-start, start-up and shut down procedures

- operator level mechanical principles
- site vehicle related records and documentation system

**6. Underpinning Skills.** The ability to:

- apply relevant occupational health and safety requirements
- operate within relevant statutory requirements
- access, read and interpret technical information including manufacturers manuals related to B-Double vehicles/trailers, and their operations
- carry-out pre-start, start-up and shut-down procedures on B-Double vehicles and trailers
- operate vehicles within specifications and limitations
- steer, manoeuvre and position vehicles and trailers
- couple and uncouple trailers
- carry out reverse parking
- park and secure vehicle and trailer
- identify and report faults in vehicles and ancillary equipment
- check load configuration and security
- change wheels
- complete appropriate vehicle records and documentation

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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NATIONAL MINING ITAB

BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the operation of road trains including the pre-start inspections and checks, the starting driving and stopping and the conduct of operator maintenance.

<u>Elements</u>	<u>Performance Criteria</u>
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G66.1 Prepare for Operations.	<p>G66.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>G66.1.2 Safety information and procedures are accessed and applied throughout the operations.</p> <p>G66.1.3 Vehicle records are prepared and log-on procedures carried out to site requirements.</p>
G66.2 Couple and Uncouple Trailers.	<p>G66.2.1 Prime mover and trailer are coupled or uncoupled and checked in accordance with manufacturer's and site instructions and procedures.</p>
G66.3 Conduct Vehicle Checks.	<p>G66.3.1 Pre-start checks on vehicle, trailer and ancillary equipment are conducted in accordance with manufacturer's and site requirements.</p> <p>G66.3.2 Vehicle and trailer operations are tested in accordance with manufacturer's and site procedures and faults which affect the safety of the operation are reported to the appropriate authority.</p> <p>G66.3.3 Engine is started in accordance with manufacturer's guidelines and start-up procedures and systems are checked against operational criteria.</p>
G66.4 Steer, Manoeuvre and Position Vehicle.	<p>G66.4.1 Vehicle is steered, manoeuvred and positioned in accordance with traffic regulations and mine manager's rules.</p> <p>G66.4.2 Movements are within limits of vehicle and road dimensions and in line with manufacturer's specifications.</p> <p>G66.4.3 Centrifugal forces are confined to load configuration and driving environment.</p> <p>G66.4.4 Movements are smooth and controlled.</p> <p>G66.4.5 Contact with obstacles is avoided.</p>



<u>Elements</u>	<u>Performance Criteria</u>
G66.4 Steer, Manoeuvre and Position Vehicle (continued).	G66.4.6 Movements are to be carried out ensuring no injury to personnel or damage to property, equipment or facilities, and load.  G66.4.7 Available road area is utilised to increase radius of turn and swept path.

G66.5 Manage Engine Power.	<p>G66.5.1 Engine power is managed to ensure efficiency of vehicle movement and to minimise damage to the engine and drive line.</p> <p>G66.5.2 Operation is within manufacturer's specified torque range and temperature.</p> <p>G66.5.3 Engine power is coordinated with gear selection to maintain torque range.</p> <p>G66.5.4 Smooth transition in gear changes necessary to maintain engine power and torque range is effected.</p>
G66.6 Monitor and Anticipate Traffic and Road Conditions	<p>G66.6.1 Traffic and road condition are constantly monitored and anticipated to allow a safe operation and ensure no injury to people or damage to property, equipment, loads and facilities.</p> <p>G66.6.2 Vehicle speed and safety is achieved using the accelerator, gears, brakes and speed retarding devices.</p> <p>G66.6.3 Traffic flows are anticipated to ensure the most efficient route of travel is taken to destinations without backtracking.</p>
G66.7 Monitor Vehicle Efficiency.	<p>G66.7.4 Account is taken of road and traffic conditions, road standards, distance and load.</p> <p>G66.7.1 The vehicle's performance is constantly monitored to ensure maximum efficiency of operation and fuel consumption.</p> <p>G66.7.2 Account is taken of warning devices that indicate engine or vehicle performance is hindered.</p> <p>G66.7.3 Vehicle is constantly monitored for any malfunctions or factors which may affect vehicle performance.</p> <p>G66.7.4 Any faults or damage to vehicle are reported to the appropriate authority.</p>

<u>Elements</u>	<u>Performance Criteria</u>
G66.8 Park and Secure the Vehicle	<p>G66.8.1 Vehicle is brought to a halt through the use of brakes using straight line braking techniques.</p> <p>G66.8.2 Vehicle is parked and locked/secured in accordance with manufacturer's specifications, site procedures and legal requirements.</p> <p>G66.8.3 Vehicle is parked in an area that is safe and legal in line with traffic regulations.</p>
G66.9 Carry out Post-Operational Activities.	<p>G66.9.1 Engine shut-down is carried out in accordance with approved procedures.</p> <p>G66.9.2 Post-operational checks are completed in accordance with approved procedures and faults</p> <p>G66.9.3 Vehicle records are maintained/updated and information is processed in accordance with site requirements.</p>

**Range of Variables:**

- 1 Vehicle Records may include manual or electronic data collection systems and cover log-on / off, activity recording, trip records and refuelling information.
- 2 Pre-start checks may include:
  - fluid levels including fuel, engine oil, brake fluids, coolant, clutch / transmission fluid and windscreen washer fluid.
  - windows and mirrors for clear visibility
  - tyres and wheels (air pressure, tyre damage, illegal tread depth and condition, abnormal wear pattern and tyre compatibility)
  - fan belts
  - seat belts
  - door hatches and latches
  - battery and connections
  - visible and current registration and licences
  - spare wheel
  - wheel nuts
  - wheel chocks and wedges
  - rear guards

- warning horn
- trailer king pin
- ancillary drive belt(s)
- turn-table
- pneumatic system including draining as required
- skid plate block

**Range of Variables (continued):**

- 3 Start-up checks may include:
- lights (headlights, clearance lights, indicators, hazard lights, reversing lights)
  - brakes
  - heating and ventilation
  - instruments and gauges
  - windscreen washers and wipers
  - pneumatic system including hydraulic hoses and hose connections
- 4 Trailer coupling, uncoupling procedures may include:
- selection of an appropriately firm and level parking area
  - apply parking brakes
  - ensure turn-table jaw release is locked/unlocked
  - turn-table lock and trailer wheel chocks
  - compatibility of turn-table and trailer ring pin
  - alignment of prime-mover, turn-table and trailer skid-pad
  - connections or brake service, emergency lines, auxiliary air and electrical lines
  - inspection and testing of air brakes, trailer brakes, lock status of turn-table jaw release
  - securing and testing trailer landing legs
- 5 Engine power may be managed by:
- selecting gear ratio to achieve smooth take-off
  - changing gears to maintain specified torque range at all speeds
  - utilising engine retarder
- 6 Manufacturer's specifications may include:
- Engine crank
  - Idling
  - Engine RPM
  - Operating temperatures
  - Torque range
- 7 Faults that may affect the safety and efficiency of the operation include the following:
- Excessive wear on King Pins
  - Loose/leaking air brake and hose fitting
  - Excessive wear in suspension system
- 8 Road conditions and safety conditions to be taken account of include:

- effects of weather conditions on road
- road surface
- road gradient
- degree of visibility

**Range of Variables (continued):**

9 Traffic conditions to be taken account of include:

- speed limits
- approved routes
- legal parking areas
- parking distances
- traffic pattern and density

10 Warning devices may include:

- audible reversing buzzer
- warning lights
- speedometer
- tachometer
- oil pressure
- air pressure
- temperature gauges/warning lights
- brake warning light
- fuel quantity
- electrical charging
- ancillary systems indicators (e.g. high beam, turn signals, parking brake)

11 Engine malfunctions may include:

- overheating
  - coolant
  - exhaust
  - drive-line
- low oil temperature
- electrical discharge/overcharge
- low air pressure
- ancillary systems
- abnormal emissions

12 Safety considerations may need to include:

- vehicle height
- condition of brakes and braking system (air pressure)
- load characteristics
- vehicle speed
- prime mover/trailer load weight ratio
- use of authorised cargo restraining equipment
- fluid levels

- 13 Site requirements include:
- observing mine traffic rules
  - observing authorised parking areas
  - correct distances between vehicles

## Evidence Guide

MNC.G66.A

## OPERATE ROAD TRAIN VEHICLE

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on road trains operations
- c. completing pre-start, start-up and shut-down procedures

Completing essential functions including:

- d. coupling and uncoupling trailers
- e. steering, manoeuvring and positioning the road trains
- f. monitoring and anticipating road and traffic conditions
- g. maintaining vehicle records
- h. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site requirements related to road trains operations



- occupational health and safety requirements related to road trains operations
- vehicle road codes and regulations
- site transport operations
- operations, characteristics and limitations of road trains, trailers and ancillary equipment
- pre-start, start-up and shut down procedures
- operator level mechanical principles
- site vehicle related records and documentation system

**6. Underpinning Skills.** The ability to:

- apply relevant occupational health and safety requirements
- operate within relevant statutory requirements
- access, read and interpret technical information including manufacturers manuals related to road trains/trailers, and their operations
- carry-out pre-start, start-up and shut-down procedures on road trains and trailers
- operate vehicles within specifications and limitations
- steer, manoeuvre and position vehicles and trailers
- couple and uncouple trailers
- carry out reverse parking
- park and secure vehicle and trailer
- identify and report faults in vehicles and ancillary equipment
- check load configuration and security
- change wheels
- complete appropriate vehicle records and documentation

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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NATIONAL MINING ITAB

BLACK COAL: GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the transporting of dangerous goods by vehicle.

<b>Elements</b>	<b>Performance Criteria</b>
G67.1 Identify Load Characteristics.	G67.1.1 Type of load is assessed to ensure compliance with Dangerous Goods Code and equipment load plate specification.  G67.1.2 Characteristics of the dangerous loads are taken in to account to ensure that appropriate loading and unloading procedures are followed.  G67.1.3 Dangerous goods are identified as per shipping documents and Emergency Procedures Guides (EPGs).  G67.1.4 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.  G67.1.5 Load weight and dimension are within vehicle capacity and its equipment.

<p>G67.2 Load and Unload Dangerous Goods.</p>	<p>G67.2.1 Vehicle is loaded and unloaded safely according to Industry standards and dangerous good code ensuring no injury to personnel or damage to equipment.</p> <p>G67.2.2 Necessary shipping documents are obtained.</p> <p>G67.2.3 The vehicle is clearly placarded with the Emergency Information Panel in accordance with the Dangerous Goods Code.</p> <p>G67.2.4 Load is not to exceed safe working capacity of vehicle.</p> <p>G67.2.5 Load is secured using appropriate load securing equipment and distributed across vehicle to ensure even weight distribution in accordance with Dangerous Goods Code.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
G67.3 Convey Dangerous Goods.	G67.3.1 Dangerous goods are conveyed in accordance with Dangerous Goods Code to ensure no injury to personnel or damage to environment, equipment or facilities.  G67.3.2 Emergency procedures are carried out in line with the Dangerous Goods Code to minimise risk to personnel, damage to environment, equipment and facilities.  G67.3.3 Controls and levers are applied to ensure a safe and effective operation of manoeuvring and positioning of load.
G67.4 Park and Secure Loaded Vehicle.	G67.4.1 Vehicle is parked and secured in accordance with Dangerous Goods Code and site requirements.  G67.4.2 Vehicle is parked in an area that is safe and shut down in accordance with manufacturer's instructions and site procedures.

**Range of Variables:**

- 1 Dangerous goods may include flammable substances, explosive substances, poisonous substances, corrosive substances and cryogenic product.
- 2 Dangerous goods will be assessed to ensure compatibility of substances to be conveyed.
- 3 Loading and unloading of dangerous goods will ensure that only compatible goods are loaded, the vehicle is secured against movement, damaged or leaking hoses are not used, all valves, hatches and other security devices are secured and closed after loading and that packaged goods are loaded in a gated or enclosed vehicle.
- 4 Vehicle to transport dangerous loads and drivers are equipped with appropriate emergency equipment as specified in the code which may include face masks, eye wash, breathing apparatus and specialised protective clothing and equipment.
- 5 Dangerous loads, such as flammable, will be identified by hazardous goods symbols. These symbols will be related to Dangerous Goods Codes.
- 6 Load will be distributed to ensure weight distribution to code, convenient load and destination sequence, protection of fragile components and safe configuration and situation of objects with dangerous projections.
- 7 Dangerous Goods Code includes the following safety considerations: the security of the load is maintained; only materials that are compatible with each other can be conveyed; shipping documents are carried and produced on request to an authorised person; the vehicle is stopped at uncontrolled rail crossings and proceeds only after checking that the way is clear; passengers are not carried unless that are employees of the owner and are authorised by the prime contractor, police or competent authority; breakdown triangles are displayed and hazard lights (or parking lights) are switched on if the vehicle breaks down on a road or street; bulk vehicles are kept at least 50 metres from other bulk vehicles if stopping to assist the broken down vehicle; there is no smoking in, or lighters, matches, etc, carried on bulk vehicles carrying classes 2.1, 3, 4 or 5; vehicles carrying bulk flammable liquids or gases are not taken into buildings except for brief essential repairs; and routes should be pre-planned whenever possible.
- 8 Driving must be in accordance with the law and must take into consideration the special requirements of the hazardous material being conveyed.
- 9 Materials will be handled with appropriate load shifting equipment. If material is to be unloaded into a licensed flammable store/warehouse a flameproof forklift is to be used.





## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the workplace or simulated workplace in accordance with relevant legislation and site procedures.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying occupational safety procedures
- b. interpreting and communicating information on the transportation of dangerous goods
- c. identify load characteristics
- d. load and unload dangerous goods'
- e. convey dangerous goods
- f. parking and securing loaded vehicle

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- relevant Occupational Health and Safety requirements
- Dangerous Goods Code
- limitations of operations resulting from Dangerous Goods Code
- placarding procedures and requirements
- loading, unloading and security requirements and procedures
- site environmental requirements and constraints related to dangerous goods

6. **Underpinning Skills.** The ability to:

- apply operational safety procedures

- access, read, interpret and apply the Dangerous Goods Code
- apply relevant vehicle placarding
- load and unload dangerous goods
- convey dangerous goods
- comply with environmental requirements

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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NATIONAL MINING ITAB

BLACK COAL: GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the planning, loading, load distribution and securing of loads on all vehicular platforms.

<u>Elements</u>	<u>Performance Criteria</u>
G68.1 Identify Load Characteristics.	G68.1.1 Intended loads are checked with manifest or load list and anomalies are resolved with appropriate party as appropriate.  G68.1.2 Characteristics of the load are taken into account to ensure that appropriate loading and unloading procedures are followed.  G68.1.3 Hazardous cargo is identified according to site/legislative procedures for hazardous and dangerous cargo.  G68.1.4 Load weight and dimension are identified to ensure they are within vehicle capacity and statutory requirements.  G68.1.5 Safety information and procedures are accessed and applied throughout the work.

<p>G68.2 Load and Unload Vehicle.</p>	<p>G68.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>G68.2.2 Vehicle is loaded and unloaded safely ensuring no injury to personnel or damage to property, equipment and load.</p> <p>G68.2.3 Load does not exceed safe working capacity of vehicle and is in accordance with manufacturer's specifications/site requirements.</p> <p>G68.2.4 Hazardous loads are identified and loaded/unloaded according to statutory requirements and site procedures.</p> <p>G68.2.5 Load is distributed across vehicle to ensure legal/even weight distribution.</p> <p>G68.2.6 Unloaded cargo is processed in accordance with site operating procedures.</p>
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<b>Elements</b>	<u>Performance Criteria</u>
G68.3 Secure Load.	G68.3.1 Load components are secured using restraints and methods approved in site procedures.  G68.3.2 Load is secured using appropriate securing equipment and lashed to anchorage points in accordance with site requirements.  G68.3.3 Lashing equipment is tightened to vehicle to ensure security during travel.  G68.3.4 Lashing and baulking is arranged in accordance with site requirements.  G68.3.5 Pre-loaded vehicle is inspected and checked for security for travel.
G68.4 Protect Load.	G68.4.1 Load is protected from the weather, dust and exposure to sunlight through the use of covers in accordance with site requirements.  G68.4.2 Pre-loaded trailer is inspected and weather protection confirmed as appropriate.

**Range of Variables:**

- 1 Safe working capacity, as determined by the Regulatory Authority, is specified on vehicle.
- 2 Loads are to comply with vehicle axle weight regulations.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Securing equipment may include chocks, gates, straps, racks, curtains, spring-loaded load restraints, lashings, baulking, pins, ropes, bulkheads, self-locking restraint, chains, roller-bed, tie-downs, covers, twist locks, cargo net and pallet locking devices.
- 5 Arrangement of lashing and baulking may be arranged to permit re-tightening of lashing, convenient unfastening, access to part loads and minimal use of equipment.
- 6 Protection measures may include those to shed water away from load, deflect head-wind effect, facilitate lashing and permit part load delivery access.
- 7 Protection equipment to be used may include taut-liner, rain covers, dust covers and shrink wrap.
- 8 Hazardous cargo may include flammable substances, chemical substances, explosives and corrosive substances.
- 9 Safe working capacity, as determined by the Regulatory Authority, is specified on vehicle.
- 10 Load will be distributed to ensure weight distribution is to code, convenient load and destination sequence, protection of fragile components, safe configuration and situation of objects with dangerous projections, and safe road handling characteristics.
- 11 Roller conveyors, where used, are raised for operation and lowered and locked for transit.



**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on loading and unloading of vehicles
- c. identifying load characteristics
- d. identifying hazardous cargo
- e. loading and unloading vehicle
- f. securing and protecting the load

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- statutory requirements for load carrying
- occupational health and safety requirements related to loading and unloading vehicles
- the National Loading Code
- impacts of loads on safe road handling characteristics
- load carrying capabilities, dimensions and limitations of site vehicles and trailers
- load securing equipment, methods and techniques
- packaged loads handling techniques and methods

**6. Underpinning Skills.** The ability to:

- apply relevant occupational health and safety requirements
- access, read and interpret information related to loading/ unloading
- plan a load
- apply load distribution techniques
- identify, select and use load securing equipment/aids
- identify, select and use load protection equipment
- identify and report hazardous cargo situations

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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**MNC.G69.A TEST OPERATIONAL FUNCTIONS  
OF PRODUCTION VEHICLES AND EQUIPMENT**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor: This Unit of Competence covers the testing of vehicles and equipment to prove the functionality of operating systems**

<b>Elements</b>	<u>Performance Criteria</u>
G69.1 Plan and Prepare for Testing.	G69.1.1 Testing requirements are identified and confirmed. G69.1.2 Resources required for the work are identified and obtained. G69.1.3 Vehicle to be worked on is prepared for the test. G69.1.4 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity. G69.1.5 Safety information and procedures are accessed and applied throughout the operations.

<p>G69.2 Test Vehicles and Equipment.</p>	<p>G69.2.1 Pre-start, start-up, shut-down and isolation procedures are carried out in accordance with manufacturer's/site specific requirements.</p> <p>G69.2.2 Operational functions of the vehicle are tested in accordance with manufacturer's/site requirements.</p> <p>G69.2.3 Faults are identified, rectified where possible, or arrangements put in place for corrective action in accordance with site procedures.</p> <p>G69.2.4 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site requirements.</p> <p>G69.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>
<p>G69.3 Complete the Testing Sequence.</p>	<p>G69.3.1 Equipment and tools are cleaned, maintained and stored in accordance with site procedures and practices.</p> <p>G69.3.2 Worksite is restored in accordance with site procedures and practices.</p> <p>G69.3.3 Records and documents are completed in accordance with manufacturer's/site procedures.</p>

**Range of Variables:**

- 1 Vehicles may include all machines involved in production at the mine site.
- 2 Equipment may include, but not limited to, gas sampling equipment, hydraulic and pneumatic testing equipment.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures
- 4 Vehicle and equipment preparation may include locating, positioning, isolation and cleaning.
- 5 Resources may include appropriate technical manuals and information materials and tools.
- 6 Testing requirements may be identified through work orders or requests, condition statements, maintenance schedules or by initial diagnosis.
- 7 Testing of functions may include steering, brakes, lights, exhaust emissions, pneumatics, hydraulics, raw gas sampling and production functionality in production mode.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on testing operations
- c. completing pre-start, start-up and shut-down procedures
- d. completing the testing functions
- e. maintaining records and documents

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- relevant Occupational Health and Safety requirements
- mine operational rules and procedures
- operations, characteristics, capabilities and limitations of production vehicles and equipment
- diagnosis and fault finding techniques
- site equipment and maintenance documentation and procedures
- site inventory (parts) systems
- testing procedures

6. **Underpinning Skills.** The ability to:

- access, interpret and apply technical information and drawings
- apply site safety procedures
- use hand and power tools
- carry out precision measurement

- access and use site inventory system
- identify and diagnose faults
- operate vehicles/plant for maintenance purposes
- interpret test results



<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	0
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

Descriptor: This Unit of Competence covers the testing of support vehicles and ancillary equipment to prove the functionality of operating systems.

<b>Elements</b>	<u>Performance Criteria</u>
G70.1 Plan and Prepare for Testing.	G70.1.1 Testing requirements are identified and confirmed.
	G70.1.2 Resources required for the work are identified and obtained.
	G70.1.3 Vehicle to be worked on is prepared for the test.
	G70.1.4 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.
	G70.1.5 Safety information and procedures are accessed and applied throughout the operations.
G70.2 Test Vehicles and Equipment.	G70.2.1 Pre-start, start-up, shut-down and isolation procedures are carried out in accordance with manufacturer's/site specific requirements.
	G70.2.2 Operational functions of the vehicle are tested in accordance with manufacturer's/site requirements.
	G70.2.3 Faults are identified, rectified where possible, or arrangements put in place for corrective action in accordance with site procedures.
	G70.2.4 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site requirements.
	G70.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.

<p>G70.3 Complete the Testing Sequence.</p>	<p>G70.3.1 Equipment and tools are cleaned, maintained and stored in accordance with site procedures and practices.</p> <p>G70.3.2 Worksite is restored in accordance with site procedures and practices.</p> <p>G70.3.3 Records and documents are completed in accordance with manufacturer's/site procedures.</p>
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**Range of Variables :**

- 1 Vehicles may include all machines involved in production at the mine site.
- 2 Equipment may include, but not limited to, gas sampling equipment, hydraulic and pneumatic testing equipment.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management systems and plans, manager's rules, OH&S policy, codes of practice, safe working procedures and safe job procedures (or equivalent).
- 4 Vehicle and equipment preparation may include locating, positioning, isolation and cleaning.
- 5 Resources may include appropriate technical manuals and information materials and tools.
- 6 Testing requirements may be identified through work orders or requests, condition statements, maintenance schedules or by initial diagnosis.
- 7 Testing of functions may include steering, brakes, lights, exhaust emissions, pneumatics, hydraulics, raw gas sampling and operational functionality.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on testing operations
- c. completing pre-start, start-up and shut-down procedures
- d. completing the testing functions
- e. maintaining records and documents

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- relevant Occupational Health and Safety requirements
- mine operational rules and procedures
- operations, characteristics, capabilities and limitations of support vehicles and ancillary equipment
- diagnosis and fault finding techniques
- site equipment and maintenance documentation and procedures
- site inventory (parts) systems
- testing procedures

6. **Underpinning Skills.** The ability to:

- access, interpret and apply technical information and drawings
- apply site safety procedures
- use hand and power tools
- carry out precision measurement

- access and use site inventory system
- identify and diagnose faults
- operate vehicles/plant for maintenance purposes
- interpret test results

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	0
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

## NATIONAL MINING ITAB

## BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor**     **This unit covers the administration, monitoring and completion of contracts for mine site equipment and plant commissioning, repair and decommissioning.**

<u>Element</u>	<u>Performance Criteria</u>
G81.1    Implement, monitor and report administrative procedures	G81.1.1    Procedures for reviewing contract performance against performance criteria are implemented.
	G81.1.2    Procedures for monitoring and rectifying performance are implemented.
	G81.1.3    Procedures for adjusting performance are developed and implemented where     performance does not meet contract requirements.
G81.2    Monitor contract time frame and specifications	G81.2.1    Regular inspection of contract services are undertaken to ensure compliance with contract specifications.
	G81.2.2    Variations between the specified scope of services and the contract are identified and documented and relevant personnel notified.
	G81.2.3    Testing of services in progress is carried out by the contract in accordance with legislative, regulation and mine site requirements.
G81.3    Resolve contractual disputes	G81.3.1    Disagreements are investigated to identify cause and validity.
	G81.3.2    Terms of resolution are negotiated and agreed.
	G81.3.3    Contracted prescriptions for dispute resolution are followed.
	G81.3.4    Specialist advices is sought to resolve dispute.
	G81.3.5    Appropriate technical/legal advice is sought to clarify dispute issues.



- G81.4 Implement contract completion
  - G81.4.1 Contract conditions and responsibilities are reviewed with appropriate personnel to ensure satisfactory completion.
  - G81.4.2 Contract completion is reported to appropriate personnel.
  - G81.4.3 Contract performance is evaluated against agreed benchmarks.

**Range of Variables**

1. Contact administration includes supervision, management, monitoring, overseeing.
2. Records of contract progress include photographs, data, progress reports, minutes of contractor meetings, testing reports.
3. Contract and services include products, maintenance contracts, supply contract, cleaning contracts, waster removal contracts, plant and equipment commissioning and decommissioning contracts, equipment supply contracts and other mine site requirements.
4. Testing includes sampling, routine checks, audit, observation, meetings, occupational health and safety checks.
5. Conditions of contract include tender documentation, maintenance plan, defects liability.
6. Performance of contract is evaluated in terms of adherence to time lines, costs, progress towards objectives, adherence to quality standards, occupational health and safety standards.

**EVIDENCE GUIDE**

1. **Context of Assessment.** Competencies should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.

## 2. Interdependent assessment of units

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical aspects of evidence.** The black coal industry has established that, for portability purposes, it is essential that competence in this unit reflect successful assessment of the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on contract progress
  - c. defining roles and responsibilities for management of contracts
  - d. documenting the contract management plan
  - e. reviewing and auditing the effectiveness of contracts
  - f. establishing and reviewing contract dispute resolution procedures
  - g. establishing statutory and mine site reporting procedures.
4. **Consistency of performance.** Consistency of performance will, in many cases be, determined in relation to local conditions, to the criticality of the unit in terms of human or physical cost/benefits and to other variable factors. The assessment must satisfy the critical aspects expressed in the units. The dimensions of assessment required to obtain

and maintain the competencies as current, unless established elsewhere by appropriate an authority, should be determined following consideration of the local factors.

#### 5. Underpinning Knowledge

A knowledge of the list of topics/disciplines is sufficient scope and depth to enable the candidate to develop (or cause to develop) and establish contract management systems:

- legislative and statutory requirements and the instructions relating to contract maintenance
- mine operation procedures
- mine plans
- mine design relating to contracted services
- contract management requirements
- risk management procedures

#### MNC.G81.A

#### IMPLEMENT, MONITOR, RECTIFY AND REPORT ON CONTRACTS

- inspection and testing of contracted services/products
- mine reporting procedures
- review processes and techniques
- power sources including electrical, hydraulic, pneumatic, diesel
- safety design features of the contracted services
- standard operating procedures relating to the contract and services
- knowledge of contract design criteria
- training programs
- computer based systems.

#### 6. Underpinning Skills

The ability to:

- access, interpret and apply technical information and briefings to other staff
- apply the principles of contract management
- assess the risks and the hazards attached to contract management
- develop procedures appropriate to mine operations for management of contracts
- plan and coordinate work
- identify training needs related to contract management
- interpret and apply contract specifications
- conduct testing of contracted services and products.

## 7. Key Competencies

<i>Key competency</i>	<i>Level</i>
Collecting, analysing, organising ideas and information.	3
Communicating ideas and information.	3

Planning and organising activities.	3
Work with others in team.	3
Solving problems.	3
Using mathematical ideas and techniques.	2
Using technologies.	2

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**MNC.G82.A**  
**CONTROL SYSTEM**

**IMPLEMENT, MONITOR, RECTIFY AND  
REPORT ON INVENTORY**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor**      **This unit covers the management of an inventory control system.**

Element

Performance Criteria

G82.1	Implement inventory control system	G82.1.1 Resources, both human and technical, required to support implementation are identified and put in place.
		G82.1.2 Record keeping procedures are implemented.
		G82.1.3 Processes for controlling stock are implemented.
		G82.1.4 Reporting processes are implemented.
		G82.1.5 System is communicated to stakeholders.
G82.2	Monitor inventory control system	G82.2.1 Procedures for monitoring inventory control system are established.
		G82.2.2 Inventory control system is audited according to organisational specifications.
		G82.2.3 Discrepancy reporting procedures are implemented.
		G82.2.4 Production of inventory system reports is supervised.
		G82.2.5 Inventory reports are analysed.
		G82.2.6 Major trends are identified.
		G82.2.7 Areas requiring adjustment are identified and documented and relevant personnel notified.

G82.3 Rectify inventory control system

G82.3.1 Procedures for adjusting procedures and performance are developed.

G82.3.2 Modifications to inventory control system are undertaken according to organisational procedures.

G82.3.3 Modifications are tested and further modifications are made where necessary.

G82.3.4 Modifications are recorded and reported to relevant personnel.

G82.4 Report on inventory control system

G82.4.1 Results of inventory control are documented in accordance with organisational specifications.

G82.4.2 Relevant parties are informed of the results of inventory control according to organisation's guidelines.

### **Range of Variables**

1. Resources required include: Clerical/computer applications for maintaining records, Technical support, Data storage facilities.
2. Record keeping procedures include: Requisition procedures, Purchasing procedures, Shipping procedures, Invoicing procedures.
3. Processes for controlling stock include: Inventory lists, Stock lists.
4. Organisational systems, policies and procedures may include: Quality systems, Standard Operating Procedures, Standard Work Practices, organisational commitment, corporate policy, community consultation and involvement, objectives and targets, documentation and records, responsibility and reporting structure, inventory review audits, supply and financial monitoring and measurement, Organisational Codes of Practice, Ethical Codes.
5. Legislation, codes, regulations and standards may include: Australian standards, environmental agencies regulations, environmental protection acts, isolation procedures, manufacturers' specifications and recommendations, Coal Mining Acts and regulations, occupational health and safety legislation, mine managers' rules.

## **EVIDENCE GUIDE**

1. **Context of Assessment.** Competencies should be assessed in the normal work environment in the bounds of safety and in accordance with normal work flow.

2. Interdependence of units

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical aspects of evidence.** The black coal industry has established that, for portability purposes, it is essential that competence in this unit reflect successful assessment of the critical aspects of:

a. applying personal and operational safety procedures



- b. interpreting and communicating information on inventory control systems
- c. applying general management principles
- d. management of contractors
- e. personnel management
- f. maintaining records
- g. budgeting and reporting procedures
- h. negotiation.

4. **Consistency of performance.** Consistency of performance will in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or physical cost/benefits and to other variable factors. The assessment must satisfy the critical aspects expressed in the units. The dimensions of assessment required to attain and maintain the competencies as current, unless established elsewhere by appropriate authority, should be determined following consideration of the local factors.

5. Underpinning Knowledge

Knowledge of:

- site and equipment safety requirements
- monitoring of documentation
- auditing procedures
- software characteristics, technical capabilities and limitations
- reporting systems
- archiving
- record keeping procedures
- sources of stock/inventory information
- continuous improvement processes
- work roles.

6. Underpinning Skills

The ability to:

- identify and interpret trends from inventory records
- read, interpret and apply inventory information
- apply diagnostic techniques
- apply inventory system relationship to manufacturing process
- record and report on management of inventory systems
- maintain accurate records
- communicate, orally and in writing, with a range of stakeholders
- demonstrate safe working practices
- work within standard operating procedures.

7. Key Competencies

<i>Key competency</i>	<i>Level</i>
Collecting, analysing, organising ideas and information.	3
Communicating ideas and information.	3
Planning and organising activities.	3

Work with others in team.	3
Solving problems.	3
Using mathematical ideas and techniques.	2
Using technologies.	3

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## NATIONAL MINING ITAB

## BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor**                    **This unit covers the maintenance management systems in both underground and open cut mines.**

	<u>Element</u>	<u>Performance Criteria</u>
G83.1	Plan maintenance management system	G83.1.1 Maintenance procedures for plant and equipment are developed from site and legislative requirements and incorporated into site documentation.
		G83.1.2 Maintenance schedules, based on manufacturers' specifications and Industry benchmarks, are developed.
		G83.1.3 Budget requirements are estimated to ensure budget allocation is secured.
		G83.1.4 Staff are allocated and trained to meet maintenance schedules.
		G83.1.5 Reporting structures are documented.
		G83.1.6 Regulations that impact upon maintenance operations are documented.
		G83.1.7 Stakeholders are identified and contacted according to organisation's guidelines.
G83.2	Implement and monitor maintenance management system	G83.2.1 Maintenance management schedules are implemented.
		G83.2.2 Maintenance records are maintained.
		G83.2.3 Periodic and sample inspection reports are used to ascertain maintenance quality and the need for revision of maintenance schedule.
		G83.2.4 Maintenance reports and system output information is analysed.
		G83.2.5 Defective components, sub-assemblies and design faults are identified.
		G83.2.6 Effectiveness of policies, plans, procedures and workplace practices are monitored against objectives, timelines, key performance indicators and regulations.

G83.2.7 The impact of contingencies is monitored.

G83.2.8 Effective use of resources is monitored.

**Unit MNC.G83.A**

**IMPLEMENT, MONITOR, RECTIFY AND REPORT  
ON MAINTENANCE MANAGEMENT SYSTEMS**

G83.4 Rectify maintenance management system

G83.4.1 Corrective action plan, based on outcome of monitoring process, is developed and documented.

G83.4.2 Modifications are implemented and tested.

G83.4.3 System modifications are documented.

G83.5 Report on maintenance management system

G83.5.1 System is documented in accordance with organisation's guidelines.

G83.5.2 System is communicated to relevant personnel.

1. Maintenance includes servicing, repairing and overhauling of equipment.
2. Equipment may include: complex hydraulic systems, air systems, rope systems, transmission systems.
3. Stakeholders may include regulatory authorities, project managers, contractors, client representatives, government authorities, community groups, engineers, architects, employees.
4. Plans, policies and procedures may include: OH&S, skills required, frequency and level of maintenance work., Trade Practices, Weights and measures, Industrial Relations, Dangerous Goods, Coal and Extractive Industry Licensing, Enterprise Agreements, Development of Training Policies/Programs to aid compliance, organizational commitment, corporate and environment policy, environmental impact assessment, community consultation and involvement, objectives and targets, documentation and records, operational and emergency procedures, responsibility and reporting structure, environmental impact, regulatory and legal compliance, maintenance review audits, emission and performance monitoring and measurement.
5. Legislation, codes, regulations and standards may include: Australian standards, environmental agencies regulations, environmental protection acts, isolation procedures, manufacturers' specifications and recommendations, Coal Mining Act, occupational health and safety legislation, Common Law, mine managers' rules.
6. Contingencies may include equipment failure, observation errors, movement, weather, injury, obstructions.

## EVIDENCE GUIDE

1. **Context of assessment.** Competencies should be assessed, wherever possible, during real work activities being completed by the candidate.

Summative assessment of underpinning knowledge, to the extent as required, and formative assessment of application skills may be conducted through simulations.

2. Interdependence of units

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. Critical aspects of evidence. **Assessment should confirm competency in activities relevant to mine site operations such as:**
- conducting an activity safely and efficiently
  - achieving quality and productivity targets
  - adhering to and understanding relevant legislative (state and federal) requirements and mine manager's rules
  - adhering to and understanding environmental and heritage issues.

The black coal industry has established that, for portability purposes, it is essential that competence in this unit reflect successful assessment of the critical aspects of:

- applying personal and operational safety procedures
- interpreting and communicating information on inventory control systems
- applying general management principles
- management of contractors
- management of permit systems
- control of hazard and explosion protection of mechanical equipment
- risk assessment and control
- personnel management
- maintaining records
- budgeting and reporting procedures
- negotiation.

4. **Consistency of performance.** Consistency of performance will in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or physical cost/benefits and to other variable factors. The assessment must satisfy the critical aspects expressed in the units. The dimensions of assessment required to attain and maintain the competencies as current, unless established elsewhere by appropriate authority, should be determined following consideration of the local factors.

5. **Knowledge would include:**

- legislative, statutory, Australian standards and site specific requirements for maintenance of mechanical systems including communications, emergency procedures, risk management, recording and reporting, mines rescue, OH&S, manufacturers' instructions, standard work procedures, training, fire fighting, handling and storing of dangerous goods, local government and power authority requirements.
- Mine operating systems and procedures including transport systems, conveyor systems, systems of mining, ventilation systems, gas management systems and mine water management systems
- Stores systems
- Underground roadway and drilling
- Protection systems
- Reticulation systems



- Specifications for mechanical systems
- Audit procedures
- Mine design principles and procedures relating to mechanical systems
- Company organisation
- Computer based systems
- Training programs
- Safety design features for maintenance of mechanical systems
- Maintenance surveys
- Work role definitions
- Reporting methods and alternatives
- Community expectations
- Consultative strategies
- Alternative documentation systems for procedures.

MNC.G83.A

**IMPLEMENT, MONITOR, RECTIFY AND REPORT  
ON MAINTENANCE MANAGEMENT SYSTEMS**

## 6. Skills demonstrated would include:

- Accessing, interpreting and applying
  - Technical information
  - Site/legislative requirements
  - Records and reports
  - Briefings and handover details
- Applying the principles of mine design
- Assessing the risks and consequences attached to mechanical systems
- Developing procedures appropriate to mine operations for management of mechanical systems
- Planning and coordinating work
- Management of confined spaces
- Identifying training needs related to mechanical systems
- Interpreting manufacturers' instructions
- Conducting maintenance surveys
- Interpersonal skills
- Liaison with other parties
- Coordination of others
- Information management
- Problem solving
- Analysis
- Use of measuring equipment
- Clear report writing
- Meeting facilitation.

## 7. Key Competencies

<i>Key competency</i>	<i>Level</i>
Collecting, analysing, organising ideas and information.	3

Communication ideas and information.	3
Planning and organizing activities.	3
Working with others in teams.	3
Solving problems.	3
Using mathematical ideas and techniques.	2
Using technologies.	2

## NATIONAL MINING ITAB

## BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor**                    **This unit covers the management of mobile plant and equipment systems in both underground and open cut mines.**

	<u>Element</u>	<u>Performance Criteria</u>
G84.1	Implement mobile plant and equipment systems	<p>G84.1.1 Responsibilities of personnel are documented.</p> <p>G84.1.2 Reporting structures are documented.</p> <p>G84.1.3 Regulations and site requirements that impact upon work operations are documented.</p> <p>G84.1.4 Systems to comply with legislative and statutory requirements are developed and documented.</p> <p>G84.1.5 Operational and emergency procedures are documented.</p> <p>G84.1.6 Stakeholders are identified and contacted according to organisation's guidelines.</p> <p>G84.1.7 Mobile plant and equipment systems are implemented according to manufacturer's specifications, site requirements and organisational procedures.</p>
G84.2	Monitor mobile plant and equipment systems	<p>G84.2.1 Effectiveness of policies, plans, procedures and workplace practices are monitored against objectives, timelines, key performance indicators and regulations.</p> <p>G84.2.2 Use of mobile plant and equipment is validated and recorded in accordance with the project specifications.</p> <p>G84.2.3 Operating constraints are assessed.</p> <p>G84.2.4 The impact of contingencies is monitored.</p> <p>G84.2.5 Effective use of resources is monitored.</p>
G84.3	Rectify mobile plant and equipment systems	<p>G84.3.1 Available information from monitoring processes is used to ensure accurate problem identification.</p> <p>G84.3.2 Specialist advice/assistance is obtained where required.</p> <p>G84.3.3 The impact of contingencies is managed.</p> <p>G84.3.4 Rectification requirements are implemented.</p>

G84.4 Report on mobile plant and equipment systems

G84.4.1 Results are documented in accordance with project specifications.

G84.4.2 Relevant parties are informed of the results according to organisation's guidelines.

1. Mobile plant and equipment systems may include: Crushing and screening plants, Gyrotory/jaw crushers, Cone crushers, Double-roll crushers, Hammermills, Double roll slogging crushers, Tube feeders, Slot feeders, Apron feeders, Roller and rotary feeders, Vibratory feeders, Reciprocating-plate feeders, Screw feeders, Conveyor belts, Drive arrangements.
2. Plans, policies and procedures may include: organisational commitment, corporate and environment policy, environmental impact assessment, community consultation and involvement, objectives and targets, surveying program, documentation and records, operational and emergency procedures, responsibility and reporting structure, environmental impact, regulatory and legal compliance, survey review audits, emission and performance monitoring and measurement, land reclamation practices.
3. Legislation, codes, regulations and standards may include: Australian standards, environmental agencies regulations, environmental protection acts, isolation procedures, manufacturers' specifications and recommendations, Coal Mining Act, occupational health and safety legislation, mine managers' rules.
4. Stakeholders may include client, client representatives, government authorities, community groups, engineers, architects, contractors.
5. Design may be represented by hard copy plans or maps or digital information.
6. Contingencies may include equipment failure, observation errors, movement, weather, injury, obstructions.
7. Constraints may be related to, but are not limited to: roadway size, pillar sizes, depth of cover and underlying/overlying strata, stress regimes, underground opening characteristics, water ingress, systems of mining, breaker liner supports, direction of mining.

## EVIDENCE GUIDE

1. **Context of Assessment.** Competencies should be assessed, wherever possible, during real work activities being completed by the candidate.

Summative assessment of underpinning knowledge, to the extent as required, and formative assessment of application skills may be conducted through simulations.

**2. Inter-dependent Assessment of Units**

- 3. Critical Aspects of Evidence.** Assessment should confirm competency in activities relevant to mine site operations such as:
- a. conducting an activity safely and efficiently
  - b. achieving quality and productivity targets
  - c. adhering to and understanding relevant legislative (state and federal) requirements and mine manager's rules
  - d. adhering to and understanding environmental and heritage issues.

4. **Consistency of performance.** Consistency of performance will in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or physical cost/benefits and to other variable factors. The assessment must satisfy the critical aspects expressed in the units. The dimensions of assessment required to attain and maintain the competencies as current, unless established elsewhere by appropriate authority, should be determined following consideration of the local factors.

5. **Knowledge would include:**

- Accuracy and precision requirements
- limitations of mobile plant and equipment systems
- project reporting guidelines
- risk management principles
- company organisation
- work role definitions
- reporting methods and alternatives
- relevant regulations, licenses and permits
- emergency procedures and obligations
- community expectations
- consultative strategies
- alternative documentation systems for procedures.

6. **Skills demonstrated would include:**

- development of responsibility/motivation
- policy management skills
- interpersonal skills
- liaison with other parties
- coordination of others
- information management
- problem solving
- analysis
- use of measuring equipment
- clear report writing
- meeting facilitation.

## 7. Key Competencies

<i>Key competency</i>	<i>Level</i>
Collecting, analysing , organising ideas and information.	3
Communication ideas and information.	3
Planning and organizing activities.	3
Working with others in teams.	2

Solving problems.	3
Using mathematical ideas and techniques.	2
Using technologies.	2

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## NATIONAL MINING ITAB

## BLACK COAL: GENERAL COMPETENCY STANDARDS

**Descriptor**                    **This unit applies to the functions of reviewing, monitoring, installing and auditing electrical reticulation, control and protection systems at a mine site.**

<u>Element</u>	<u>Performance Criteria</u>
G90.1 Provide power supply systems for the mine sites	<p>G90.1.1 Install and maintain the system conduct, undertake, review, modify maintain the audit processes and procedures to provide:</p> <p>G90.1.2 Low voltage switching and distribution system</p> <p>G90.1.3 High voltage switching and distribution system</p> <p>G90.1.4 Earthing systems on mine sites.</p> <p>G90.1.5 Conduct, undertake processes and procedures to ensure reliability and quality of supply taking into account transients, harmonics, over-voltages, lightning and stray currents.</p> <p>G90.1.6 Conduct, undertake processes and procedures to protect high energy sources (sub stations and transformers) through the selection and installation of switchgear and protective devices.</p> <p>G90.1.7 Provide mine illumination systems and equipment in accordance with site operations and safety needs.</p> <p>G90.1.8 Plan and install battery and associated charging equipment in accordance with mine site conditions and safety needs.</p> <p>G90.1.9 All power supply systems are reviewed, modified, installed, audited and maintained in accordance with the relevant Australian Standards and Codes for Power Supply Systems for Mines.</p>

G90.2 Provide electrical protection system for mine sites

G90.2.1 Install and maintain the system and conduct, undertake, review, modify and maintain the audit processes and procedures to provide:

G90.2.2 Over current and earth fault protection systems

G90.2.3 Earth continuity monitoring systems and devices

G90.2.4 Earth leakage protection systems and devices

G90.2.5 Earth fault current limitation systems

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**ESTABLISH AND MAINTAIN THE MINE ELECTRICAL RETICULATION AND PROTECTION SYSTEM**

G90.2.6 Frozen contactors (loss of vacuum) systems and devices.

G90.2.7 Faults in electrical installations are identified, isolated, rectified and ability of the system verified through recognised decision making processes including the use of fault level calculations, discrimination and component ratings.

G90.2.8 Apply management decision making processes for the maintenance, examination and testing of electrical protection systems relative to mine site and safety needs.

G90.2.9 All electrical protection systems and devices are reviewed installed, modified, audited and maintained in accordance with the relevant Australian Standards and Codes for Electrical Protection Systems.

G90.3 Selection, installation and use of cables from power source to point of usage

G90.3.1 Mine cables are identified, selected and applied in accordance with mine site requirements and safety needs.

G90.3.2 Mine cable faults and hazards are identified, reported and rectified in accordance with mine site and hazard elimination requirements.

G90.3.3 Mine cables are inspected for their integrity, usage, consequence of fault/damage and previous repairs.

G90.3.4 Management, inspection, application, testing, fault finding and repair are carried out in accordance with the relevant Australian Standards and Codes for Mine Cables.

- G90.4 Provide overall electrical services that apply to production systems
- G90.4.1 Mine communication systems are installed, monitored, maintained and re-sited in accordance with mine site needs and safety.
  - G90.4.2 The electrical components of the gas detection systems are selected, installed, monitored, maintained and re-sited in accordance with mine site and safety needs.
  - G90.4.3 Automatic control systems for winder control, wash plant and other related operational production systems/ processes are installed, monitored and maintained in accordance with mine site and safety needs.
  - G90.4.4 Electromagnetic interference that may affect the safe use of electrical systems is controlled, monitored and rectified.

**ESTABLISH AND MAINTAIN THE MINE ELECTRICAL  
RETICULATION AND PROTECTION SYSTEM**

G90.4.5 Remote control systems on mining equipment are inspected, reviewed and maintained to comply with relevant mine and regulatory standards.

G90.4.6 Welding equipment and energy delivery sources are inspected, reviewed and maintained to comply with relevant mine and regulatory standards, including pre and post operations.

G90.4.7 Hazards from electrostatic changes are identified, controlled and managed.

G90.4.8 All activities relevant to this element (4) are carried out in accordance with the relevant Australian Standards and Codes for the above operational electrical/ electrician requirements.

Power supply systems for mines refers from low through to high voltage switching and distribution systems on mines as well as mine earthing systems.

Electrical protection systems in mines shall include but not be limited to protection against short-circuit, over-current, earth fault and earth leakage.

Mine cables may include feeder, trailing and reeling cables, as well as all other cabling used for power reticulation, control, data and signalling in the mining environment.

Hazardous area electrical equipment for mines shall include certified explosion protected electrical equipment for underground and surface mines.

Hazards may include electric shock, burns, electric arcing and explosions, electric ignition of flammable gases and dusts, transient over-voltage, lightning, uncontrolled operation of machinery, loss of communications, failure of protection systems.

Remote control systems include systems used to operate fixed, transportable and mobile mining machinery from a distance. These may be radio controlled, infra red control or umbilical control.

Mine communications systems may includes telephone, radio, microwave, and hardwired systems for voice and data communications throughout the mine.

DC Installations may include storage battery installations such as battery locos and battery shuttle cars, as well as battery charging. Other DC installations may also include rectification of AC power for drive applications.

## Evidence Guide

1. **Context of Assessment** The ultimate competency outcome is for the candidate to be able to establish and maintain electrical reticulation, control and protection systems at a mine and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements of this Competency Unit.

Electrical reticulation, control and protection systems will differ markedly between mine sites. Therefore, to ensure the candidate is able to apply the theory to a working situation, assessment must include practical exercises and measurable evidence.

The assessment system for this competency is to cover the following requirements:

- (a) theory and knowledge underpinning the competency
- (b) application of theory and knowledge to generic practical situations which form part of the practical establishment, installation, maintenance and testing of electrical reticulation, control and protection systems at a mine site.

There are special considerations in respect of assessment. Although the generic practical situations to be assessed should cover all major aspects of this competency, it is unlikely that all candidates will be able, in terms of access, reasonable economic constraints and reasonable time frames, to demonstrate practical application of all aspects of the establishment and maintenance of electrical reticulation, control and protection systems at the mine site.

## 2. Interdependent assessment of units

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

## 3. Critical aspects of evidence

It is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. modification, evaluation and selection activities associated with electrical reticulation, control and protection systems at a mine site
- c. modifying and evaluating changes to electrical reticulation, control and protection systems at a mine site
- d. installing, examining, testing, maintaining and auditing the effectiveness of electrical reticulation, control and protection systems at a mine site
- e. selecting and developing responses and procedures for electrical reticulation, control and protection systems at a mine site
- f. defining roles and responsibilities for electrical reticulation, control and protection systems at a mine site
- g. identifying training needs for personnel for electrical reticulation, control and protection systems at a mine site
- h. interpreting and communicating information on electrical reticulation, control and protection systems at a mine site
- i. conducting risk assessments to identify hazards and risks associated with electrical reticulation, control and protection systems at a mine site
- j. documenting electrical reticulation, control and protection systems at a mine site.

### 4. Consistency of performance

Consistency of performance in this unit is aided by the standards of performance which are contained within state legislation and by professional standards and practices established and observed by the mining industry. Establishment and maintenance of electrical reticulation, control and protection systems at a mine is to meet legislative and industry standards.

5. Underpinning Knowledge

A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to establish and maintain (or cause to be established and maintained) electrical reticulation, control and protection systems at a mine site, including:

- legislative and site requirements, inspections, and reporting procedures
- electrical protection theory, including earthing systems, co-ordination and fault level calculations, step and touch potential management.
- fault discrimination and fault clearance characteristics of equipment
- mining electrical protection systems including earth continuity monitoring, earth leakage protection, earth fault current limitation and relevant standards
- typical low and high voltage switching and distribution systems on mines
- transient over-voltages, harmonics, and lightning theory, hazards and protection schemes
- hazards associated with high energy systems in mining
- mining cables, faults and consequences, cable protection systems, standards and cable repair
- classification of hazardous areas and explosion-protected electrical equipment principles, general requirements, verification, testing and standards
- automatic control system hazards, protection schemes and standards
- management and Control of process control change to software and hard wired based systems
- electromagnetic interference hazards, protection schemes and standards
- radio remote control systems hazards, protection schemes and standards
- safety protective devices associate with welding machines such a Voltage Reducing Devices.

6. Underpinning Skills

The ability to:

- access, interpret and apply:
- technical information
- site/legislative requirements
- records and reports
- apply the principles of electrical reticulation, control and protection system theory
- evaluate designs and installations of electrical reticulation, control and protection systems at a mine in terms of safety requirements
- assess the risks associated with and consequences of failure of electrical reticulation, control and protection systems at a mine
- assess the risks associated with and consequences of changes to electrical reticulation, control and protection systems at a mine
- develop procedures, appropriate to the mine operations, for management, operation, testing and maintenance of the mines electrical reticulation, control and protection systems
- plan, co-ordinate and document work on the mines electrical reticulation, control and protection systems
- identify training needs related to the safety aspects of the mines electrical reticulation, control and protection systems



7. Key Competencies

<i>Key competency</i>	<i>Level</i>
Collecting, analysing, organising ideas and information.	3
Communicating ideas and information.	2
Planning and organising activities.	3
Work with others in team.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technologies.	2

MNC.G91.A

**IMPLEMENT, MONITOR, RECTIFY AND REPORT ON INTERFACES  
BETWEEN ELECTRICAL AND MECHANICAL COMPONENTRY**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor**                    **This unit covers working with mechanical components of electrical machinery.**

	<u>Element</u>	<u>Performance Criteria</u>
G91.1	Determine requirements of electrical and mechanical interface	G91.1.1 Component defect reports are examined. G91.1.2 Components are inspected according to site, legislative and manufacturer's procedures. G91.1.3 Reports are prepared detailing the equipment modifications requirements.
G91.2	Plan rectification work on electrical and mechanical interface componentry	G91.2.1 Available information from maintenance and test results is used to ensure accurate problem identification. G91.2.2 Componentry faults and causes are identified. G91.2.3 Fault rectification requirements are reported. G91.2.4 Specialist advice/assistance is obtained where required. G91.2.5 Componentry is isolated/tagged for rectification work.

G91.3 Rectify electrical and mechanical interface componentry

G91.3.1 Componentry parts are dismantled in accordance with manufacturer's requirements and safe working procedures.

G91.3.2 Componentry parts are assessed for serviceability.

G91.3.3 Modifications are undertaken according to manufacturer's specifications/specialist advice.

G91.3.4 Componentry parts are replaced according to manufacturer's specifications/safe working procedures.

G91.3.5 Componentry is tested for safe working with proscribed specifications.

G91.3.6 Repaired/modified componentry details are recorded.

G91.3.7 Appropriate personnel are notified of repairs/modifications.

MNC.G91.A

#### IMPLEMENT, MONITOR, RECTIFY AND REPORT ON INTERFACES BETWEEN ELECTRICAL AND MECHANICAL COMPONENTRY

##### **Range of Variables:**

1. Electrical componentry may include componentry in: Power systems, Electrical protection systems, Mine cabling, Remote control systems, Communication systems
2. Mechanical componentry may include: Hydraulic components, Air system components, Rope system components, Transmission system components
3. Legislation, codes, regulations and standards may include: Australian standards, Environmental agencies regulations, Environmental protection acts, Isolation procedures, Manufacturers' specifications and recommendations, Coal Mining Acts and regulations, Occupational health and safety legislation, Common Law, Mine managers' rules

##### **Evidence Guide**

1. **Context of Assessment:** Competencies should be assessed in the normal work environment in the bounds of safety and in accordance with normal work flow.

## 2. Interdependence of units

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical aspects of evidence:** The coal industry has established that, for portability purposes, it is essential that competence in this unit reflect successful assessment of the critical aspects of:

- applying personal and operational safety procedures
- interpreting and communicating information on interface componentry
- completing equipment pre start, start up and shut down procedures
- completing house keeping requirements
- following and applying authorized disassembly and assembly procedures
- disposing of environmentally sensitive oils, fluids and materials
- materials handling and storage procedures
- control of hazard and explosion protection of equipment
- risk assessment and control
- personnel management
- maintaining records
- budgeting and reporting procedures
- negotiation

4. **Consistency of performance:** Consistency of performance will in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or physical cost/benefits and to other variable factors. The assessment must satisfy the critical aspects expressed in the units. The dimensions of assessment required to attain and maintain the competencies as current, unless established elsewhere by appropriate authority, should be determined following consideration of the local factors.

5. Underpinning Knowledge

Knowledge of:

- legislative, statutory, Australian standards and site specific requirements for maintenance of mechanical systems including communications, emergency procedures, risk management, recording and reporting, mines rescue, OH&S, manufacturers' instructions, standard work procedures, training, fire fighting, handling and storing of dangerous goods, local government and power authority requirements.

- Mine operating systems and procedures including transport systems, conveyor systems, systems of mining, ventilation systems, gas management systems and mine water management systems
- Stores systems
- Underground roadway and drilling
- Protection systems
- Reticulation systems
- Specifications for mechanical systems
- Audit procedures
- Mine design principles and procedures relating to mechanical systems
- Company organisation
- Computer based systems
- Training programs
- Safety design features for maintenance of mechanical systems
- Maintenance surveys
- Work role definitions
- Reporting methods and alternatives
- Community expectations
- Consultative strategies
- Alternative documentation systems for procedures

**6. Skills demonstrated would include:**

- Accessing, interpreting and applying
  - Technical information
  - Site/legislative requirements
  - Records and reports
  - Briefings and handover details
- Applying the principles of mine design
- Assessing the risks and consequences attached to mechanical systems
- Developing procedures appropriate to mine operations for management of mechanical systems
- Planning and coordinating work
- Management of confined spaces
- Identifying training needs related to mechanical systems
- Interpreting manufacturers' instructions
- Conducting maintenance surveys
- Interpersonal skills
- Liaison with other parties
- Coordination of others
- Information management
- Problem solving
- Analysis
- Use of measuring equipment

- Clear report writing
- Meeting facilitation

7. Underpinning Skills

The ability to:

- apply operational and safety requirements
- read, interpret and apply technical instrument information
- apply diagnostic techniques
- use relevant hand tools
- apply environmental constraints in rectification operations
- maintain equipment records
- dispose of environmentally sensitive fluids and materials

## 8. Key Competencies

<i>Key competency</i>	<i>Level</i>
Collecting, analysing, organising ideas and information	3
Communicating ideas and information	3
Planning and organising activities	3
Work with others in team	3
Solving problems	3
Using mathematical ideas and techniques	2
Using technologies	2

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## NATIONAL MINING ITAB

## BLACK COAL: OPENCUT COMPETENCY STANDARDS

**Descriptor:** This unit covers the routine movement of material, such as overburden, blasted rock and coal, using the basic capabilities of earthmoving machines.

<u>Elements</u>	<u>Performance Criteria</u>
O09.1 Plan and Prepare for Operations.	<p>O09.1.1 Task requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O09.1.2 Minesite geological and survey data required to complete the allocated task is accessed, interpreted and applied in accordance with specific task requirements.</p> <p>O09.1.3 Material characteristics/information required to complete the allocated task is assessed, interpreted and applied in accordance with site procedures.</p> <p>O09.1.4 Safety information and procedures are accessed and applied throughout the task.</p>
O09.2 Operate Earthmoving Equipment.	<p>O09.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the task activity.</p> <p>O09.2.2 Pre-start, start-up, park-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>O09.2.3 Earthmoving machine operations are conducted, controlled and monitored within equipment and operator limitations during the task.</p> <p>O09.2.4 Operating techniques are selected and modified to appropriately meet changing work conditions.</p> <p>O09.2.5 Towing of equipment or plant is carried out safely and in accordance with the authorised equipment and connection capabilities.</p>

<u>Elements</u>	<u>Performance Criteria</u>
O09.2 Operate Earthmoving Equipment (Continued).	<p>O09.2.6 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p> <p>O09.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>O09.2.8 Task is completed in accordance with the supervisors requirements and within the operating capacities of the earthmoving machine</p>
O09.3 Carry Out Operator Maintenance.	<p>O09.3.1 Earthmoving machine inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O09.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O09.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O09.3.4 Tools and equipment required for servicing and maintenance are identified, accessed and applied in accordance with site requirements</p> <p>O09.3.5 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O09.3.6 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Earthmoving machines may include dozers, graders, scrapers or front end loaders.
- 2 Task requirements may include nature and scope of task, achievement targets, operational/loading conditions, site lighting conditions, defects on equipment/plant, hazards and potential hazards and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Survey data may include minesite plans, minesite maps, sketches, models and directional signs
- 5 Materials may include coal, overburden and blasted rock.
- 6 Material characteristics/information may include different conditions such as dry, wet, loose, compacted, stockpiled and gradient.
- 7 Specific safety requirements are to include boarding and disembarking procedures and operation signal procedures.
- 8 Coordination requirements may include those with other earthmoving machines, light vehicles, dust suppression units and lighting plants.
- 9 Operating techniques may include loading, scraping, pushing or digging.
- 10 Tools and equipment may include hand and power tools, spare parts, lubricants and cleaning products.
- 11 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

- 1. Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety and in accordance with approved dig and loading sequences.

The Black Coal Industry acknowledges that, due to differences between mines, it is not possible to stipulate a specific earthmoving machine as being essential for this unit. The unit may be granted on the basis of one or more of the earthmoving machines listed in the Range of Variables. The actual earthmoving machines assessed are to be endorsed on all related recognition documents.

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

Assessment in this unit will be relevant, in part, to the higher order or full competency for the particular earthmoving machine and may contribute to the assessment process towards full competency

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- applying personal and operational safety procedures
- interpreting and communicating information on earthmoving operations
- preparation of work area
- completing earthmoving machine pre-start, start-up and shut-down procedures

Completing essential functions including:

- basic operation and control of earthmoving machine
- safe operating techniques
- towing of equipment
- completing operator maintenance

- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- the scope and limitations of operation related to this competency
- site mining systems and procedures
- relevant earthmoving machine characteristics, technical capabilities and limitations
- relevant earthmoving machine operational procedures
- relevant earthmoving machine maintenance systems and procedures
- minesite geological and survey data
- assessment of ground
- open cut materials properties and characteristics in a variety of conditions
- hazard identification and response procedures
- site environmental requirements and constraints related to earthmoving machine operations

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- operate earthmoving machine controls
- apply eye-hand co-ordination
- dispose of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- use relevant hand tools
- apply diagnostic techniques
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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## NATIONAL MINING ITAB

## BLACK COAL: OPENCUT COMPETENCY STANDARDS

**Descriptor:** This unit covers the relocation of burden and other materials using a dragline.

<u>Elements</u>	<u>Performance Criteria</u>
O10.1 Plan and Prepare for Dragline Operations.	<p>O10.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O10.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O10.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
O10.2 Relocate Burden and Materials.	<p>O10.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O10.2.2 Pre-start, start-up, park-up and shut-down procedures are carried out in accordance with manufacturer and site specific requirements.</p> <p>O10.2.3 Controls are operated in accordance with machine manufacturer's instructions and site procedures to position, fill and dump burden or other material as part of the dig sequence and specified tasks.</p> <p>O10.2.4 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p>





<u>Elements</u>	<u>Performance Criteria</u>
O10.2 Relocate Burden and Materials (Continued).	<p>O10.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer’s instructions and site procedures.</p> <p>O10.2.6 Work is completed in accordance with agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>
O10.3 Relocate Dragline.	<p>O10.3.1 Route and location plan is received and confirmed, if necessary by site inspection.</p> <p>O10.3.2 Ground preparation is completed in accordance with site procedures.</p> <p>O10.3.3 Cable location and handling is carried out in accordance with manufacturer’s specification and site procedures.</p> <p>O10.3.4 Co-ordination issues including support equipment and personnel are resolved.</p> <p>O10.3.5 Dragline is walked in accordance with manufacturer’s instructions and site procedures.</p>
O10.4 Carry Out Operator Maintenance.	<p>O10.4.1 Dragline inspections and faultfinding are carried out in accordance with manufacturer’s instructions and site requirements.</p> <p>O10.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer’s instructions and site authorised procedures and practices.</p> <p>O10.4.3 Minor maintenance is carried out to manufacturer’s instructions and site requirements.</p> <p>O10.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O10.4.5 Records are processed in accordance with site requirements.</p>



**Range of Variables :**

- 1 Draglines include a broad range of equipment capacities and they may be electric drive, hydraulic or diesel powered.
- 2 Work details may include information on operations and mining conditions, site lighting conditions, dig sequence, defects on equipment, hazards, output targets and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include boarding and disembarking procedures, limit testing requirements and operational signal procedures.
- 5 Dig sequence may include set-up requirements, manouvre, operational information, soil placement, movement to main and dump to final spoil.
- 6 Coordination requirements may include those with dozers, cable-reelers, graders, bob-cats, winches, cranes, tractors and other vehicles.
- 7 Specified tasks may include key cut, main dig, chop, placement of primary spoil, rehandling of spoil placement, bridge building and other site specific activities.
- 8 Hazardous and emergency situations may include sinking, bridge failure, spoil stabilisation, wet weather operation and electrical shut-down or site equivalent.
- 9 Monitoring systems and alarms are those which indicate vital signs and out of specification activities/operations.
- 10 Operator (operational) maintenance procedures are those established and authorised for the site.



## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety and in accordance with approved dig sequence.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on dragline operations
- c. completing ground preparation
- d. completing pre-start, start-up and shut-down procedures

Completing essential functions including:

- e. key cutting
- f. main dig
- g. chop
- h. spoil placement
- i. bridge building
- j. rehandling of spoil
- k. relocating the dragline
- l. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety procedures
- site mining systems and procedures
- dragline and associated equipment characteristics, technical capabilities and limitations

- dragline maintenance systems and procedures
- site geological and survey data
- hazard identification and response procedures
- site environmental requirements and constraints related to dragline operations

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- apply eye-hand co-ordination
- work at heights
- work in confined spaces
- work wearing noise protection equipment
- apply diagnostic techniques
- use relevant hand tools
- maintain equipment records
- dispose of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	2
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

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## NATIONAL MINING ITAB

## BLACK COAL: OPENCUT COMPETENCY STANDARDS

**Descriptor:** This unit covers the surface drilling of blast holes.

<u>Elements</u>	<u>Performance Criteria</u>
O11.1 Plan and Prepare for Operations.	<p>O11.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O11.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O11.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>O11.1.4 Drill site is prepared and high wall, low wall inspections are completed to site requirements.</p> <p>O11.1.5 Drill pattern is interpreted and marked out in accordance to drill pattern plan.</p>
O11.2 Drill Blast Holes.	<p>O11.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O11.2.2 Pre-start, start-up, park-up and shut-down procedures are carried out to manufacturer's instructions and site procedures.</p> <p>O11.2.3 Drill is positioned and levelled according to pattern with trailing cable where appropriate, positioned to site requirements.</p> <p>O11.2.4 Drill is operated and operations are monitored in accordance with manufacturer's and site requirements.</p> <p>O11.2.5 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p>



<u>Elements</u>	<u>Performance Criteria</u>
O11.2 Operate Drill Systems (Continued).	<p>O11.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>O11.2.7 Records are maintained in accordance with site requirements.</p> <p>O11.2.8 Work is completed in accordance with the agreed plans and outcomes and within the operating capacities of the equipment.</p>
O11.3 Relocate the Drill.	<p>O11.3.1 Route and location plan is received and confirmed, if necessary by site inspection.</p> <p>O11.3.2 Ground preparation including pads, roads, cable routes and ramp are completed and/or followed according to site requirements.</p> <p>O11.3.3 Cable location and handling, where applicable, is carried out in accordance with site rules.</p> <p>O11.3.4 Co-ordination issues including support equipment and personnel are resolved.</p> <p>O11.3.5 Drill is relocated in accordance with manufacturer's and/or site requirements.</p>
O11.4 Carry Out Operator Maintenance.	<p>O11.4.1 Drill equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O11.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O11.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O11.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O11.4.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Drill types may include auger, pneumatic or rotary.
- 2 Drills may be electric, diesel power or air tracked and platforms may be tracked or wheeled.
- 3 Work details may include the nature and scope of task, achievement targets, working conditions, site lighting conditions, defects on equipment, hazards and coordination requirements/issues.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 5 Site preparation includes pads which may be flat, sloping or benched.
- 6 Coordination requirements may include those with cable reelers, earth moving equipment/plant, water trucks, service vehicles, cranes and floats.
- 7 Drill operations need to have regard to positioning systems (global or other), stabilisation, drill angle, bit size and type, drill depth and dust suppression requirements.
- 8 Drill operations monitoring needs to have regard to rotation and pull-down pressures, gauges, alarms and other warning devices, rods, bits and associated equipment performance.
- 9 Relocation may include walking, driving, towing, transporting or floating.
- 10 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

**1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on drilling operations
- c. drill site preparation
- d. completing drill equipment pre-start, start-up and shut-down procedures
- e. operation of the drill (system)
- f. completion of drilling to pattern/specification
- g. relocating and positioning of drills
- h. completing operator maintenance

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- site drilling procedures
- basic drill pattern planning
- drill equipment characteristics, technical capabilities and limitations
- drill equipment maintenance systems and procedures
- basic geological and survey data related to this unit
- site environmental requirements and constraints related to drilling operations
- hazard identification and response procedures
- dust suppression techniques

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- read and interpret pattern plans
- apply drilling techniques
- apply eye-hand co-ordination
- apply diagnostic techniques
- use relevant hand tools
- maintain equipment records
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the removal of bulk material by either sidecasting or loading directly into a transport system using a rope/shovel.**



<u>Elements</u>	<u>Performance Criteria</u>
O12.1 Plan and Prepare for Operations.	<p>O12.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O12.1.2 Basic geological and survey data required to complete the allocated task is accessed, interpreted and applied in accordance to site procedures.</p> <p>O12.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>O12.1.4 Work area preparation including floor clean up and level and grade requirements is co-ordinated with others and carried out to job specifications.</p>
O12.2 Operate Shovel.	<p>O12.1.5 Cable towers and/or crossovers are positioned/moved in accordance with site plans and requirements.</p> <p>O12.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O12.2.2 Pre-start, start-up, park-up and shut-down procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>O12.2.3 Required loading method, single-sided and double sided, or other appropriate method is selected and the equipment and trucks positioned to meet this requirement.</p>

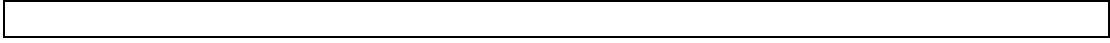


<u>Elements</u>	<u>Performance Criteria</u>
O12.2 Operate Shovel (Continued).	<p>O12.2.4 Dig procedures, fill and load, are conducted, controlled and monitored in accordance with manufacturer's instructions and site procedures including those covering truck loading.</p> <p>O12.2.5 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p> <p>O12.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>O12.2.7 Work is completed in accordance with agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>
O12.3 Relocate Shovel	<p>O12.3.1 Route and location plan is received and confirmed, if necessary by site inspection.</p> <p>O12.3.2 Ground preparation including pads, roads, cable routes and ramp are completed and/or followed according to site requirements.</p> <p>O12.3.3 Cable location and handling, where applicable, is carried out in accordance with site rules.</p> <p>O12.3.4 Co-ordination issues including support equipment and personnel are resolved.</p> <p>O12.3.5 Shovel is relocated in accordance with manufacturer's and/or site requirements.</p>
O12.4 Carry Out Operator Maintenance	<p>O12.4.1 Shovel inspections and fault finding are carried out in accordance with the manufacturer's instructions and site requirements.</p> <p>O12.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p>

<u>Elements</u>	<u>Performance Criteria</u>
O12.4 Carry Out Operator Maintenance (Continued)	<p>O12.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O12.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O12.4.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 A rope shovel may be electric or diesel.
- 2 Work details may include the nature and scope of the task, achievement targets, mining conditions, site lighting conditions, defects on equipment/plant, hazards and potential hazards, cable positioning and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include boarding and disembarking procedures, limit testing requirements, operational signal procedures and parking of auxillary equipment/vehicles.
- 5 Site preparation may include pads (flat, sloping or benched), positioning towers and cross-overs.
- 6 Coordination requirements may include those with dozers, graders and other general support equipment/plant.
- 7 Relocating may include floating, walking, trammig or towing.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.



## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety and in accordance with the approved dig and loading sequence.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on shovel operations
- c. positioning towers and/or cross-overs
- d. floor preparation
- e. completing shovel pre-start, start-up and shut-down procedures

Completing essential functions including:

- f. operation and control of shovel
- g. applying loading methods
- h. applying emergency procedures
- i. relocating the machine
- j. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- site mining systems and procedures
- rope shovel equipment characteristics, technical capabilities and limitations
- rope shovel operational procedures
- rope shovel maintenance systems and procedures
- basic geological and survey data

- hazard identification and response procedures
- site environmental requirements and constraints related to rope shovel operations

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- use relevant hand tools
- apply eye-hand co-ordination
- apply diagnostic techniques
- work at heights
- work in confined spaces
- monitor and respond to excessive dust
- dispose of environmentally sensitive fluids and materials
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	2
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	2
Using technology.	



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## NATIONAL MINING ITAB

## BLACK COAL: OPENCUT COMPETENCY STANDARDS

**Descriptor:** This unit covers the transfer of bulk material, to a dump or directly into a transport system, using a front end loader.

<u>Elements</u>	<u>Performance Criteria</u>
O13.1 Plan and Prepare for Operations.	<p>O13.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O13.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O13.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>O13.1.4 Work area preparation including floor clean up, level and grade requirements is co-ordinated with others and carried out to job specifications.</p>
O13.2 Transfer Bulk Material.	<p>O13.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O13.2.2 Pre-start, start-up, park-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>O13.2.3 Front-end loader operations are conducted, controlled and monitored within equipment and operator limitations during the dig cycle.</p> <p>O13.2.4 Loading technique is selected and modified to appropriately meet changing work conditions.</p> <p>O13.2.5 Towing of equipment or plant is carried out safely and in accordance with the authorised equipment and connection capabilities.</p>

<u>Elements</u>	<b>Performance Criteria</b>
O13.2 Transfer Bulk Material (Continued).	<p>O13.2.6 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p> <p>O13.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>O13.2.8 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>
O13.3 Carry Out Operator Maintenance.	<p>O13.3.1 Front end loader inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O13.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O13.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O13.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O13.3.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Front end loader may be diesel-electric or diesel-mechanical.
- 2 Shift details may include nature and scope of task, achievement targets, operational/loading conditions, site lighting conditions, defects on equipment/plant, hazards and potential hazards and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include boarding and disembarking procedures and operation signal procedures.
- 5 Coordination requirements may include those with graders, scrapers, light vehicles, dust suppression units, lighting plants and dozers.
- 6 Loading techniques may include single-sided and double-sided and may include drive-by.
- 7 Haulage units include rear dump, belly-dumps, scraper, road trucks and rail.
- 8 Materials handling facilities may include crusher, conveyor lines, feeders, ROM hoppers.
- 9 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety and in accordance with approved dig and loading sequences.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on front end loader operations
- c. preparation of work area
- d. completing front end loader pre-start, start-up and shut-down procedures

Completing essential functions including:

- e. operation and control of front end loader
- f. safe loading procedures
- g. towing of equipment
- h. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- site mining systems and procedures
- front end loader characteristics, technical capabilities and limitations
- front end loader operational procedures
- front end loader maintenance systems and procedures
- basic geological and survey data
- hazard identification and response procedures

- site environmental requirements and constraints related to front end loader operations

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply eye-hand co-ordination
- dispose of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- use relevant hand tools
- apply diagnostic techniques
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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MNC.O14.A

CONDUCT BULK MATERIAL TRUCK OPERATIONS

**NATIONAL MINING ITAB**

**BLACK COAL: OPENCUT COMPETENCY STANDARDS**

**Descriptor:** This unit covers the haulage of bulk material using trucks (other than those commercial vehicles covered in the General package).

<u>Elements</u>	<b>Performance Criteria</b>
O14.1 Plan and Prepare for Operations.	<p>O14.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O14.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O14.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
O14.2 Operate Truck.	<p>O14.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O14.2.2 Pre-start, start-up, park-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>O14.2.3 Truck controls are operated in accordance with manufacturer's and site procedures.</p> <p>O14.2.4 Truck is operated within vehicle limitations as specified by the manufacturer's instructions and site procedures.</p> <p>O14.2.5 Monitoring systems and alarms are acted or reported in accordance with manufacturer's instructions and site procedures.</p> <p>O14.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>O14.2.7 Records are maintained in accordance with site requirements.</p>

<u>Elements</u>	<u>Performance Criteria</u>
O14.3 Load, Haul and Dump Materials.	<p>O14.3.1 Truck is positioned under loading in accordance with site procedures.</p> <p>O14.3.2 Hauling operations are carried out efficiently in accordance with work instructions and site procedures.</p> <p>O14.3.3 Dumping operations are carried out efficiently in accordance with work instructions and site procedures.</p> <p>O14.3.4 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the equipment.</p>
O14.4 Carry Out Operator Maintenance.	<p>O14.4.1 Truck inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O14.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O14.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O14.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O14.4.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Trucks may include electric drive, mechanical drive, rear dump, belly dump, articulated single drive and multiple drive.
- 2 Shift details may include the truck identity/allocation, nature and scope of the task, achievement targets, haul routes and route conditions, adequacy of site lighting, defects on vehicle, hazards and potential hazards and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include boarding and disembarkation procedures and operational signal procedures.
- 5 Coordination with Loading Equipment may include shovels, front end loaders, excavators, bins, conveyor belts and dragline.
- 6 Materials may be coal, burden, rejects, top soil, gravel, road base, sand and wet burden.
- 7 Dumping may be in burden dumps, reject dumps, stockpiles, hopper, bunkers, rehabilitation dumps, clean dumping, block dumping and topsoil dumps.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on truck operations
- c. completing truck pre-start, start-up and shut-down procedures

Completing essential functions including:

- d. smooth and safe operating
- e. loading operations
- f. hauling operations
- g. dumping operations
- h. Completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- site operational procedures
- truck characteristics, technical capabilities and limitations
- truck operational procedures
- truck maintenance systems and procedures
- basic geological and survey data
- hazard identification and response procedures
- site environmental requirements and constraints related to truck operations

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply eye-hand coordination
- apply diagnostic techniques.
- use relevant hand tools
- dispose of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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MNC.O15.A

CONDUCT BULK WATER TRUCK OPERATIONS

**NATIONAL MINING ITAB**

**BLACK COAL: OPENCUT COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the haulage of bulk water using trucks (other than those commercial vehicles covered in the General package).**



<u>Elements</u>	<b>Performance Criteria</b>
O15.1 Plan and Prepare for Operations.	<div style="border: 1px solid black; padding: 5px;">           O15.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.         </div>
O15.2 Operate Truck.	O15.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures. O15.1.3 Safety information and procedures are accessed and applied throughout the work. O15.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity. O15.2.2 Pre-start, start-up, park-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures. O15.2.3 Truck controls are operated in accordance with manufacturer's and site procedures. O15.2.4 Truck is operated within vehicle limitations as specified by the manufacturer's instructions and site procedures. O15.2.5 Monitoring systems and alarms are acted or reported in accordance with manufacturer's instructions and site procedures. O15.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures. O15.2.7 Records are maintained in accordance with site requirements.

<u>Elements</u>	<u>Performance Criteria</u>
O15.3 Load, Haul and Distribute Water.	<p>O15.3.1 Water is loaded at the water point in accordance with site procedures.</p> <p>O15.3.2 Water haulage is carried out efficiently in accordance with work instructions and site procedures.</p> <p>O15.3.3 Water is distributed efficiently in accordance with work instructions and site procedures.</p> <p>O15.3.4 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the equipment.</p>
O15.4 Carry Out Operator Maintenance.	<p>O15.4.1 Equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O15.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O15.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O15.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O15.4.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Trucks may include electric drive, mechanical drive, articulated single drive and multiple drive.
- 2 Shift details may include the truck identity/allocation, nature and scope of the task, achievement targets, haul routes and route conditions, adequacy of site lighting, defects on vehicle, hazards and potential hazards and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include boarding and disembarkation procedures and operational signal procedures.
- 5 Coordination with Loading Equipment may include stand pipe, water tower and water pump.
- 6 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on truck operations
- c. completing truck pre-start, start-up and shut-down procedures

Completing essential functions including:

- d. smooth and safe operating
- e. loading operations
- f. water distribution operations
- h. Completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- site operational procedures
- truck characteristics, technical capabilities and limitations
- truck operational procedures
- truck maintenance systems and procedures
- basic geological and survey data
- hazard identification and response procedures
- site environmental requirements and constraints related to truck operations

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply eye-hand coordination
- apply diagnostic techniques.
- use relevant hand tools
- dispose of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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## NATIONAL MINING ITAB

## BLACK COAL: OPENCUT COMPETENCY STANDARDS

**Descriptor:** This unit covers the planned grading and ripping of materials using a grader.

<u>Elements</u>	<b>Performance Criteria</b>
O16.1 Plan and Prepare for Operations.	<p>O16.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O16.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O16.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
O16.2 Operate the Grader.	<p>O16.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O16.2.2 Pre-start, start-up, park-up and shut-down procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>O16.2.3 Grader controls and functions including blade, tynes, articulation, wheel tilt and manoeuvre are used to complete specified tasks.</p> <p>O16.2.4 Towing of equipment and plant is carried out safely and in accordance with the authorised equipment and connection capabilities.</p> <p>O16.2.5 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p>

<u>Elements</u>	<b>Performance Criteria</b>
O16.2 Operate the Grader (Continued).	<p>O16.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>O16.2.7 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>
O16.3 Carry Out Operator Maintenance	<p>O16.3.1 Equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O16.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O16.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O16.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O16.3.5 Records are processed in accordance with site requirements.</p>



**Range of Variables :**

- 1 Shift details may include grader identification/allocation, nature and scope of the work, working conditions, achievement targets, site lighting arrangements, defects on equipment, hazards and potential hazards and coordination requirements/issues.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Specific safety requirements are to include boarding and disembarking procedures, raising and lowering of equipment and operational signal procedures.
- 4 Materials include burden, coal, gravel, mud, sand, topsoil.
- 5 General tasks may include grade and form roads and pads, maintenance of surfaces, cutting of batters and drains.
- 6 Grader operations are to include haul roads, access roads, pads, dumps, drainage, batters and may include stockpiles, coal seam, cleaning in preparation for mining, rehabilitation and highwalls.
- 7 Towing can include lighting plants, pumps and crib huts.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on grader operations
- c. completing grader pre-start, start-up and shut-down procedures
- d. smooth and efficient operating procedures

Completing essential functions including:

- e. roads (haul and/or access)
- f. pad preparation
- g. drainage
- h. batters
  
- i. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- site operational procedures
- grader characteristics, technical capabilities, limitations
- grader operational procedures
- grader maintenance systems and procedures
- basic geological and survey data
- hazard identification and response procedures
- site environmental requirements and constraints related to grader operations



**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply eye-hand co-ordination
- apply diagnostic techniques.
- use relevant hand tools
- apply environmental constraints in grading operations
- dispose of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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## NATIONAL MINING ITAB

## BLACK COAL: OPENCUT COMPETENCY STANDARDS

**Descriptor:** This unit covers the pick up, transporting and placing of materials using a Scraper.

<u>Elements</u>	<u>Performance Criteria</u>
O17.1 Plan and Prepare for Operations.	<p>O17.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O17.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O17.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>O17.1.4 Work circuit including pick-up and dump areas is prepared and maintained.</p>
O17.2 Operate Scraper.	<p>O17.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O17.2.2 Pre-start, start-up, park-up and shutdown procedures are carried out in accordance with manufacturer's and/or site specific requirements.</p> <p>O17.2.3 Scraper controls and functions are used in accordance with the manufacturer's instructions to complete specified tasks.</p> <p>O17.2.4 Monitoring systems and alarms are acted or reported in accordance with manufacturer's instructions and site procedures.</p>

<u>Elements</u>	<u>Performance Criteria</u>
O17.2 Operate Scraper (Continued).	<p>O17.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>O17.2.6 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>
O17.3 Carry Out Operator Maintenance.	<p>O17.3.1 Scraper inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O17.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O17.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O17.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O17.3.5 Records are processed in accordance with site requirements.</p>

**Range of Variables:**

- 1 Scraper types may be twin power, single power, self loading, push loading, elevator and auger.
- 2 Shift details may include scraper identification/allocation, nature and scope of the work, working conditions, achievement targets, site lighting arrangements, defects on machine, hazards and potential hazards, and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include boarding and disembarking procedures, lowering of equipment, load carrying safety and operational signal procedures.
- 5 Scraper tasks are to include road maintenance, top soil removal and stockpiling, and may include dam walls, contour drainage, coal seams, cleaning in preparation for mining and rehabilitation.
- 6 Materials may include burden, coal, gravel, mud, sand, topsoil.
- 7 Operator (operational) maintenance procedures are those established and authorised for the site.



## Evidence Guide

**1. Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on scraper operations
- c. completing scraper pre-start, start-up and shut-down procedures
- d. smooth and efficient operating procedures
- e. carrying out loading
- f. carrying out dumping
- g. completing operator maintenance

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- site operational procedures
- scraper characteristics, technical capabilities and limitations
- scraper operational procedures
- scraper maintenance systems and procedures
- basic geological and survey data
- hazard identification and response procedures
- site environmental requirements and constraints related to scraper operations

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply eye-hand co-ordination
- use relevant hand tools
- apply diagnostic techniques
- dispose of environmentally sensitive fluids and materials
- apply environmental constraints in scraper operations

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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## NATIONAL MINING ITAB

## BLACK COAL: OPENCUT COMPETENCY STANDARDS

**Descriptor:** This unit covers the planned ripping, pushing and placing of materials using a dozer.

<u>Elements</u>	<u>Performance Criteria</u>
O18.1 Plan and Prepare for Dozer Operations.	<p>O18.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O18.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O18.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
O18.2 Operate Dozer.	<p>O18.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O18.2.2 Pre-start, start-up, park-up and shut-down procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>O18.2.3 Dozer controls and functions including manoeuvre, blade and ripper are effectively used to complete specified tasks.</p> <p>O18.2.4 Towing and pushing of equipment and plant is carried out safely and in accordance with the authorised equipment and/or connection capabilities.</p> <p>O18.2.5 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p>

<u>Elements</u>	<b>Performance Criteria</b>
O18.2 Operate Dozer (Continued).	<p>O18.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>O18.2.7 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>
O18.3 Carry Out Operator Maintenance	<p>O18.3.1 Dozer inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O18.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O18.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O18.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O18.3.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 This unit covers all tracked dozers and those tasks and performance criteria which are within the legal and technical limitations of rubber-wheeled dozers.
- 2 Shift details may include the plant identification/allocation, nature and scope of the task, achievement targets, working conditions, adequacy of site lighting, defects to equipment, hazards and potential hazards, and coordination requirements/issues.
- 3 Safety requirements may include those contained in legislation and regulations, relevant Australian standards, management systems and plans, manager's rules, OH&S policy, codes of practice, safe working procedures and safe job procedures.
- 4 Specific safety requirements are to include boarding and disembarkation procedures, operational signal procedures and equipment lowering and lifting.
- 5 Specified dozer operations/tasks may include ripping, pushing and preparing overburden, underburden and coal, bench and pad preparation, dump establishment and maintenance and civil works.
- 6 Rip and push may include pushing over highwalls, working under highwalls, working in cable areas and highwall chaining, support other equipment.
- 7 Working in dumps may include creation of windrows and working on live stockpiles.
- 8 Civil works may include road works, contours, batters, rehabilitation and drainage, and may include scrub clearing, final landform and the interpretation of associated survey pegs, and sealing tailing dams.
- 9 Towing and pushing may include lighting plants, pumps, cable boats, towers, sleds and transformers.
- 10 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment **by day and night and in all weather conditions** within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on dozer operations
- c. completing dozer pre-start, start-up and shut-down procedures

Completing essential functions including:

- d. rip materials
- e. push materials
- f. level materials
- g. working with other equipment
- h. towing and pushing other equipment
- i. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- site operational procedures
- dozer characteristics, technical capabilities and limitations
- dozer operational procedures
- dozer maintenance systems and procedures
- basic geological and survey data
- hazard identification and response procedures
- site environmental requirements and constraints related to dozer operations

**6. Underpinning Skills.** The ability to:

- apply operation safety
- access, interpret and apply technical information
- maintain equipment records
- apply eye-hand coordination
- use relevant hand tools
- apply diagnostic techniques
- dispose of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1



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## NATIONAL MINING ITAB

## BLACK COAL: OPENCUT COMPETENCY STANDARDS

**Descriptor:** This unit covers the selective milling, loading and stockpiling of all materials using a surface miner.

<u>Elements</u>	<b>Performance Criteria</b>
O19.1 Plan and Prepare for Operations.	<p>O19.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O19.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O19.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
O19.2 Operate Surface Miner.	<p>O19.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O19.2.2 Pre-start, start-up, park-up and shut-down procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>O19.2.3 Mining procedures, milling, loading, and manoeuvring are conducted, controlled and monitored in accordance with manufacturer's instructions and site procedures.</p> <p>O19.2.4 Required loading method, drive by or other appropriate method is selected and the equipment and haulage units positioned to meet this requirement.</p> <p>O19.2.5 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p>

<u>Elements</u>	<b>Performance Criteria</b>
O19.2 Operate Surface Miner (Continued).	<p>O19.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>O19.2.7 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>
O19.3 Carry Out Operator Maintenance.	<p>O19.3.1 Surface miner inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O19.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O19.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O19.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O19.3.5 Records are processed in accordance with site requirements.</p>

**Range of Variables**

- 1 This unit covers all surface miners and may be either diesel-electric or diesel mechanical.
- 2 Shift details may include nature and scope of the work, working conditions, achievement targets, site lighting arrangements, defects on machine, hazards and potential hazards, and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include boarding and disembarking procedures, lowering of equipment, relocating and operational signal procedures.
- 5 Surface miner operations are to include mining coal and roadworks and may include topsoil removal, road profiling and boxing-out.
- 6 Surface miner tasks are to include milling to correct mining depths and horizons, responding to changes in depth, grade and crossfall, loading and manoeuvring.
- 7 Loading methods may include drive by, single and double side and windrow stockpiling.
- 8 Haulage units may include rear dump, belly-dumps and road trucks.
- 9 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety and in accordance with approved mining sequences.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on surface miner operations
- c. completing surface miner pre-start, start-up and shut-down procedures

Completing essential functions including:

- d. milling to correct depths
- e. milling to correct horizons
- f. responding to changes in depth, grade and crossfall
- g. manoeuvring and relocating
- h. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- mining systems and site procedures
- miner characteristics, technical capabilities and limitations
- surface miner operational procedures
- basic geological and survey data.
- surface miner maintenance systems and procedures
- hazard identification and response procedures
- site environmental requirements and constraints related to surface miner operations



**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain records
- apply eye-hand co-ordination
- use relevant hand tools
- apply diagnostic techniques
- apply environmental constraints in surface miner operations
- dispose of environmentally sensitive fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

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## NATIONAL MINING ITAB

## BLACK COAL: OPENCUT COMPETENCY STANDARDS

**Descriptor:** This unit covers the in-seam excavation of coal using an augering process.

<u>Elements</u>	<b>Performance Criteria</b>
O20.1 Plan and Prepare for Operations.	<p>O20.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O20.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O20.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
O20.2 Operate Auger Miner.	<p>O20.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O20.2.2 Pre-start, start-up, park-up and shut-down procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>O20.2.3 Mining procedures are conducted, controlled and monitored in accordance with manufacturer's instructions and site procedures.</p> <p>O20.2.4 Required loading method, drive by or other appropriate method, is selected and the equipment and haulage units positioned to meet this requirement.</p> <p>O20.2.5 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p>

<u>Elements</u>	<b>Performance Criteria</b>
O20.2 Operate Auger Miner (Continued).	<p>O20.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>O20.2.7 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>
O20.3 Carry Out Operator Maintenance	<p>O20.3.1 Equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O20.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O20.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O20.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O20.3.5 Records are processed in accordance with site requirements.</p>

**Range of Variables**

- 1 This unit covers all auger miners which may be diesel, mechanical, electrical or other design.
- 2 Shift details may include equipment/plant identification/allocation, nature and scope of the work, working conditions, achievement targets, site lighting arrangements, defects on machine, hazards and potential hazards, and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include boarding and disembarking procedures, relocation procedures, shift blasting schedules, advance and retraction procedures and operational signal procedures.
- 5 Auger miner operations include pad preparation, planning and set-up, mining, loading and repositioning.
- 6 Miner controls are to be used to mine to correct depths and horizons, maintain alignment and respond to changes in seam dip and geological structures.
- 7 Loading methods may include drive by, stockpile, or single side.
- 8 Haulage units may include rear dump, belly dump and road trucks.
- 9 Coordination with other equipment may include, front end loaders, cranes, auger flight handling machines, service vehicles, dozers.
- 10 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.
2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on auger operations
  - c. planning and preparation
  - d. auger inspections and monitoring
  - e. completing pre-start, start-up and shut-down procedures

Completing essential functions including:

- f. set-up
  - g. control of mining
  - h. loading of coal
  - i. repositioning of miner
  - j. completing operator maintenance
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
  5. **Underpinning Knowledge.** A knowledge of:
    - relevant statutory requirements
    - site mining systems and procedures
    - site and equipment safety procedures
    - auger equipment characteristics, technical capabilities and limitations
    - auger mining operational procedures.
    - auger mining maintenance systems and procedures
    - geological and survey data
    - hazard identification and response procedures

- site environmental requirements and constraints related to auger mining

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- monitor wall stability
- apply eye-hand co-ordination
- apply diagnostic techniques
- use relevant hand tools
- maintain equipment records
- apply environmental constraints in auger mining operations
- dispose of environmentally sensitive fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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## NATIONAL MINING ITAB

## BLACK COAL: OPENCUT COMPETENCY STANDARDS

**Descriptor:** This unit covers the removal and placement of burden using a bucketwheel.

<u>Elements</u>	<u>Performance Criteria</u>
O21.1 Plan and Prepare for Bucketwheel Operations.	<p>O21.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O21.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O21.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
O21.2 Operate Bucketwheel Excavator.	<p>O21.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O21.2.2 Pre-start, start-up, park-up and shut-down procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>O21.2.3 Bucketwheel controls are operated to remove and place burden in accordance with machine manufacturer's instructions and site procedures.</p> <p>O21.2.4 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p> <p>O21.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>O21.2.6 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>



<u>Elements</u>	<b>Performance Criteria</b>
O21.3 Relocate Bucketwheel Excavator.	<p>O21.3.1 Route and location plan is received and confirmed, if necessary by site inspection.</p> <p>O21.3.2 Ground preparation is completed in accordance with manufacturer's and/or site requirements.</p> <p>O21.3.3 Cable location and handling is carried out in accordance with manufacturer's specification and/or site rules.</p> <p>O21.3.4 Coordination issues including support equipment and personnel are resolved.</p>
O21.4 Carry Out Operator Maintenance.	<p>O21.4.1 Bucketwheel inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O21.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O21.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O21.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O21.4.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Shift details may include nature and scope of the work, working conditions, achievement targets, site lighting arrangements, defects on equipment, hazards and potential hazards, and coordination requirements/issues.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Specific safety requirements are to include boarding and disembarking procedures, identifying and confirming potential hazards, relocating and operational signal procedures.
- 4 Emergency and hazardous situations may include sinking, spoil and highwall stabilisation, wet weather operation, electrical start-up and shut-down, belt system fires, electrical fires, windy and dusty conditions and working in close proximity to moving equipment and parts.
- 5 Coordination issues include communication with personnel, and an awareness of other support plant and equipment.
- 6 Basic geological and survey data must include safety factors relating to natural fall, grades, levels, faults, slips, strata and drainage.
- 7 Bucketwheel operations may include the positioning and digging of burden as part of a terrace dig, rehandling and responding to changes in depth, grade and crossfall.
- 8 Ground preparation for bucketwheel relocation may include pads, roads, rolls, cable routes and ramps.
- 9 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety and in accordance with dig sequences and machine capabilities.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on bucketwheel operations
- c. completing bucketwheel pre-start, start-up and shut-down procedures
- d. smooth and efficient operating procedures

Completing essential functions including:

- e. terrace dig procedures
- f. responding to changes in depth, grade and crossfall
- g. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety procedures
- site operational procedures
- bucketwheel equipment characteristics, technical capabilities and limitations
- bucketwheel operational procedures
- site environmental requirements and constraints related to bucketwheel operations
- hazard identification and response procedures
- bucketwheel maintenance systems and procedures

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- apply eye-hand co-ordination
- work at heights
- apply diagnostic techniques
- use relevant hand tools
- apply environmental constraints in bucketwheel operations
- maintain equipment records
- dispose of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	2
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	2
Using technology.	

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MNC.O22.A

CONDUCT SPREADER OPERATIONS

**NATIONAL MINING ITAB**

**BLACK COAL: OPENCUT COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the placement of burden from an operating bucketwheel using a spreader.**

<u>Elements</u>	<b>Performance Criteria</b>
O22.1 Plan and Prepare for Operations.	<p>O22.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O22.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O22.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
O22.2 Operate Spreader.	<p>O22.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O22.2.2 Pre-start, start-up, park-up and shut-down procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>O22.2.3 Spreader controls are operated to place burden in accordance with machine manufacturer's instructions and site procedures.</p> <p>O22.2.4 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p> <p>O22.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>O22.2.6 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>

<u>Elements</u>	<b>Performance Criteria</b>
O22.3 Relocate Spreader.	<p>O22.3.1 Route and location plan is received and confirmed, if necessary by site inspection.</p> <p>O22.3.2 Ground preparation is completed in accordance with manufacturer's and site requirements.</p> <p>O22.3.3 Cable location and handling is carried out in accordance with manufacturer's specification and/or site rules.</p> <p>O22.3.4 Coordination issues including support equipment and personnel are resolved.</p>
O22.4 Carry Out Operator Maintenance.	<p>O22.4.1 Spreader inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O22.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O22.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O22.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O22.4.5 Records are processed in accordance with site requirements.</p>



**Range of Variables :**

- 1 Shift details may include nature and scope of the work, working conditions, achievement targets, site lighting arrangements, defects on equipment, hazards and potential hazards, and coordination details.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Specific safety requirements are to include boarding and disembarking procedures, identifying and confirming potential hazards, relocating and operational signal procedures.
- 4 Emergency and hazardous situations may include sinking, spoil and highwall stabilisation, wet weather operation, electrical start-up and shut-down, belt system fires, electrical fires, windy and dusty conditions and working in close proximity to moving equipment and parts.
- 5 Coordination issues include communication with personnel, and an awareness of other support plant and equipment.
- 6 Spreader operations include the positioning, discharging and selective placement of materials as part of low dumping, high dumping and capping.
- 7 Ground preparation for spreader relocation may include pads, roads, rolls, cable routes and ramps.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on spreader operations
- c. completing spreader pre-start, start-up and shut-down procedures
- d. coordination with others involved in the operation
- e. smooth and efficient operating procedures

Completing essential functions including:

- f. positioning, discharging and selective placement of material
- g. low dumping, high dumping and capping
- h. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety procedures
- site operational procedures
- spreader equipment characteristics, technical capabilities and limitations
- spreader operational procedures
- site environmental requirements and constraints related to spreader operations
- hazard identification and response procedures
- spreader maintenance systems and procedures

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access interpret and apply technical information
- apply eye-hand co-ordination
- work at heights
- apply diagnostic techniques
- use relevant hand tools
- apply environmental constraints in spreader operations
- maintain equipment records
- dispose of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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## NATIONAL MINING ITAB

## BLACK COAL: OPENCUT COMPETENCY STANDARDS

**Descriptor:** This unit covers the hopper and conveyor supporting an operating bucketwheel.

<u>Elements</u>	<b>Performance Criteria</b>
O23.1 Plan and Prepare for Support.	<p>O23.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O23.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O23.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>O23.1.4 Tasks are prioritised in accordance with immediate system requirements.</p>
O23.2 Operate Hopper and Conveyor System.	<p>O23.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O23.2.2 Pre-start, start-up, park-up and shut-down procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>O23.2.3 Controls are operated in accordance with machine manufacturer's instructions and site procedures.</p> <p>O23.2.4 Walking head is relocated in accordance with system requirements.</p> <p>O23.2.5 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p>

<u>Elements</u>	<b>Performance Criteria</b>
O23.2 Operate Hopper and Conveyor System (Continued).	<p>O23.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>O23.2.7 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>
O23.3 Maintain the Bucketwheel Support System.	<p>O23.3.1 Equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O23.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O23.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O23.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O23.3.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Support operations include the positioning of the hopper to receive and discharge materials.
- 2 Ground preparation for bucketwheel relocation may include pads, roads, rolls, cable routes and ramps.
- 3 Shift details may include nature and scope of the work, working conditions, achievement targets, site lighting arrangements, defects on equipment, hazards and potential hazards, and coordination details.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 5 Specific safety requirements are to include boarding and disembarking procedures, identifying and confirming potential hazards, relocating, belt rimming, tracking and resetting, and operational signal procedures.
- 6 Emergency and hazardous situations may include sinking, spoil and highwall stabilisation, wet weather operation, electrical start-up and shut-down, belt system fires, electrical fires, windy and dusty conditions and working in close proximity to moving equipment and parts.
- 7 Coordination issues include communication with personnel, and an awareness of other support plant and equipment.
- 8 Basic geological and survey data must include safety factors relating to natural fall, grades, levels, faults, slips, strata and drainage.
- 9 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety and in accordance with system requirements.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on support operations
- c. completing support equipment pre-start, start-up and shut-down procedures
- d. smooth and efficient operating procedures
- e. receiving and discharging materials
- f. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety procedures
- site bucketwheel operational procedures
- bucketwheel system equipment characteristics, technical capabilities and limitations
- bucketwheel support operational procedures
- bucketwheel maintenance systems and procedures
- hazard identification and response procedures
- site environmental requirements and constraints related to bucketwheel support operations



**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access interpret and apply technical information
- apply eye-hand coordination
- work at heights
- apply diagnostic techniques
- use relevant hand tools
- apply environmental constraints in support operations
- maintain equipment records
- dispose of environmentally sensitive fluids and materials
- apply chemical and fuel safety measures

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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## NATIONAL MINING ITAB

## BLACK COAL: OPENCUT COMPETENCY STANDARDS

**Descriptor:** This unit covers the laying and recovering of electrical trailing cables and hoses using cable handling devices.

<u>Elements</u>	<u>Performance Criteria</u>
O25.1 Plan and Prepare for Laying and Recovery.	<p>O25.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O25.1.2 Safety information and procedures are accessed and applied throughout the work.</p> <p>O25.1.3 Equipment required for the work is identified, obtained and prepared as per the plan.</p>
O25.2 Lay and Recover Cables and Hoses.	<p>O25.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O25.2.2 Pre-start, start-up and shut-down procedures are carried out in accordance with manufacturer and/or site authorised procedures.</p> <p>O25.2.3 Cable and hose laying and recovery is carried out by engaging controls to govern speed, direction and tensions in accordance with the plan, manufacturer's instructions and site procedures.</p> <p>O25.2.4 Excess cable is layed safely in accordance with site procedures.</p> <p>O25.2.5 Cables are prepared for connection, visually inspected and the location is marked in accordance with the site requirements.</p> <p>O25.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>

<u>Elements</u>	<b>Performance Criteria</b>
O25.3 Carry Out Operator Maintenance on Cable Laying Equipment.	<p>O25.3.1 Equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O25.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O25.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O25.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O25.3.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Cable reeler types may include modified loaders, trucks, scrapers and cable boat.
- 2 Work requirement details may include the nature and scope of tasks, achievement targets, locations and routes, equipment/plant allocation (including any defects), site lighting arrangements, special arrangements and coordination requirements/issues.
- 3 Cabling equipment and functions may include establishing of cable towers, establishing of crossovers, working over high wall gantry, operating cable reelers, replacing wheels or drums and using stockings, star pickets, ropes, slings and signs/markers.
- 4 Other equipment and plant may include vehicles, graders and dozers.
- 5 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 6 Specific safety requirements are to include boarding and disembarking procedures, avoidance of water, cable handling safety and operational signal procedures.
- 7 Laying and recovery of cables requires the use of controls and capabilities of allotted equipment and the replacing of wheels or drums on an as required basis.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on cable laying and recovery operations
- c. completing pre-start, start-up and shut-down procedures on equipment

Completing essential functions of cable laying and recovery including:

- d. site inspection
- e. safe cable handling procedures
- f. using a cable reeler
- g. working over a high wall gantry
- h. establishing a cable tower
- i. establishing a cross-over
  
- j. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- types, uses and characteristics of cables
- cable safety
- cable laying equipment characteristics, technical capabilities and limitations
- cable laying and recovery operational and maintenance procedures
- maintenance procedures related to cable laying operations
- basic geological, geographical and survey data

- hazard identification and response procedures
- site environmental requirements and constraints related to cabling operations

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- apply eye-hand coordination
- apply diagnostic techniques
- use relevant hand tools
- apply environmental constraints during cabling operations
- maintain equipment records
- dispose of environmentally sensitive fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1



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**MNC.O26.A**

**CONDUCT DEWATERING OPERATIONS**

**NATIONAL MINING ITAB**

**BLACK COAL: OPENCUT COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the removal of water from the site.**

<b>Elements</b>	<u>Performance Criteria</u>
O26.1 Plan and Prepare for Operations.	<p>O26.1.1 Dewatering requirement is received, interpreted and the scope of task is confirmed, if necessary, by site inspection.</p> <p>O26.1.2 Safety information and procedures are accessed and applied throughout the work.</p> <p>O26.1.3 Dewatering task planning is completed in accordance with site procedures/practices.</p> <p>O26.1.4 Dewatering task is prepared for and resourced in accordance with site procedures/practices.</p> <p>O26.1.5 Sumps and pads are prepared to site requirements in accordance with authorised procedures.</p>
O26.2 Install, Operate and Recover Dewatering Systems.	<p>O26.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O26.2.2 Dewatering system is installed in accordance with the plan and other appropriate regulations and specification.</p> <p>O26.2.3 Pre-start, start-up and shutdown procedures are carried out in accordance with manager's rules, manufacturer's instructions and site procedures.</p> <p>O26.2.4 Dewatering system is started, tested and adjusted in accordance with manufacturer's instructions and site procedures.</p> <p>O26.2.5 Dewatering system performance is monitored and adjusted to satisfy pumping requirements.</p> <p>O26.2.6 Dewatering system is recovered in accordance with the plan, manufacturer's instructions and site procedures.</p> <p>O26.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>

<u>Elements</u>	<u>Performance Criteria</u>
O26.3 Carry Out Operator Maintenance.	<p>O26.3.1 Equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>O26.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>O26.3.3 Pump, lines and fittings are repaired and replaced in accordance with technical specifications and safe work procedures.</p> <p>O26.3.4 Records and reports are processed in accordance with site procedures.</p>

**Range of Variables :**

- 1 Pump types may include centrifugal and positive displacement (including submersible), piston and diaphragm.
- 2 Pumps may be powered by electricity, diesel, petrol or gas and they may be wheel mounted, pontoon mounted, skid mounted or self contained with hose wheel.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include pump equipment/plant safety and isolation, water specific safety including, where necessary, swimming and the use of buoyancy vests and water/electrical safety hazards and measures.
- 5 Dewatering task planning may include identification of required pump capacity, identification of pump locations, discharge points and routes, configuration, layout and resources required for lines and fittings, identification and satisfaction of environmental requirements, site lighting and other human and materials resources issues.
- 6 Dewatering task preparation may include the briefing of involved personnel, the application of safety, isolation and defective equipment procedures, the physical locating of pump sites, routes and discharge points, and the obtaining and transportation of equipment/plant and materials to the appropriate sites.
- 7 Sump and pad preparation may include site lighting , access roads, security arrangements and service lines.
- 8 Pump operating location may be sump or high wall.
- 9 Lines can be intake or delivery and can be metal, PVC or canvas (layflat) or other materials.
- 10 Associated equipment may include cable reeler.
- 11 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on dewatering operations
- c. planning the dewatering
- d. preparing for the dewatering
- e. ensuring sumps and pads are prepared
- f. completing pre-start, positioning, start-up and shut-down procedures
- g. installation of dewatering lines
- h. operating pumping units
- i. recovering dewatering lines and equipment
- j. complying with environmental requirements
- k. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- site water management plan
- site dewatering operational procedures
- dewatering equipment characteristics, technical capabilities and limitations
- dewatering systems maintenance procedures
- basic geological and survey data related to dewatering
- hazard identification and response processes
- drainage principles and processes
- basic hydraulic safety

- site environmental requirements and constraints related to water management and dewatering

**6. Underpinning Skills.** The ability to:

- apply operation safety requirements
- access, interpret and apply technical information
- read and interpret mine plans
- apply diagnostic techniques
- use relevant hand tools
- apply environmental constraints related to water
- dispose of environmentally sensitive fluids and materials
- maintain equipment records

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1



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## NATIONAL MINING ITAB

## BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the removal of bulk material by either sidecasting or loading directly into a transport system using an excavator or hydraulic shovel.

<u>Elements</u>	<u>Performance Criteria</u>
O27.1 Plan and Prepare for Operations.	<p>O27.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>O27.1.2 Basic geological and survey data required to complete the allocated task is accessed, interpreted and applied in accordance to site procedures.</p> <p>O27.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>O27.1.4 Work area preparation including floor clean up and level and grade requirements is co-ordinated with others and carried out to job specifications.</p> <p>O27.1.5 Cable towers and/or crossovers are positioned/moved in accordance with site plans and requirements.</p>
O27.2 Operate Excavator/Hydraulic Shovel.	<p>O27.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O27.2.2 Pre-start, start-up, park-up and shut-down procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>O27.2.3 Required loading method, single-sided and double sided, or other appropriate method is selected and the equipment and trucks positioned to meet this requirement.</p>

<u>Elements</u>	<u>Performance Criteria</u>
<p>O27.2 Operate Excavator/Hydraulic Shovel. (Continued).</p>	<p>O27.2.4 Dig procedures, fill and load, are conducted, controlled and monitored in accordance with manufacturer's instructions and site procedures including those covering truck loading.</p> <p>O27.2.5 Monitoring systems and alarms are acted on or reported in accordance with manufacturer's instructions and site procedures.</p> <p>O27.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>O27.2.7 Work is completed in accordance with agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>
<p>O27.3 Relocate Excavator/Shovel</p>	<p>O27.3.1 Route and location plan is received and confirmed, if necessary by site inspection.</p> <p>O27.3.2 Ground preparation including pads, roads, cable routes and ramp are completed and/or followed according to site requirements.</p> <p>O27.3.3 Cable location and handling, where applicable, is carried out in accordance with site rules.</p> <p>O27.3.4 Co-ordination issues including support equipment and personnel are resolved.</p> <p>O27.3.5 Excavator/Shovel is relocated in accordance with manufacturer's and/or site requirements.</p>
<p>O27.4 Carry Out Operator Maintenance</p>	<p>O27.4.1 Excavator/Shovel inspections and fault finding are carried out in accordance with the manufacturer's instructions and site requirements.</p> <p>O27.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p>



<u>Elements</u>	<u>Performance Criteria</u>
O27.4 Carry Out Operator Maintenance (Continued)	<p>O27.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>O27.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>O27.4.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 A Excavator/ Hydraulic Shovel may be electric or diesel
- 2 Work details may include the nature and scope of the task, achievement targets, mining conditions, site lighting conditions, defects on equipment/plant, hazards and potential hazards, cable positioning and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include boarding and disembarking procedures, limit testing requirements, operational signal procedures and parking of auxillary equipment/vehicles.
- 5 Site preparation may include pads (flat, sloping or benched), positioning towers and cross-overs.
- 6 Coordination requirements may include those with dozers, graders and other general support equipment/plant.
- 7 Relocating may include floating, walking, trammig or towing.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.



## Evidence Guide

**1. Context of Assessment.** Competency should be assessed in the work environment by day and night and in all weather conditions within the bounds of safety and in accordance with the approved dig and loading sequence.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on excavator operations
- c. positioning towers and/or cross-overs
- d. floor preparation
- e. completing excavator/hydraulic shovel pre-start, start-up and shut-down procedures

Completing essential functions including:

- f. operation and control of excavator/hydraulic shovel
- g. applying loading methods
- h. applying emergency procedures
- i. relocating the machine
- j. completing operator maintenance

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- site mining systems and procedures
- excavator/hydraulic shovel equipment characteristics, technical capabilities and limitations
- excavator/hydraulic shovel operational procedures
- excavator/hydraulic shovel maintenance systems and procedures

- basic geological and survey data
- hazard identification and response procedures
- site environmental requirements and constraints related to excavator/hydraulic shovel operations



**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- use relevant hand tools
- apply eye-hand co-ordination
- apply diagnostic techniques
- work at heights
- work in confined spaces
- monitor and respond to excessive dust
- dispose of environmentally sensitive fluids and materials
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	2
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	2
Using technology.	

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## NATIONAL MINING ITAB

## BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the transportation of coal and overburden using conveyor systems.

<u>Elements</u>	<u>Performance Criteria</u>
O28.1 Plan and Prepare for Operations.	<p>O28.1.1 Briefings or handover details are received, interpreted and clarified including:</p> <ul style="list-style-type: none"> <li>• Status of system/permits.</li> <li>• Machine defects/faults.</li> <li>• Production and Digging Plan</li> <li>• Work group details.</li> <li>• Potential hazards.</li> </ul> <p>O28.1.2 The job is planned to optimise production and coordinated with Bucketwheel driver and Control Centre including:</p> <ul style="list-style-type: none"> <li>• Allocation of duties.</li> <li>• Plant inspections.</li> <li>• Minor maintenance.</li> </ul> <p>O28.1.3 Local and system pre-start checks are carried out in accordance with manufacturers manuals and/or site standard operating procedures and safety requirements.</p> <p>O28.1.4 Safety rules and regulations including mine managers' rules, legislation and site specific instructions are observed.</p>

<p>O28.2 Operate Conveyor.</p>	<p>O28.2.1 The conveyor system(s) are started according to manufacturers manuals and/or site standard operating procedures and safety requirements.</p> <p>O28.2.2 The conveyor is monitored for correct operation including:</p> <ul style="list-style-type: none"> <li>• The optimisation of the system including belt tracking and loading/transfer of material at transfer stations.</li> <li>• Ensuring all personnel are authorised and correctly attired.</li> <li>• Faults are investigated, rectified and/or reported.</li> <li>• Manufacturers manuals and site standard operating procedures applied.</li> </ul> <p>O28.2.3 Emergency procedures are carried out in accordance with manufacturers and/or mine requirements.</p> <p>O28.2.4 Conveyor is shut down in accordance with manufacturers manuals and/or site standard operating procedures and safety requirements ensuring:</p> <ul style="list-style-type: none"> <li>• All faults conditions and outstanding faults are rectified and/or reported.</li> <li>• Conveyor is restored to condition for next start- up.</li> <li>• All logs and reporting requirements are completed.</li> </ul>
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<u>Elements</u>	<u>Performance Criteria</u>
	O28.2.5 Conveyor shuttles are operated in accordance with job requirements and site/mine procedures, including: <ul style="list-style-type: none"><li>• Maintenance.</li><li>• Safety Device Testing.</li></ul> O28.2.6 Hazards are identified and control measures implemented.

<p>O28.3 Carry Out Operator Maintenance.</p>	<p>O28.3.1 Conveyor is cleaned in accordance with manufacturers and/or site standard operators procedures and safety requirements including:</p> <ul style="list-style-type: none"> <li>• Correct selection, use and storage of equipment.</li> <li>• Conveyor being free from spillage and obstructions.</li> <li>• Walkways clear and clean.</li> <li>• Water from monitor and excess water clear of electrical equipment.</li> <li>• Mobile plant organised for large spills.</li> </ul> <p>O28.3.2 Lubrication is carried out in accordance with manufacturers specifications and charts and site standard operating procedures including:</p> <ul style="list-style-type: none"> <li>• Correct use and storage of lubricants and lubricating equipment.</li> <li>• Lubricants and lubricating equipment free from contaminants.</li> <li>• Ensuring accurate readings.</li> <li>• Correct disposal of contaminated lubricants.</li> </ul> <p>O28.3.3 Conveyor is prepared for maintenance in accordance with manufacturers manuals, site standard operating procedures and safety requirements including:</p> <ul style="list-style-type: none"> <li>• Conveyor correctly positioned and set-up.</li> <li>• Electrics isolated.</li> <li>• Correct permits issued.</li> </ul> <p>O28.3.4 Minor maintenance is carried out in accordance with manufacturers specifications and site standard operating procedures.</p> <p>O28.3.5 Conveyor is prepared for shifting and returned to service in accordance with site/standard procedures including:</p> <ul style="list-style-type: none"> <li>• Removal of belt tension.</li> <li>• Clean head and tail end sections.</li> <li>• Issue permits.</li> <li>• Anchor posts.</li> <li>• Test runs.</li> <li>• Positioning hopper.</li> </ul> <p>O28.3.6 Conveyor is inspected/tested after maintenance and conveyor shift and prior to return to service in accordance with site/standard procedures.</p> <p>O28.3.7 Worksite is cleared of tools, debris and defective components and restored to site and safety requirements.</p>
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MNC.O28.A

**CONDUCT CONVEYOR OPERATIONS**

<u>Elements</u>	<u>Performance Criteria</u>
<p>O28.4 Carry Out Inspection, Testing, Repair and Reporting</p>	<p>O28.4.1 Structure, components and system route are inspected and tested for conditions, wear and need of repair or replacement in accordance with manufacturers specification and/or site standard operating procedures including checking:</p> <ul style="list-style-type: none"> <li>• Excessive build-up of material.</li> <li>• Belts.</li> <li>• Sensors and Indicators.</li> <li>• Idlers and Pulleys.</li> <li>• Frames.</li> <li>• Motors and Gear Boxes.</li> <li>• Fish Plates and Sleepers.</li> <li>• Spill curtains.</li> </ul> <p>O28.4.2 Inspection and testing of safety devices in accordance with manufacturers manuals and/or site standard operating procedures including:</p> <ul style="list-style-type: none"> <li>• Proving the equipment function and correct lamp activated.</li> <li>• All safety devices activated.</li> <li>• Lamp indicators tested.</li> </ul> <p>O28.4.3 Inspection and testing fire service systems is in accordance with manufacturers manuals and/or site standard operating procedures.</p> <p>O28.4.4 Records and reporting carried out in accordance with site/mine procedures.</p>

**Range of Variables:**

- 1 Conveyor systems may vary in number of transfer stations, shuttles, bucketwheel optimum digging rates, belt sizes and loading capacities.
- 2 Production targets, optimum loading conditions of belts, operational and minor maintenance requirements may vary between sites.
- 3 Safety information, procedures and practices may be contained in legislation and regulations, relevant Australian standards, management plans, managers rules, OH & S Policy, codes of practice, manufacturer's manuals and instructions, safe working or job procedures, training resources.
- 4 Survey data may include minesite plans and maps, sketches, models and signage.
- 5 Materials include coal and overburden.
- 6 Operations may be conducted in all weather conditions, including extreme conditions by day or night and may include hot and dusty, heavy rain/flood, fog and high wind.
- 7 Environmental and ground conditions may include stress relief, cracking, fire holes, and aquifers.
- 8 Material characteristics/information may include different conditions such as dry, wet, compacted, loose, lumpy. Material may also include vegetation and trees in various states of decomposition.
- 9 Specific safety requirements may include access and permit procedures, boarding and disembarking procedures, working behind protective barriers, procedures for clearing blocked chutes and excessive spills, procedures covering moving parts and hot machinery.
- 10 Coordination may be required with mobile plant operators, maintenance contractors, conveyor shifting supervisors.
- 11 Tools and equipment may include hand and power tools, spare parts, lubricants and cleaning products.
- 12 Operator maintenance procedures are those established and authorised for the site.
  - Site hazards may include:
  - Power lines.
  - Overhead service lines.
  - Obstructions.
  - Structures.
  - Other equipment/vehicles.
  - Dangerous material.
  - Formation/earthworks/batters.
  - Underground services.
  - Water.



**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night in all weather conditions within the bounds of safety in accordance with approved conveyor and system sequences and work procedures.
2. **Inter-dependant Assessment of Units**

Assessment should include those aspects of the core competencies, which are consistent with the work environment of this unit.

Assessment of this unit is relevant in part, to the higher order competencies of operating the control centre and shifting of conveyor systems.
3. **Critical Aspects and Evidence.** It is essential that competence is fully observed in the critical aspects of:
  - a. applying personal and operational safety procedures and practices
  - b. interpreting and communicating production and conveyor system information
  - c. completing essential functions including:
  - d. completing system and section pre-start, start-up and shut-down procedures, locally
  - e. preparing system for maintenance and returning to service
  - f. inspection and testing
  - g. operating techniques including optimum belt loading
  - h. operator maintenance
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human, fiscal costs / benefits, production imperatives and to other variable factors. Assessment must satisfy the critical aspects of evidence expressed in this unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge.** A knowledge of:
  - legislative and regulatory requirements related to this competency
  - site and equipment safety requirements and procedures
  - scope and limitations of operations related to this competency
  - site conveyor systems and bucketwheel configurations
  - relevant conveyor system and equipment characteristics, technical capabilities and limitations
  - relevant operational and maintenance procedures
  - mine site geological conditions and survey data
  - fire suppression, fire alert and disaster plan procedures
  - hazard identification and risk assessment response procedures
  - site environmental requirements and constraints related to conveyor/bucketwheel system

**6. Underpinning Skills.** The ability to:

- Apply mine permit and isolation procedures
- Apply operational safety requirements
- Access, interpret and apply technical information
- Maintain equipment records
- Apply eye-hand coordination
- Dispose of environmentally sensitive fluids and materials
- Use relevant hand tools
- Apply diagnostic techniques
- Comply with environmental requirements

**7. Key Competencies****Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

## NATIONAL MINING ITAB

## BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the transportation of material from an operating Bucket Wheel or Bucket Chain Excavator to a conveyor system using a Mobile Slew Conveyor.

<u>Elements</u>	<u>Performance Criteria</u>
O29.1 Plan and Prepare for Operations.	<p>O29.1.1 Briefings or hand over details are received, interpreted and clarified including:</p> <ul style="list-style-type: none"> <li>• Machine defects/faults.</li> <li>• Nature and scope of task.</li> <li>• Details of load chart/factors.</li> <li>• Adequacy of site lighting.</li> <li>• Potential hazards.</li> <li>• Status of system/permits.</li> </ul> <p>O29.1.2 The job is planned to optimise production including:</p> <ul style="list-style-type: none"> <li>• Allocation of duties.</li> <li>• Plant inspections.</li> <li>• Minor maintenance.</li> </ul> <p>O29.1.3 Pre-start checks are carried out in accordance with manufacturer and/or site standard operating procedures and safety requirements including:</p> <ul style="list-style-type: none"> <li>• Rotation test.</li> <li>• Operational readiness test.</li> </ul> <p>O29.1.4 Route to be travelled is inspected and planned according to job and site requirements and operational safety requirements. Hazardous conditions are identified and control measures implemented.</p> <p>O29.1.5 Work is prepared for in accordance with manufacturers/site requirements including avoidance of obstacles and hazards.</p> <p>O29.1.6 Mobile Slew Conveyor is positioned accurately, safely and stabilised prior to commencement of operations in accordance with specifications and site/mine requirements.</p> <p>O29.1.7 Mobile Slew Conveyor is prepared for operation in accordance with machine limitations and digging conditions.</p> <p>O29.1.8 Work area is confirmed as clear and safe prior to commencing operation.</p> <p>O29.1.9 Safety rules and regulations including mine managers' rules, legislation and site specific instructions are observed.</p>

<u>Elements</u>	<u>Performance Criteria</u>
O29.2 Operate Mobile Slew Conveyor.	<p>O29.2.1 Start up, park and shut down procedures are carried out in accordance with manufacturers and/or site-specific requirements.</p> <p>O29.2.2 Travel and steer to survey line is carried out in unison with excavator and hopper within operating and safety limits.</p> <p>O29.2.3 Relevant Mobile Slew Conveyor controls and functions are operated from stationary mode including - boom up, boom down, hoist up, hoist down, travel slew, within manufacturers specifications to effectively lift and position loads.</p> <p>O29.2.4 Relevant Mobile Slew Conveyor controls and functions are operated in travel mode including discharge and receiving boom hoist and slew in accordance with manufacturers specifications and standard procedures to effectively locate the conveyor.</p> <p>O29.2.5 Light panel is monitored and acted on in accordance with site standard procedures.</p> <p>O29.2.6 Emergency procedures are carried out in accordance with manufacturers and/or mine requirements.</p> <p>O29.2.7 Loading and discharge is completed in accordance with the agreed plan and outcomes and within the optimum operating capacities of the allocated equipment.</p> <p>O29.2.8 Controls are operated to transfer loads in accordance with manufacturers instructions and authorised mine procedures.</p> <p>O29.2.9 Hazards are identified and control measures implemented.</p>

O29.3 Carry Out Operator Maintenance.	O29.3.1 Mobile Slew Conveyor is travelled to maintenance site and/or prepared for maintenance in accordance with manufacturers instructions and site requirements, including: <ul style="list-style-type: none"> <li>• Positioning and set-up.</li> <li>• Electrics isolated.</li> <li>• Permit issued.</li> </ul>
	O29.3.2 Routine operator servicing, lubrication and housekeeping tasks are carried out to manufacturers/site requirements.
	O29.3.3 Non-routine tasks are carried out to site/mine requirements. Gantry/cranes operation is restricted to authorised personnel.
	O29.3.4 Minor maintenance is carried out to manufacturers and/or site requirements.
	O29.3.5 Work site is cleared of tools, debris and defective components and restored to site and safety requirements.

**MNC.O29.A**

**CONDUCT MOBILE SLEW CONVEYOR OPERATIONS**

<u>Elements</u>	<u>Performance Criteria</u>
O29.4 Carry Out Inspection, Testing and Reporting.	O29.4.1 Structures and components are inspected and tested for fault conditions, wear and need of repair or replacement in accordance with manufacturers specification and/or site standard operating procedures including checking: <ul style="list-style-type: none"> <li>• Belts.</li> <li>• Sensors and Indicators.</li> <li>• Idlers and Pulleys.</li> <li>• Gearboxes.</li> <li>• Motors.</li> <li>• Couplings.</li> <li>• Hydraulics.</li> <li>• Frames.</li> </ul>
	O29.4.2 Inspection and testing of safety devices is in accordance with manufacturers manuals and/or site standard operating procedures including: <ul style="list-style-type: none"> <li>• Proving the equipment function and correct lamp activated.</li> <li>• Lamp indicators tested.</li> </ul>
	O29.4.3 Inspection and testing of fire service systems is in accordance with manufacturers manuals and/or site standard operating procedures.
	O29.4.4 Records and reporting is carried out in accordance with site/mine procedures.



**Range of Variables:**

- 1 Mobile Slew may operate to manned or unmanned hopper, from bucket-wheel or bucket-chain excavators; optimum digging rates, belt sizes and loading capacities may vary.
- 2 Production targets, optimum loading conditions of belts, operational and minor maintenance requirements may vary between sites.
- 3 Safety information, procedures and practices may be contained in legislation and regulations, relevant Australian standards, management plans, managers rules, OH & S Policy, codes of practice, manufacturer's manuals and instructions, safe working or job procedures, training resources.
- 4 Survey data may include minesite plans and maps, sketches, models and signage.
- 5 Materials may include coal or overburden.
- 6 Operations may be conducted in all weather conditions, including extreme conditions by day or night and may include hot and dusty, heavy rain/flood, fog and high wind.
- 7 Environmental and ground conditions may include stress relief, cracking, fire holes, and aquifers.
- 8 Material characteristics/information may include different conditions such as dry, wet, compacted, loose, lumpy. Material may also include vegetation and trees in various states of decomposition.
- 9 Specific safety requirements may include access and permit procedures, boarding and disembarking procedures, working behind protective barriers, procedures for clearing blocked chutes and excessive spills, procedures covering moving parts and hot machinery.
- 10 Coordination may be required with mobile plant operators, maintenance contractors.
- 11 Tools and equipment may include hand and power tools, spare parts, lubricants and cleaning products.
- 12 Operator maintenance procedures are those established and authorised for the site.

Site hazards may include:

- Power lines
- Overhead service lines
- Lighting
- Obstructions
- Structures
- Other equipment/vehicles
- Dangerous material
- Formation/earthworks/batters
- Underground services
- Water





**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night in all weather conditions within the bounds of safety in accordance with approved conveyor and system sequences and work procedures.

2. **Inter-dependant Assessment of Units**

Assessment should include those aspects of the core competencies, which are consistent with the work environment of this unit.

Assessment of this unit is relevant in part, to the higher order competencies of operating the bucket-wheel and bucket-chain excavators.

3. **Critical Aspects and Evidence.** It is essential that competence is fully observed in the critical aspects of:

- a. applying personal and operational safety procedures and practices
- b. interpreting and communicating production, machine and system information
- c. completing essential functions including:
- d. operational safety including correct interpretation of ground conditions and machine stability requirements.
- e. completing machine pre-start, start-up and shut-down procedures
- f. travel and steering to survey line
- g. smooth operation and coordination of receiving and discharge booms while travelling
- h. machine optimisation
- i. inspection and testing
- j. operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human, fiscal costs / benefits, production imperatives and to other variable factors. Assessment must satisfy the critical aspects of evidence expressed in this unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- legislative and regulatory requirements relating to this competency
- site and equipment safety requirements and procedures
- scope and limitations of operations related to this competency
- site conveyor systems and bucketwheel configurations
- relevant mobile slew equipment characteristics, technical capabilities and limitations.
- relevant operational and maintenance procedures
- mine site geological and survey data and assessment of ground conditions
- fire suppression, fire alert and disaster plan procedures.
- hazard identification and risk assessment response procedures
- site environmental requirements and constraints related to conveyor/bucketwheel system

**6. Underpinning Skills.** The ability to:

- apply permit and access procedures
- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply eye-hand coordination
- use relevant hand tools
- apply diagnostic techniques including assessing ground conditions
- comply with environmental requirements
- recognise site hand signals

**7. Key Competencies****Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	1
Using technology.	1

## NATIONAL MINING ITAB

## BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor:**        **This unit covers the control of bucketwheel excavator/conveyor system mining operations from a Control Centre.**

<u>Elements</u>	<u>Performance Criteria</u>
O30.1    Prepare for Plant Operations.	<p>O30.1.1    Information is transmitted to and confirmed with all relevant personnel to make ready for production before commencement of operations.</p> <p>O30.1.2    Shift requirements are identified from the previous shift report and instructions relating to plant operations including:</p> <ul style="list-style-type: none"> <li>•    Operating plant identified</li> <li>•    Outages and breakdowns</li> <li>•    Maintenance schedules</li> <li>•    Digging tonnage requirements</li> </ul> <p>O30.1.3    Shift operational plan is interpreted and confirmed with the supervisor according to mine procedures.</p> <p>O30.1.4    All equipment under plant operator control is located and identified.</p> <p>O30.1.5    Pre-start check of all equipment is carried out in accordance with manufacturers and/or site authorised procedures.</p> <p>O30.1.6    Basic geological information required to complete the operations is interpreted and applied in accordance with site requirements.</p> <p>O30.1.7    Safety rules and regulations, including mine managers' rules and schemes and site or plant specific instructions are observed.</p>

<p>O30.2 Control Plant Operations.</p>	<p>O30.2.1 Equipment is started up and closed down completely or partially in the sequence necessary to avoid damage/spillage and according to site/mine procedures.</p> <p>O30.2.2 Plant processes are monitored and controlled to maintain shift plan and optimise coal recovery and overburden removal according to site/mine procedures.</p> <p>O30.2.3 Warning devices are monitored and acted on according to site/mine procedures.</p> <p>O30.2.4 The operation of equipment and the use of materials are controlled to minimise wastage.</p> <p>O30.2.5 Emergency, fire and disaster situations are acted on and co-ordinated including control centre evacuation procedures, according to site/mine procedures.</p> <p>O30.2.6 The availability of personnel, materials and equipment are monitored and adjusted to maintain production in accordance with the shift plan.</p>
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**MNC.O30.A**

**CONDUCT CONTROL CENTRE OPERATIONS**

<u>Elements</u>	<u>Performance Criteria</u>
<p>O30.3 Record Operational Information.</p>	<p>O30.3.1 All information required to maintain coal excavation and plant operations is reported and recorded in accordance with site procedures including oral and written reports.</p>
<p>O30.4 Maintain Standard Practices.</p>	<p>O30.4.1 Standards for safe and competent work practices are followed in accordance with established Control Centre procedures.</p> <p>O30.4.2 Control systems security requirements are maintained in accordance with site/mine procedures.</p> <p>O30.4.3 Contractor access to, mine and plant is controlled and monitored in accordance with site/mine procedure.</p> <p>O30.4.4 Safety rules and regulations including mine managers' rules, legislation and site specific instructions are observed.</p>

**Range of Variables:**

- 1 The previous shift report may include:
  - Production results including input and output tonnages and coal quality/blending requirements
  - Breakdown details
  - Availability and location of coal by type, seam, blend
  - System and plant defects including faults of plant equipment
  - Maintenance and Outage coordination requirements
  - Water availability
  - Charts, print-outs, logs, amp readings
- 2 Information may be transmitted by the following means: Two-way radio, telephone, PA, verbal, CB, written, computer monitor and print-outs.
- 3 Role and responsibilities may include Production, Outage Co-ordination, Emergency Commander.
- 4 Liaisons with other personnel may include: Fitters, Electricians, Contractors, Plant Operators, Machinery Operators, Supervisors, Yard persons, Laboratory assistant, Planners, Emergency Personnel.
- 5 Coordination with other sections may include: Power Station Operations, Fire Services, Police and Emergency Services, Planning, Maintenance.
- 6 Operations may be conducted in all weather conditions, including extreme conditions by day or night and may include hot and dusty, heavy rain/flood, fog and high wind.
- 7 Environmental and ground conditions may include stress relief, cracking, fire holes, and aquifers.
- 8 Plant may include conveyor transport system, crushers, stackers, raw coal bunkers, bucket wheel/bucket chain excavators, feeders, reclaimers, samplers, pumps and screens, gates, compressors, tramp iron magnets.
- 9 Processes may involve ash level, moisture content, size, condition of ROM, yield, belt size, plant availability, coal availability, limitations of equipment, bunker capacity, coal blending, reject percentages, sump levels, density control, weather information.
- 10 Faults may be identified by the following: alarms, indicator lights, amp gauges, computer monitor, camera monitor and visual inspection. Adjustments may be made directly using automatic or manual controls, or remotely through third parties.
- 11 Factors governing coal quality may include: coal type, moisture and ash content.
- 12 Plant identification codes may vary between mine sites

**Evidence Guide:**

**1. Context of Assessment.** Competency should be assessed in the work environment by day and night in all weather conditions within the bounds of safety in accordance with approved mine production system, sequences, and procedures.

**2. Inter-dependant Assessment of Units**

Assessment should include those aspects of the core competencies, which are consistent with the work environment of this unit.

**3. Critical Aspects and Evidence.** It is essential that competence is fully observed in the critical aspects of:

- a. applying personal and operational safety procedures and practices
- b. interpreting and communicating production and other information including coordinating production between power station and mine operations.

Completing essential functions including:

- a. monitoring and controlling production to production plan.
- b. modifying production plan and systems in response to emergency and breakdown situations
- c. maintaining operational safety and emergency systems and procedures.
- d. managing start-up, park and shut-down procedures for mine plant and systems.
- e. controlling and monitor contractor access
- f. maintaining logs and reports
- g. testing and monitoring of control centre systems and security procedures

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human, fiscal costs / benefits, production imperatives and to other variable factors. Assessment must satisfy the critical aspects of evidence expressed in this unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- legislative and regulatory requirements relating to this competency
- site and equipment permit and access procedures
- state and mine emergency and disaster procedures and safety requirements, including fire and flood
- site plant and systems configuration, alternative configurations, capacities and limitations
- environmental compliance requirements
- control centre monitoring and communication systems
- personnel/shift systems
- maintenance and contractor procedures
- mine geological conditions and survey data and associated operating precautions

**6. Underpinning Skills.** The ability to:

- apply emergency, disaster, safety and security requirements
- access, interpret and apply technical information to production plans
- maintain records
- apply eye-hand coordination
- apply diagnostic techniques and resolve operational problems
- comply with environmental requirements
- use basic keyboard skills

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	1

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## NATIONAL MINING ITAB

## BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor: This unit covers managing the relocation of conveyor systems associated with bucket wheel and bucket chain excavator and stacker operations.**

<u>Elements</u>	<u>Performance Criteria</u>
O31.1 Plan and Prepare for Conveyor Shift.	<p>O31.1.1 Briefings and survey plans are received, interpreted and clarified by the trackshift Co-ordinator/Supervisor including:</p> <ul style="list-style-type: none"> <li>• Position of the conveyor.</li> <li>• Relationship to trunk/main conveyors.</li> <li>• Type of conveyor shift.</li> <li>• Scheduled times.</li> <li>• Position of digging machinery.</li> </ul> <p>O31.1.2 Site inspection is carried out to determine the preparation requirements including:</p> <ul style="list-style-type: none"> <li>• Accessibility for plant.</li> <li>• Stability and evenness of surface.</li> <li>• Location of electrical services and cables.</li> <li>• Location of Hopper.</li> <li>• Cracks in rail and/or plates.</li> </ul> <p>O31.1.3 Resources are identified and planned according to the conveyor shift requirements and site/mine procedures.</p> <p>O31.1.4 Conveyor personnel are organised and briefed on plan, timing, tasks and co-ordination issues resolved according to conveyor shift requirements and site/mine procedures.</p>

<p>O31.2 Set-Up for Conveyor Shift.</p>	<p>O31.2.1 Ground preparation including pads, ramps, roads and cable routes are completed according to conveyor shift requirements and site/mine procedures.</p> <p>O31.2.2 Fire service pipes are relocated according to conveyor shift requirements and site/mine procedures.</p> <p>O31.2.3 Minor maintenance is carried out according to site/mine requirements.</p> <p>O31.2.4 Anchoring equipment/posts are set and prepared in accordance with the survey plan and site/mine procedures.</p> <p>O31.2.5 Permits are issued and plant isolated according to site/mine safety requirements and procedures.</p> <p>O31.2.6 Conveyor belt tension is released in accordance with safety requirements and site/mine procedures.</p>
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**MNC.O31.A**

**COORDINATE CONVEYOR SYSTEM SHIFT**

<u>Elements</u>	<u>Performance Criteria</u>
<p>O31.3 Co-ordinate and Monitor Conveyor Shift.</p>	<p>O31.3.1 Mine plant and equipment is prepared and/or re-located according to conveyor shift and safety requirements and site/mine procedures.</p> <p>O31.3.2 Conveyor is disconnected from transfer machinery and head/tail end units according to site/mine procedures.</p> <p>O31.3.3 Mobile plant is positioned and attached to conveyor in accordance with site/mine procedures, safety and manufacturers requirements.</p> <p>O31.3.4 Conveyor system is continually checked during shifting stage for damage and excessive movement.</p> <p>O31.3.5 Towing/pushing of conveyor system is coordinated with operator drivers and spotters.</p> <p>O31.3.6 Distance from survey peg line and trunk conveyor is regularly monitored and measured in accordance with site/mine procedures.</p> <p>O31.3.7 Conveyor is patrolled and running repairs carried out in accordance with conveyor shift requirements and site/mine procedures.</p> <p>O31.3.8 Final line-up of conveyor against survey plan is carried out in accordance with site/mine procedures and tolerances.</p> <p>O31.3.9 Work is completed in accordance with the survey conveyor shifting plan and conveyor is connected, anchored and prepared for operation in accordance with site/mine procedures.</p> <p>O31.3.10 Emergency procedures are carried out in accordance with manufacturers and site/mine requirements.</p> <p>O31.3.11 Safety rules and regulations including mine managers' rules, legislation and site specific instructions are observed.</p> <p>O31.3.12 Hazardous conditions are identified and control measures implemented.</p>

<u>Elements</u>	<u>Performance Criteria</u>
O31.4 Test and Return Conveyor to Service.	<p>O31.4.1 Permits are cancelled and isolated plant restored in accordance with safety requirements and site/mine procedures.</p> <p>O31.4.2 Test runs are carried out with unloaded and loaded belt in accordance with site/mine procedures.</p> <p>O31.4.3 Frames and conveyor belt are inspected for alignment, tension and fouling in accordance with site/mine procedures.</p> <p>O31.4.4 Minor maintenance is carried out as required in accordance with manufacturers requirements and site/mine procedures.</p> <p>O31.4.5 Conveyor system is returned to service in accordance with site/mine procedures.</p> <p>O31.4.6 Site is cleared of debris, tools, plant and machinery.</p> <p>O31.4.7 Reports and reporting are carried out in accordance with site/mine procedures.</p>

**Range of Variables:**

- 1 Types of conveyor shift may include parallel, tail end, head end, pivot or a combination.
- 2 Conveyor systems may vary in distance, number of sections, transfer stations and shuttles.
- 3 Production targets, optimum loading conditions of belts, operational and minor maintenance requirements may vary between sites.
- 4 Completion of shift may include inspections of track and frames, tensioning of belt, connection of fire services, HV and communication cables, test-running.
- 5 Safety information, procedures and practices may be contained in legislation and regulations, relevant Australian standards, Coordination plans, Coordinators rules, OH & S Policy, codes of practice, manufacturer's manuals and instructions, safe working or job procedures, training resources.
- 6 Survey data may include minesite plans, survey belt centreline and offsets.
- 7 Equipment includes track dozers, rigging equipment and specialist rollerheads, front end loaders, cranes.
- 8 Machinery associated with trackshift may include manned and unmanned hoppers, stackers, reclaimers, trippers and head and tail end units.
- 9 Environmental and ground conditions may include stress relief and dry, wet, cracking, fire holes, aquifers, flood, dust, wind.
- 10 Formation may include compacted coal and overburden.
- 11 Specific safety requirements may include access and permit procedures, working in vicinity of other machines, near structures and other personnel.
- 12 Coordination may be required with other mobile plant operators, maintenance contractors, conveyor shifting supervisor.
- 13 Damage may include fish plates, rail cracks, sleeper/frame fixings broken, belt stretching or pinching.
- 14 Tools and equipment may include hand and power tools, spare parts, lubricants and cleaning products.
- 15 Operator maintenance procedures are those established and authorised for the site.
- 16 Site hazards may include:
  - Dust, high wind and wet ground conditions
  - Power lines
  - Overhead service lines
  - Obstructions
  - Structures
  - Other equipment/vehicles
  - Dangerous material
  - Formation/earthworks/batters
  - Underground services
  - Water

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night in all weather conditions within the bounds of safety in accordance with approved conveyor and system sequences and work procedures.

2. **Inter-dependant Assessment of Units**

Assessment should include those aspects of the core competencies, which are consistent with the work environment of this unit.

Assessment of this unit is relevant in part, to the higher order competencies of operating the control centre and shifting of conveyor systems.

3. **Critical Aspects and Evidence.** It is essential that competence is fully observed in the critical aspects of:

- a. applying personal and operational safety procedures and practices
- b. interpreting and communicating conveyor shifting information

Completing essential functions including:

- a. interpreting conveyor shift plan
- b. coordinating preparation and conveyor system shift requirements
- c. inspection of conveyor system pre and post shift
- d. operating techniques including smooth and coordinated shifting with minimal damage to conveyor system, and final alignments to markers.
- e. overseeing test running and handover of system

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human, fiscal costs / benefits, production imperatives and to other variable factors. Assessment must satisfy the critical aspects of evidence expressed in this unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- mobile plant capabilities and limitations
- site and equipment safety requirements and procedures
- scope and limitations of operations related to this competency
- site conveyor systems and re-location coordination requirements
- relevant conveyor system and equipment characteristics, technical capabilities and limitations
- mine site geological conditions and survey data
- fire suppression, fire alert and disaster plan procedures.
- hazard identification and risk assessment response procedures
- site environmental requirements and constraints related to conveyor/bucketwheel system

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- plan and organise
- lead a diverse team
- apply diagnostic techniques
- comply with environmental requirements

**7. Key Competencies****Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2

## NATIONAL MINING ITAB

## BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the isolation, access and restoration of mechanical plant.

<u>Elements</u>	<u>Performance Criteria</u>
O32.1 Conduct Access Selection.	O32.1.1 Correct item of plant and work to be carried out is identified. O32.1.2 Permit procedure (written or oral) is correctly identified and applied according to the site/mine procedures. O32.1.3 Risks to personal well being are identified and preventive strategies are adopted. O32.1.4 Permit clearance is obtained in accordance with site procedures before work is commenced.
O32.2 Isolate Plant.	O32.2.1 A safe working area is established and maintained in accordance with site procedures. O32.2.2 Isolation of all required energy sources and immobilisation of potential energy source is carried out in accordance with site permit procedure and safety requirements including: <ul style="list-style-type: none"> <li>• Protective clothing</li> <li>• Non-conductive platform</li> </ul> O32.2.3 Locks and tags are placed on isolators in accordance with the type of permit procedure. O32.2.4 Breaches in permit procedure safety are identified and acted on or reported in accordance with authorised procedures.
O32.3 Complete Written Permit Form.	O32.3.1 Factual statement of isolations is prepared according to site/permit procedures. O32.3.2 Sign-on and sign-off requirements are completed according to mine procedures. O32.3.3 Hand-over of plant and equipment is carried out in accordance with mine procedures.



<u>Elements</u>	<u>Performance Criteria</u>
O32.4 Cancel Procedure.	O32.4.1 Confirmation is received that work has been completed and is ready for return to service. O32.4.2 Designated work to be completed is checked in accordance with work/site contract and/or site/mine procedure. O32.4.3 Energy sources are restored according to site procedures. O32.4.4 Situations, which may endanger individuals or workers are identified and corrected or reported. O32.4.5 All permits are confirmed as cancelled before plant is brought back into operation.

**Range of Variables:**

- 1 Permits may include written or oral access procedures to mechanical plant.
- 2 Permit/access devices may include locks, tags and barriers.
- 3 Authorisation of personnel may vary between mines and may include issuing officers and recipients-in-charge.
- 4 Personal protective apparel and measures may include, HV Isolation gloves for 6.6V isolation, Rubber mat/non-conductive platform and other site prescribed clothing apparel.
- 5 Mechanical access procedure may cover plant such as bucket wheel/chain excavators, stackers, mobile slew conveyors, hoppers, conveyors, pumps, loading units, bunkers.
- 6 Safety information, procedures and practices may be contained in legislation and regulations, relevant Australian standards, management plans, managers rules, OH & S Policy, codes of practice, manufacturer's manuals and instructions, safe working or job procedures, training resources.
- 7 Specific safety requirements may also include boarding and disembarking procedures, working behind protective barriers, procedures for clearing blocked chutes and excessive spills, procedures covering moving parts and hot machinery.
- 8 Coordination may be required with control centre, other operators, mobile plant operators, maintenance contractors, shift supervisors.
- 9 Operator maintenance procedures are those established and authorised for the site.
- 10 Site hazards may include:
  - HV switchgear
  - Dust and water
  - Power lines
  - Overhead service lines
  - Obstructions
  - Structures
  - Other equipment/vehicles
  - Dangerous material
  - Formation/earthworks/batters
  - Underground services
  - Water

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment by day and night in all weather conditions within the bounds of safety in accordance with approved conveyor and system sequences and work procedures.

2. **Inter-dependant Assessment of Units**

Assessment should include those aspects of the core competencies, which are consistent with the work environment of this unit.

Assessment of this unit is relevant in part, to the higher order competencies of operating the control centre and shifting of conveyor systems.

3. **Critical Aspects and Evidence.** It is essential that competence is fully observed in the critical aspects of:

- a. applying personal and operational safety procedures and practices
- b. interpreting and communicating isolation, access and production information

Completing essential functions including:

- a. isolation and de-energising procedures
- b. use and care of safety equipment
- c. accurate completion of all records and reporting requirements

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human, fiscal costs / benefits, production imperatives and to other variable factors. Assessment must satisfy the critical aspects of evidence expressed in this unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- high and low voltage distribution and switching systems
- plant and equipment isolation points
  - potential hazards
  - site and equipment safety requirements
  - operational and maintenance procedures
  - emergency, fire suppression, fire alert and disaster procedures
- relevant operational and maintenance procedures
- hazard identification and risk assessment response procedures

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- maintain accurate records
- identify plant status
- apply eye-hand coordination
- use relevant safety equipment and hand tools
- apply diagnostic techniques
- use oral and written communications

**7. Key Competencies****Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	1

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## NATIONAL MINING ITAB

## BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the shifting of conveyor systems using dozers in tandem.

<u>Elements</u>	<u>Performance Criteria</u>
O33.1 Plan and Prepare for Conveyor Shift.	<p>O33.1.1 Briefings or handover details are received, interpreted and clarified including:</p> <ul style="list-style-type: none"> <li>• Conveyor shifting plan and program.</li> <li>• Work coordination requirements.</li> <li>• Worksite and formation inspection.</li> <li>• Location of potential hazards.</li> <li>• Permit and access requirements.</li> </ul> <p>O33.1.2 Equipment is selected and inspected in accordance with job and safety requirements including:</p> <ul style="list-style-type: none"> <li>• Roller head attachments.</li> <li>• Slings and shackles.</li> </ul> <p>O33.1.3 Basic geological formation and survey data required to complete the shift is interpreted and applied in accordance with site requirements.</p> <p>O33.1.4 Conveyor system is inspected for condition and potential breaks including:</p> <ul style="list-style-type: none"> <li>• Fish plates</li> <li>• Rails and sleepers</li> </ul> <p>O33.1.5 Safety rules and regulations including mine managers' rules and schemes, legislation and site specific instructions are observed.</p>

<u>Elements</u>	<u>Performance Criteria</u>
O33.2 Operate Dozer to Shift Conveyor.	<p>O33.2.1 Machine pre-start checks, start-up, park and shut-down procedures are carried out in accordance with manufacturers and/or site requirements.</p> <p>O33.2.2 Attachments are fitted to dozer including roller heads, ropes and shackles in accordance with safety and site requirements.</p> <p>O33.2.3 Dozer and rollers are attached to conveyor rails and rail warm-up carried out in accordance with safety requirements and site procedures. Rail problems identified and rectified or noted.</p> <p>O33.2.4 Conveyor is shifted in tandem with other machines in small passes and including:</p> <ul style="list-style-type: none"> <li>• Constant monitoring for damage to rail and fish plates.</li> <li>• Maintaining communication with other machines and conveyor shift supervisor.</li> </ul> <p>O33.2.5 Dozer controls and manoeuvres are carried out smoothly to minimize damage to rail, fishplates, conveyor frames and pipelines.</p> <p>O33.2.6 Towing, winching and pushing is carried out in accordance with safety procedures and site practices.</p> <p>O33.2.7 Final alignment is carried out in accordance with survey plan and within site tolerances.</p> <p>O33.2.8 Operating techniques are adjusted in extreme conditions to ensure safety of plant and personnel, and necessary hazard control measures are taken.</p> <p>O33.2.9 Hand signals and radio communications are used and interpreted in accordance with site procedures.</p> <p>O33.2.10 Work is completed in accordance with site procedures including inspection of conveyor system.</p>
O33.3 Complete Conveyor Shift Operations.	<p>O33.3.1 Dozer is shut down, parked, inspected and cleaned in accordance with site procedures.</p> <p>O33.3.2 Attachments are inspected for serviceability and damage and stored according to site procedures.</p> <p>O33.3.3 Logs and reporting requirements are carried out in accordance with site procedures.</p>

**Range of Variables:**

1. Conveyor systems may vary in distance, number of sections, transfer stations and shuttles.
2. Production targets, optimum loading conditions of belts, operational and minor maintenance requirements may vary between sites.
3. Safety information, procedures and practices may be contained in legislation and regulations, relevant Australian standards, management plans, managers rules, OH & S Policy, codes of practice, manufacturer's manuals and instructions, safe working or job procedures, training resources.
4. Survey data may include minesite plans, survey belt centreline and offsets.
5. Equipment includes track dozers, rigging equipment and specialist rollerheads.
6. Operations may be conducted in all weather conditions, including extreme conditions by day or night and may include hot and dusty, heavy rain/flood, fog and high wind.
7. Environmental and ground conditions may include stress relief, cracking, fire holes, and aquifers.
8. Formation may include compacted coal and overburden.
9. Specific safety requirements may include access and permit procedures, working in vicinity of other machines, near structures and other personnel.
10. Coordination may be required with other mobile plant operators, maintenance contractors, conveyor shifting supervisors.
11. Tools and equipment may include hand and power tools, spare parts, lubricants and cleaning products.
12. Operator maintenance procedures are those established and authorised for the site.
13. Site hazards may include:
  - a. Power lines
  - b. Overhead service lines
  - c. Obstructions

Following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- legislative and regulatory requirements related to this competency
- site and equipment safety requirements and procedures.
- scope and limitations of operations related to this competency
- site conveyor systems and re-location coordination requirements



- relevant conveyor system and equipment characteristics, technical capabilities and limitations.
- mine site geological conditions and survey data
- fire suppression, fire alert and disaster plan procedures.

**6. Underpinning Skills.** The ability to:

- apply dozer operating skills
- apply operational safety requirements
- access, interpret and apply technical information
- maintain equipment records
- apply eye-hand coordination
- use relevant hand tools
- apply diagnostic techniques
- comply with environmental requirements

**7. Key Competencies****Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	1
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	1
Using technology.	2

## NATIONAL MINING ITAB

## BLACK COAL: OPENCUT COMPETENCY STANDARDS

**Descriptor:** This unit covers the safe use of explosives for the purpose of breaking burden or coal.

<u>Elements</u>	<u>Performance Criteria</u>
O40.1 Plan for Shotfiring.	<p>O40.1.1 Shotfiring work requirements are received, interpreted, clarified and confirmed, if necessary, by preliminary site inspection.</p> <p>O40.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O40.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>O40.1.4 Calculations are carried out to enable pattern design, loading and tie-ing in shots within legislative requirements and site procedures.</p> <p>O40.1.5 Pattern design, loading and tie-ing in is carried out in accordance with legislative requirements and site procedures.</p>
O40.2 Store and Transport Explosives.	<p>O40.2.1 Explosives are stored in facilities which comply with legislative requirements and site procedures.</p> <p>O40.2.2 Inventory control systems are maintained in accordance with legislative requirements and site procedures.</p> <p>O40.2.3 Inspections of the storage and transportation facilities are conducted in accordance with legislative requirements and site procedures.</p> <p>O40.2.4 Transportation of explosives is in accordance with legislative requirements and site procedures.</p>

**MNC.O40.A**

**CONDUCT SHOTFIRING OPERATIONS**

<u>Elements</u>	<u>Performance Criteria</u>
O40.3 Prepare for Shotfiring.	<p>O40.3.1 Blast area is established conforming to legislative requirements and site procedures.</p> <p>O40.3.2 Explosives and accessories are ordered and received in accordance with legislative requirements and site procedures.</p> <p>O40.3.3 Support requirements are coordinated in accordance with legislative requirements and site procedures.</p> <p>O40.3.4 Explosives are prepared and mixed in accordance with legislative and site requirements.</p> <p>O40.3.5 Blasting accessories are obtained and transported to shot site in accordance with legislative requirements and site procedures.</p> <p>O40.3.6 Blast personnel are supervised during loading operations in accordance with legislative requirements and site procedures.</p> <p>O40.3.7 Equipment and accessories are tested in accordance with legislative requirements and site procedures.</p> <p>O40.3.8 Priming, loading and stemming is carried out in accordance with legislative requirements and site procedures.</p>
O40.4 Conduct the Blast.	<p>O40.3.9 Records are maintained and updated in accordance with legislative requirements and site procedures.</p> <p>O40.4.1 Tieing-in is carried out in accordance with the plan.</p> <p>O40.4.2 Pre-blasting procedures are carried out in accordance with legislative requirements and site procedures.</p> <p>O40.4.3 The blast is initiated in accordance with legislative requirements and site procedures.</p> <p>O40.4.4 Post blast inspection is carried out in accordance with legislative requirements and site procedures.</p>

<u>Elements</u>	<u>Performance Criteria</u>
O40.4 Conduct the Blast (Continued).	<p>O40.4.5 Misfires are dealt with in accordance with legislative requirements and site procedures.</p> <p>O40.4.6 All personnel within the blast area are supervised during tie-in and initiation in accordance with legislative requirements and site procedures.</p>
O40.5 Complete the Blast Operation.	<p>O40.5.1 Post blast co-ordination is carried out in accordance with legislative requirements and site procedures.</p> <p>O40.5.2 Reports are completed in accordance with legislative requirements and site procedures.</p>

**Range of Variables :**

- 1 Shotfiring work requirements may include equipment requirements, location, time, transport, safe storage, type and quantity of explosives.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Geological data may include wet or dry holes.
- 4 Calculations may include depth of holes, temperatures, water problems, pattern design and types of explosive.
- 5 Equipment may include vehicles approved for dangerous goods, explosive mixers, earth moving equipment, cable laying equipment, water pumps, lights, witches hats, tapes, signs, pegs, flags, radios, ropes, measuring tape and cutting implements.
- 6 Fencing may be windrow, bundwall, ribbon, tape, witches hats, ropes, flags and pegs.
- 7 Marking can be signs, flags or lights.
- 8 Accessories and specialist tools may include initiators, detonators, leadlines, siren ,radios, vehicles.
- 9 Blasting accessories can be primers, delays, down lines, trunk lines, leading lines, safety fuse, detonators, gas bags, decking, stemming and hole liners.
- 10 Shot site preparation may include area isolation, cleaning up, fencing, marking inspection, measuring holes and dewatering holes.
- 11 Pattern design, loading and tie-ing in will require consideration of geology, hazards, safety distances and margins.
- 12 Inventory control systems may include types and quantities of explosives, shelf life and distribution records.
- 13 Explosives can be wet or dry, variable density, packaged free flowing or bulk.
- 14 Pre-blasting procedures are to include warnings, sentries and area clearance.
- 15 Testing may include electrical and non-electrical.

16 Initiation may be either electrical or non-electrical.

17 Post blasting coordination is to include the return of unused explosives and other equipment, and withdrawal of sentries.



## Evidence Guide

**1. Context of Assessment.** Competency should be assessed in the normal and simulated work environment within the bounds of safety and in accordance with legislative requirements and site procedures.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on shotfiring operations
- c. planning a shot
- d. site preparation
- e. safe transportation and storage of explosives
- f. loading, priming, tie-ing in and firing
- g. technical control of the shot site
- h. sleeping of loaded shot
- i. handling misfires
- j. observance of environmental constraints
- k. maintenance of records and reports

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site and equipment safety procedures
- shotfiring planning processes
- statutory and environmental requirements including vibration, noise, dust and chemicals
- types and characteristics of explosives and protection measures associated with their use
- explosive handling, transportation and storage requirements
- shotfiring equipment characteristics, technical capabilities and limitations

- shotfiring equipment maintenance procedures
- site geological and survey data
- site environmental requirements and constraints related to shotfiring

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- apply eye-hand co-ordination
- read, interpret and apply technical information related to shotfiring
- plan a shot
- calculate explosives requirements
- coordinate all aspects of shot-firing operations
- prepare and mix explosives
- apply diagnostic techniques
- use relevant hand tools
- identify potential hazards
- maintain records and reports
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	1
Using technology.	

## NATIONAL MINING ITAB

## BLACK COAL: OPENCUT COMPETENCY STANDARDS

**Descriptor:** This unit covers the support for shotfiring including the safe handling of explosives, preparation for shot and clean up operations following the shot.

<u>Element</u>	<u>Performance Criteria</u>
O41.1 Plan for Shotfiring.	<p>O41.1.1 Shotfiring requirements are obtained from the shoffirer, interpreted and confirmed.</p> <p>O41.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O41.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>O41.1.4 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>
O41.2 Complete Support Operations.	<p>O41.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O41.2.2 Explosives are prepared and mixed in accordance with legislative requirements and site procedures.</p> <p>O41.2.3 Blasting accessories are obtained and transported to the shot site in accordance with legislative requirements and site procedures.</p> <p>O41.2.4 Shot site is established, secured and isolated in accordance with legislative requirements and site procedures.</p> <p>O41.2.5 The explosive is loaded, stemmed and tied-in in accordance with legislative requirements and site procedures.</p> <p>O41.2.6 Reports and/or records are prepared and processed in accordance with legislative requirements and site procedures.</p>

O41.2.7 Equipment and facilities not required are removed from the shot site in accordance with legislative requirements and site procedures.

**Range of Variables:**

- 1 Shotfiring requirement details may include the detailed directions or essential survey data and locations, essential geological information, equipment requirements, transport and storage issues, timings for preparation, detailed responsibilities and coordination requirements / issues.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Specific safety requirements are to include warnings, sentries, area clearances, safety distances and control / responsibilities.
- 4 Site preparation may include cleaning up, fencing, marking, inspection, measuring holes and dewatering holes.
- 5 Equipment may include vehicles approved for dangerous goods, explosive mixers, earth moving equipment, cable laying equipment, water, pumps, lights, witches hats, tapes, signs, pegs, flags, radios, rope, measuring tape, cutting implements.
- 6 Explosives may be wet or dry, variable density, packaged, free flowing or bulk.
- 7 Fencing may be windrow, bundwall, ribbon, tape, witches hats, ropes, flags or pegs.
- 8 Marking may be signs, flags, lights.
- 9 Blasting accessories may be primers, delays, down lines, trunk lines, leading lines, safety fuse, detonators, gas bags, decking, stemming, hole liner.
- 10 Specialised tools may include approved exploder and other tools.

## Evidence Guide

**1. Context of Assessment.** Competency should be assessed in the work environment in accordance with relevant legislation and site specific rules.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating shotfiring information
- c. selecting and mixing explosives
- d. selecting accessories
- e. preparing the site
- f. loading, stemming and tying-in explosives
- g. handling detonators and explosives
- h. clearing the site

**4. Consistency of Performance.** Consistency of performance will, in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site operational safety requirements
- shotfiring techniques and procedures
- types, characteristics, uses and limitations of explosives
- shotfiring equipment and accessories
- explosive handling, transportation and storage requirements
- site geological and survey data
- hazard identification and response procedures
- site environmental requirements and constraints related to shotfiring

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- read, interpret and apply technical information
- mix and handle explosives requirements
- identify potential hazards
- maintain records
- apply diagnostic techniques
- use relevant and specialist hand tools
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1



MNC.O42.A

EXAMINE AND MAINTAIN MINE SAFETY

**NATIONAL MINING ITAB**

**BLACK COAL: OPENCUT COMPETENCY STANDARDS**

**Descriptor:**                    **This unit describes the roles and tasks of an Open Cut Examiner.**

<u>Elements</u>	<u>Performance Criteria</u>
O42.1 Maintain Familiarity with Operational and Safety Activities.	<p>O42.1.1 Operational information in the form of handover reports, work orders and verbal briefings is obtained, analysed and confirmed.</p> <p>O42.1.2 Operational forecast information related to the work area is obtained from and clarified with the appropriate management authorities.</p> <p>O42.1.3 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>O42.1.4 Site environmental licence and compliance requirements are obtained, interpreted and applied to all relevant work activities.</p> <p>O42.1.5 Safety information and procedures are accessed and applied throughout the work.</p>
O42.2 Examine Operations.	<p>O42.1.6 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>O42.2.1 Inspections are conducted as detailed in legislation/regulations and site procedures.</p> <p>O42.2.2 Instances of regulatory non-compliance or other operational practices which endanger personnel are responded to immediately.</p> <p>O42.2.3 Inspection findings are discussed with responsible parties and responses initiated to restore operational safety and site compliance.</p> <p>O42.2.4 Results of inspections are recorded and the records processed in accordance with legislative requirements and site procedures.</p>

**Range of Variables :**

- 1 Operational information may include mine layout and plan, previous shift inspection reports, personnel and equipment availability, work and equipment locations, production targets and other work requirements, incidents, hazards and potential hazards and coordination requirements/issues.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Coordination may include that to set priorities, to establish liaison channels with supervisors and management and to ensure work and safety requirements are passed to, and reinforced with, operational personnel and contractors.
- 4 Inspections required include all safety aspects of working on or around high walls, low walls, dumps, roads, working faces and stockpiles.

## Evidence Guide

**1. Context of Assessment.** Competency should be assessed in a real work environment over a period of time which permits the effectiveness of application to be evaluated.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. Applying personal and operational safety procedures
- b. Interpreting and communicating information on open-cut operations
- c. Undertaking statutory inspections
- d. Coordinating and monitoring actions and responding to changes
- e. Obtaining, interpreting and acting on information including personnel equipment and production requirements, incidents and problems
- f. Applying site and legislative requirements
- g. Producing and reviewing reports

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- legislative and site requirements and procedures
- site/statutory requirements for inspections
- geological, geographical and survey data
- shotfiring procedures and practices
- equipment characteristics, technical capabilities and limitations
- operational and maintenance procedures
- risk management procedures
- site environmental requirements and constraints

**6. Underpinning Skills.** The ability to:

- read, interpret and apply
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
  - job priorities
- apply geological and survey information
- recognise potential hazards and apply corrective measures according to site/legislative procedures
- provide feedback
- prepare complex technical reports
- investigate and report on incidents

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	1
Solving problems.	2
Using mathematical ideas and techniques.	1
Using technology.	

**MONITOR THE INTERACTION OF  
HEAVY AND LIGHT VEHICLES AND  
MINING EQUIPMENT.**

**NATIONAL MINING ITAB**

**BLACK COAL: GENERAL COMPETENCY STANDARDS**

**Descriptor**            **This unit covers the management of the interaction of vehicles and mining equipment in open cut mines.**

<u>Element</u>	<u>Performance Criteria</u>
O43.1    Plan and prepare for monitoring	<p>O43.1.1 The legislative, statutory and site requirements related to the interaction of vehicles and mining equipment are identified and interpreted.</p> <p>O43.1.2 Site requirements for the interaction of transport systems and equipment are identified and recorded.</p> <p>O43.1.3 The specifications for the required transport systems and equipment are accessed and interpreted.</p> <p>O43.1.4 Roles and responsibilities are identified, clarified and communicated.</p> <p>O43.1.5 Standard operating procedures are accessed and interpreted.</p>
O43.2    Monitor vehicles and equipment	<p>O43.2.1 Effectiveness of policies, plans, procedures and workplace practices are monitored against objectives, timelines, key performance indicators and regulations.</p> <p>O43.2.2 Use of vehicles and equipment is validated and recorded in accordance with the project specifications.</p> <p>O43.2.3 Hazards associated with interaction of transport and equipment are identified, and risks are evaluated and responded to in accordance with established procedures.</p> <p>O43.2.4 Interaction of vehicles and mining equipment is monitored to ensure optimum efficiency.</p> <p>O43.2.5 Hazards associated with interaction of vehicles and mining equipment are monitored in accordance with workplace procedures.</p>

## MNC.043.A

### MONITOR THE INTERACTION OF HEAVY AND LIGHT VEHICLES AND MINING EQUIPMENT.

- O43.3 Monitor and review operations
- O43.1.1 The impact of contingencies is monitored.
  - O43.3.2 Available information from monitoring processes is used to ensure accurate problem identification.
  - O43.3.3 Specialist advice/assistance is obtained where required.
  - O43.3.4 The impact of contingencies is managed.
  - O43.3.5 Rectification requirements are implemented.

Vehicles may include all machines involved in production or those that have access to the operational and trafficable areas at the mine site.

Equipment may include, but not limited to, mobile plant heavy earth moving equipment, Water and service machines, 4 wheel drive passenger vehicles including cars and buses and equipment systems (eg trailers and floats).

Plans, policies and procedures may include: organisational commitment, community consultation and involvement, objectives and targets, surveying program, documentation and records, operational and emergency procedures, responsibility and reporting structure, work environmental impact, regulatory and legal compliance, reviews/audits, significant Incident Alerts.

Legislation, codes, regulations and standards may include: Australian standards, manufacturers' specifications and recommendations, Coal Mining Acts and regulations, Traffic Act, Dangerous Goods Act, occupational health and safety legislation, mine site procedures and safety management systems, driver licensing and authorisation requirements.

Stakeholders may include mine operator, mineworkers, government authorities, community groups, engineers, contractors.

Contingencies may include vehicle and equipment failure, observation errors, operator error, movement of plant or ground, weather, injury, obstructions, changing environment, visibility, parking, overhead power.

#### Evidence Guide

1. Context of assessment: **Competencies should be assessed, wherever possible, during real work activities being completed by the candidate.**

Summative assessment of underpinning knowledge, to the extent as required, and formative assessment of application skills may be conducted through simulations.

2. Interdependence of units

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical aspects of evidence.** Assessment should confirm competency in activities relevant to mine site operations such as:
8. conducting an activity safely and efficiently
  9. achieving quality and productivity targets
  10. apply and observe compliance with relevant legislative (state and federal) requirements and mine site transport rules
  11. risk management issues in relation to vehicle interaction are identified proactively prior to and during operations.

**MNC.043.A**

**MONITOR THE INTERACTION OF  
HEAVY AND LIGHT VEHICLES AND  
MINING EQUIPMENT.**

4. **Consistency of performance** Consistency of performance will in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or physical cost/benefits and to other variable factors. The assessment must satisfy the critical aspects expressed in the units. The dimensions of assessment required to attain and maintain the competencies as current, unless established elsewhere by appropriate authority, should be determined following consideration of the local factors.

5. **Knowledge would include:**

- Accuracy and precision requirements
- limitations of transport, mobile plant and equipment systems
- functions of vehicles and mine equipment
- capabilities and limitations of equipment and vehicles
- project reporting guidelines
- risk management principles
- company organisation
- work role definitions.
- reporting methods and alternatives
- relevant regulations, licenses and permits
- emergency procedures and obligations
- community expectations
- consultative strategies
- alternative documentation systems for procedures.

6. **Skills demonstrated would include:**

- development of responsibility/motivation
- policy management skills
- interpersonal skills
- liaison with other parties
- coordination of others



- information management
- problem solving
- analysis
- use of measuring equipment
- clear report writing
- meeting facilitation.

MNC.043.A

**MONITOR THE INTERACTION OF  
HEAVY AND LIGHT VEHICLES AND  
MINING EQUIPMENT.**

**7. Key Competencies**

<i>Key competency</i>	<i>Level</i>
Collecting, analysing , organising ideas and information.	2
Communication ideas and information.	2
Planning and organizing activities.	2
Working with others in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technologies.	2

## NATIONAL MINING ITAB

## BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor**                    **This unit covers the accurate placement of plant and equipment in open cut mines**

<u>Element</u>	<u>Performance Criteria</u>
O44.1 Plan for the laser levelling	<p>O44.1.1 Design is interpreted to identify laser levelling to be implemented.</p> <p>O44.1.2 Design is checked for internal consistencies.</p> <p>O44.1.3 Stakeholder are identified and contacted according to organisation's guidelines.</p> <p>O44.1.4 Project resources are identified and obtained.</p> <p>O44.1.5 Relevant legal, statutory and site requirements and standards are researched, considered and adhered to.</p>
O44.2 Implement laser levelling	<p>O44.2.1 Heights to be transferred/established are accurately identified.</p> <p>O44.2.2 Heights are transferred to required position/s with aid of electronic receiving staff.</p> <p>O44.2.3 Reporting structures are documented.</p> <p>O44.2.4 Regulations and site requirements that impact upon work operations are documented.</p> <p>O44.2.5 Systems to comply with legislative and statutory requirements are developed and documented.</p> <p>O44.2.6 Operational and emergency procedures are documented.</p> <p>O44.2.7 Stakeholders are identified and contacted according to organisation's guidelines.</p> <p>O44.2.8 Project resources are managed.</p>

## O44.3 Monitor laser levelling

O44.3.1 Effectiveness of policies, plans, procedures and workplace practices are monitored against objectives, timelines, key performance indicators and regulations.

O44.3.2 Identified spatial components are correctly measured using appropriate equipment and technology.

O44.3.3 Measurements are validated and recorded in accordance with the project specifications.

O44.3.4 Measured spatial data is reduced to project spatial reference system for comparison against design.

O44.3.5 Inconsistencies in levelling program are identified.

O44.3.6 The impact of contingencies is monitored.

O44.3.7 Effective use of resources is monitored.

1. Plans, policies and procedures relating to laser levelling may include: organisational commitment, corporate and environment policy, environmental impact assessment, community consultation and involvement, objectives and targets, surveying program, documentation and records, operational and emergency procedures, responsibility and reporting structure, environmental impact, regulatory and legal compliance, emission and performance monitoring and measurement, land reclamation practices.
2. Legislation, codes, regulations and standards may include: Australian standards, environmental agencies regulations, environmental protection acts, isolation procedures, manufacturers' specifications and recommendations, Coal Mining Acts and regulations, occupational health and safety legislation, mine managers' rules.
3. Spatial components may include position, dimension, height, direction, depth, slope, volume, flow rates.
4. Stakeholders may include client, client representatives, government authorities, community groups, engineers, architects, contractors.
5. Contingencies may include equipment failure, observation errors, movement, weather, injury, obstructions.

1. **Context of assessment.** Competencies should be assessed, wherever possible, during real work activities being completed by the candidate.

Summative assessment of underpinning knowledge, to the extent as required, and formative assessment of application skills may be conducted through simulations.

2. **Interdependence of units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical aspects of evidence.** Assessment should confirm competency in activities relevant to mine site operations such as:
  - a. conducting an activity safely and efficiently
  - b. achieving quality and productivity targets
  - c. adhering to and understanding relevant legislative (state and federal) requirements and mine manager's rules
  - d. adhering to and understanding environmental and heritage issues.
  
4. **Consistency of performance.** Consistency of performance will in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or physical cost/benefits and to other variable factors. The assessment must satisfy the critical aspects expressed in the units. The dimensions of assessment required to attain and maintain the competencies as current, unless established elsewhere by appropriate authority, should be determined following consideration of the local factors.
  
5. **Knowledge would include:**
  - measurement techniques
  - Accuracy and precision requirements
  - limitations of equipment, measuring and analysis guidelines
  - project reporting guidelines
  - risk management principles
  - company organisation
  - work role definitions
  - reporting methods and alternatives
  - relevant regulations, licenses and permits
  - emergency procedures and obligations
  - community expectations
  - consultative strategies
  - alternative documentation systems for procedures.
  
6. **Skills demonstrated would include:**
  - use of laser levelling equipment
  - development of responsibility/motivation
  - policy management skills
  - interpersonal skills
  - liaison with other parties
  - coordination of others
  - information management
  - problem solving
  - use of measuring equipment
  - clear report writing
  - meeting facilitation.

## 7. Key Competencies

<i>Key competency</i>	<i>Level</i>
Collecting, analysing , organising ideas and information.	3
Communication ideas and information.	3
Planning and organizing activities.	3
Working with others in teams.	3
Solving problems.	3
Using mathematical ideas and techniques.	3
Using technologies.	3

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

Descriptor: This unit covers the application of environmental plans in a surface mine

<u>Element</u>	<u>Performance Criteria</u>
1 Access environmental management policies, plans and procedures.	1.1 Plans and procedures are accessed in consultation with team members. 1.2 Contingency plans are prepared in the event of the need to vary initial plans and procedures. 1.3 Activities/operations that impact upon the environment are identified. 1.4 Resources, personnel and physical facilities and equipment are determined to support plans and procedures.
2 Apply mine environmental plans and procedures.	2.1 Responsibilities of personnel which may effect persons relevant to the role are documented. 2.2 Reporting structures are documented. 2.3 Environmental regulations that impact upon day to day operations are documented. 2.4 Systems to comply with site and statutory requirements are applied. 2.5 Operational and emergency procedures are documented.



- 3 Monitor mine environmental plans and procedures.
  - 3.1 Environmental plans and procedures and workplace practices are monitored.
  - 3.2 Environmental risk control measures are monitored and results reported.
  - 3.3 Inadequacies in risk control measures are identified and reported.
  - 3.4 Performance of environmental plans and procedures are reported according to statutory requirements and mine management rules.
  - 3.5 Adverse environmental impacts are identified and reported.
  - 3.6 Procedures for dealing with environmental incidents are monitored.
  - 3.7 Records of environmental management plans and procedures are maintained.

### **Range Of Variables**

1. Environmental management plans, policies and procedures may include: organizational commitment, corporate and environment policy, environmental impact assessment, community consultation and involvement, objectives and targets, environmental management programme, documentation and records, operational and emergency procedures, responsibility and reporting structure, environmental impact, regulatory and legal compliance, environmental review audits, emission and performance monitoring and measurement, land reclamation practices.
2. Legislation, codes, regulations and standards may include: Australian standards, environmental agencies regulations, environmental protection acts, isolation procedures, manufacturers' specifications and recommendations, Coal Mining Acts and regulations, occupational health and safety legislation, mine managers' rules.

### **Evidence Guide**

1. **Context of assessment.** Competencies should be assessed, wherever possible, during real work activities being completed by the candidate.

Summative assessment of underpinning knowledge, to the extent as required, and formative assessment of application skills may be conducted through simulations.

2. **Interdependence of units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical aspects of evidence.** Assessment should confirm competency in activities relevant to mine site operations such as:
  - a. conducting an activity safely and efficiently
  - b. achieving quality and productivity targets
  - c. adhering to and understanding relevant legislative (state and federal) requirements and mine manager's rules
  - d. adhering to and understanding environmental and heritage issues.
4. **Consistency of performance.** Consistency of performance will in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or physical cost/benefits and to other variable factors. The assessment must satisfy the critical aspects expressed in the units. The dimensions of assessment required to attain and maintain the competencies as current, unless established elsewhere by appropriate authority, should be determined following consideration of the local factors.

5. **Knowledge would include:**

- company organisation
- work role definitions
- reporting methods and alternatives
- relevant regulations, licences and permits
- high risk activities
- emergency procedures and obligations
- community expectations
- consultative strategies
- alternative documentation systems for procedures.

MNC.O45.A

**APPLY AND MONITOR ENVIRONMENTAL  
MANAGEMENT POLICIES, PLANS AND PROCEDURES**

**6. Skills demonstrated would include:**

- development of responsibility/motivation
- policy management skills
- interpersonal skills
- liaison with other parties
- coordination of others
- clear report writing
- meeting facilitation.

**7. Key Competencies**

<b>Key competency</b>	<b>Level</b>
Collecting, analysing , organising ideas and information.	3
Communication ideas and information.	3
Planning and organizing activities.	3
Working with others in teams.	3
Solving problems.	3
Using mathematical ideas and techniques.	2
Using technologies.	3

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## NATIONAL MINING ITAB

### BLACK COAL: GENERAL COMPETENCY STANDARDS

**Descriptor**                    **This unit covers the monitoring and reporting on the status and maintenance of a mine site mining system.**

	<u>Element</u>	<u>Performance Criteria</u>
O46.1	Plan and prepare for monitoring the application of the mining system	O46.1.1 The legislative, statutory and site requirements related to the site requirements and procedures are accessed, identified and interpreted.
		O46.1.2 Site risk management, OH&S, environment, other appropriate systems and standard operating procedures are accessed and interpreted.
		O46.1.3 The risks associated with unstable mining structures are identified and interpreted.
O46.2	Monitor and report mine development operation	O46.2.1 The application of and the communication of the approved mining system is monitored in accordance with the site requirements and procedures.
		O46.2.2 Mining constraints impacting on the maintenance of stable mining structure are identified and assessed in accordance with the site requirements and procedures.
		O46.2.3 The method of mining is monitored assessed and reported in accordance with site procedures.
		O46.2.4 Strata spoil and dump failures are assessed and reported.
		O46.2.4 The application of the mining sequences is identified and monitored in accordance with the site requirements and procedures.
		O46.2.5 Failure mechanisms including virgin and induced stress control methods are predicted, identified and assessed.
		O46.2.6 Emergency response and evacuation plans and procedures are identified, monitored and reported in accordance with site requirements.
		O46.2.7 Standard operating procedures are identified, monitored and reported in accordance with site requirements.
O46.2.8 Systems audit and review requirements are contributed to in accordance with the site requirements and procedures.		

## MNC.O46A

## MONITOR SYSTEMS AND METHODS OF MINING

O46.3 Monitor waste management procedures	O46.3.1 Surface and groundwater information is identified and assessed.
	O46.3.2 The implementation of the drainage system is monitored and applied in accordance with mine site requirements and environmental regulations.
	O46.3.3 The measures taken to mitigate the impact of water and drainage issues and encourage best practice are monitored and reported.
O46.4 Monitor stockpile formation and reclaiming systems	O46.4.1 Stockpile requirements are identified.
	O46.4.2 Stockpile configuration is monitored and reported according to mine site and environmental compliance.
	O46.4.3 Stockpile operation is monitored and reported to meet mine site requirements and procedures.
O46.5 Identify and communicate hazards related to maintenance procedures	O46.5.1 Hazards relating to the inspection, repair and maintenance activities are identified and rectified in accordance with site requirements and procedures.
	O46.5.2 Maintenance and monitoring requirements and activities are recorded, reported and reviewed in accordance with site requirements and procedures.

### Definitions:

- **Audit** is the validation process to ensure the system, procedures and processes meet the established objectives and are implemented.
- **Mine systems** is the sequences involved in the development of the mining process as specified in the mine design.
- **Risk** is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood. (AS/NZ 4360: 1995).
- **Hazard** is a source of potential harm or a situation with a potential to cause loss.
- **Standard operating procedures (SOP)** are also known as safe working procedures, safe operating procedures and standard working procedures.
- **Mining structures** may include excavations, high walls, low walls, benches, and dumps.

### Range Of Variables

1. Mining systems and methods may include but are not limited to: highwall mining, prestrip, interburden removal, spoil pits, stockpiles, dumps and safety berms, development of coal pits roads and ramps, may involve the use of various mining equipment including draglines, truck and shovel, excavators, bucketwheel, scraper, high wall miners, augers and drills, mining areas which contain heating, coal face protection from blasting, reclamation from spoil dumps, dragline benching

2. Stress includes, but is not limited to, horizontal and vertical tectonic induced stress and mining induced stress.
3. Geological and hydrogeological information includes that related to, but not limited to: subsidence, floor technical data, gas content, over and underlying strata, waterbearing strata, permeability of seam and strata, physical properties, faults, intrusions and deformities.

MNC.O46A

MONITOR SYSTEMS AND METHODS OF MINING

**Range Of Variables ... (contd)**

4. Mine site historical information may include, but not limited to: existence of previous workings within the work seam or other seam, sedimentology aspects of the minesite relating to subsidence, gas content, floor technical data, over and underlying strata, water bearing strata, permeability of seam and strata, hydrology, physical property testing results, joint patterns, faulting.
5. Mine design may include in whole or in part requirements relating to: mine plant, mining induced stress, sequencing, modelling, coal seam grades (dips), geology, fault management, multi-seams, fault drivage, spontaneous combustion, floor technical data, over and underlying strata, subsidence, legislative and statutory requirements.
6. Stable structure controls include, but are not limited to: roads, strength of coal and underlying/overlying strata, stress regimes, strata characteristics, water ingress, systems of mining, direction of mining.
7. Mine site plans, policies and procedures may include: mine site and environment policy, environmental impact assessment, community consultation and involvement, objectives and targets, documentation and records, operational and emergency procedures, responsibility and reporting structure, environmental impact, regulatory and legal compliance, emission and performance monitoring and measurement, land reclamation practices.
8. Legislation, codes, regulations and standards may include: Australian standards, environmental agencies regulations, environmental protection acts, isolation procedures, manufacturers' specifications and recommendations, Coal Mining Acts and regulations, occupational health and safety legislation, other applicable legislation including explosives, gas, electricity, radiation, mine legislation.

Evidence Guide

- Context of assessment. **Competencies should be assessed, wherever possible, during real work activities being completed by the candidate.**

Summative assessment of underpinning knowledge, to the extent as required, and formative assessment of application skills may be conducted through simulations.

- Interdependence of units

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

- Critical aspects of evidence. **The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:**
  - a. monitoring the application of personal and operational safety procedures
  - b. interpreting and communicating information on the stability of mining structures
  - c. identifying and effectively managing risks and hazards associated with mining structures, dumps and stock piles
  - d. evaluating mine site and failure mode historical information relating to the maintenance of stable mining structures
  - e. identifying and assessing geological features
  - f. identifying, monitoring and assessing strata gas characteristics, lithological features, stress regimes coal seam stockpile and waste dump, spontaneous combustion and other methods of heating
  - g. identifying, monitoring and assessing mining system types and methods
  - h. identifying, assessing and reporting mining constraints / equipment requirements
- Consistency of performance. **Consistency of performance will in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or physical cost/benefits and to other variable factors. The assessment must satisfy the critical aspects expressed in the units. The dimensions of assessment required to attain and maintain the competencies as current, unless established elsewhere by appropriate authority, should be determined following consideration of the local factors.**

MNC.O46A

MONITOR SYSTEMS AND METHODS OF MINING

- Knowledge would include:
  - legislative and statutory requirements for mining structures including mine plans, mining methods and safety management plans
  - the systems of mining including.
  - Interpret visual signs of stress including mining induced stress, adverse jointing, fault orientation, spoil characteristics.
  - sedimentology including subsidence, water bearing strata, permeability of seam and strata, hydrology, physical property testing, over and underlying strata
  - mining systems of work
  - stable structure control and maintenance systems
  - geology, hydrogeological, strata and strata gas characteristics
  - coal seam characteristics which may include rank, petrology, moisture, cleat, coal hardness, seam gas, friability, pyrites, depositional factors such as seam formation, seam thickness, multiple and rider seams, fault folding, seam dip and depth of cover
  - basic mechanical, electrical and pressurised fluid safety
  - mining engineering principles
  - audit - inspection, communication and reporting methodologies
  - job safety analysis
  - mine site historical information
  - people management.



- Skills demonstrated would include:
  - access, interpret and apply technical information
  - access and analyse archival and historical strata management information related to the mine and failure mode of mine structures
  - interpret and monitor the application of design criteria for strata management
  - communicate effectively in the workplace
  - apply operational procedures relating to strata management
  - conduct and report on audits and inspections
  - identify and evaluate geological and geotechnical information
- Key Competencies

<i>Key competency</i>	<i>Level</i>
Collecting, analysing, organising ideas and information.	2
Communicating ideas and information.	2
Planning and organizing activities.	2
Working with others in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technologies.	2

**MNC.U011.A  
OPERATIONS**

**CONDUCT FORKLIFT**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the lifting and relocating of loads using a forklift in an underground environment.**

<u>Elements</u>	<b>Performance Criteria</b>
U11.1 Plan and Prepare for Operations.	<p>U11.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U11.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U11.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U11.1.4 Attachments are fitted and removed in accordance with manufacturer's specifications and site requirements.</p>
U11.2	<p>U11.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U11.2.2 Pre-start, start-up, park-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U11.2.3 Forklift is manoeuvred and positioned smoothly in accordance with manufacturer's instructions and site procedures.</p> <p>U11.2.4 Load is secured, lifted, transferred and placed in accordance with manufacturer's instructions and site procedures.</p> <p>U11.2.5 Attachments are used in accordance with manufacturer's specifications and site requirements</p> <p>U11.2.6 Traffic flow and work area conditions are monitored and anticipated to facilitate safe operations and to ensure the most efficient route of travel is selected and used.</p>

<u>Elements</u>	<u>Performance Criteria</u>
U11.2	<p>U11.2.7 Monitoring systems and alarms are acted on or reported in accordance with site instruction/requirements.</p> <p>U11.2.8 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>
U11.3	<p>U11.3.1 Forklift inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U11.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U11.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U11.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U11.3.4 Records are processed in accordance with site requirements.</p>

**Range of Variables:**

- 1 Types of forklift equipment may be diesel or battery powered and have a lifting capacity to 40t and be either fixed or traversing.
- 2 Forklift tasks may include the lifting and transferring of chocks, maingate, tailgate drives and general longwall installation and removal.
- 3 Shift/work detail may include forklift equipment allocation, nature and scope fo the work, working conditions, achievement targets, site lighting arrangements, defects on equipment, hazards and potential hazards and coordination requirements/issues.

- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 5 Specific safety requirements are to include load safety and security, traffic clearance, working within area limitations, boarding and disembarking and operational signal procedures.
- 6 Attachments may include tyre handler, lifting device and slipper forks.
- 7 Site hazards may include underground services, other equipment, obstructions, poor road conditions, water and inadequate lighting.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

- 1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

- 2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - applying personal and operational safety procedures
  - interpreting and communicating information on forklift operations
  - completing forklift equipment pre-start, start-up, park-up and shut-down procedures

Completing essential functions including:

- smooth manoeuvring and positioning of forklift equipment
  - lifting, securing, transferring and positioning of loads
  - applying emergency procedures
  - completing operator maintenance
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
  - 5. Underpinning Knowledge.** A knowledge of:
    - site and equipment safety requirements
    - site/statutory authorisation procedures
    - forklift operational procedures
    - forklift equipment characteristics, technical capabilities and limitations
    - mine ventilation systems and conditions
    - forklift maintenance systems and procedures
    - basic geological and survey data related to forklift operation
    - site environmental requirements and constraints related to forklift operations

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- apply hand-eye coordination in the control of forklift
- apply diagnostic techniques
- use relevant hand tools
- apply environmental constraints and procedures
- dispose of environmentally sensitive oils, fluids and materials
- maintain equipment records

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1



## NATIONAL MINING ITAB

### BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:**                    **This unit covers the start up, operation and shutdown of the power tram.**

<u>Elements</u>	<u>Performance Criteria</u>
U12.1 Plan and Prepare for Operations.	<p>U12.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U12.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U12.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
U12.2 Operate Power Tram.	<p>U12.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U12.2.2 Pre-start, start-up, park-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U12.2.3 Towing procedures are carried out to manufacturer's instructions and site procedures.</p> <p>U12.2.4 Safe operating practices, including operating controls, monitoring gauges and systems conducting safety checks are carried out within manufacturer's instructions and site procedures.</p> <p>U12.2.5 Equipment is operated within limitations as specified by the manufacturer's instructions and site procedures.</p>

	<p>U12.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>U12.2.7 Records are maintained in accordance with site agreements.</p> <p>U12.2.8 Work is completed in accordance with the agreed plan and outcomes and within the operating capacities of the equipment.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
U12.3 Carry Out Operator Maintenance.	<p>U12.3.1 Power tram inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U12.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U12.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U12.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U12.3.5 Records are processed in accordance with site requirements.</p>

**Range of Variables:**

- 1 The power tram may be rubber tyred or skid mounted.
- 2 Shift details may include nature and scope of the work, working conditions, defects on equipment, achievement targets, hazards and potential hazards and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Powertram may be used to relocate continuous miner, mules, shuttle car and ratio feeders.
- 5 Operator (operational) maintenance procedures are those established and authorised for the site.

## **Evidence Guide**

- 1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.
- 2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on power tram operations
  - c. identifying locations where the power tram may not be used
  - d. completing start-up, monitoring, park-up and shut-down procedures
  - e. relocating the power tram
  - f. applying emergency shutdown procedures
  - g. completing operator maintenance
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
- 5. Underpinning Knowledge.** A knowledge of:
- operational safety requirements
  - power tram equipment characteristics, technical capabilities and limitations
  - power tram operational procedures
  - location of equipment relative to working environment
  - ventilation system and conditions
  - power tram maintenance requirements and procedures
  - recording, reporting and handover procedures
  - site environmental requirements and constraints related to power trams
- 6. Underpinning Skills.** The ability to:
- apply operational safety requirements
  - access, interpret and apply technical information
  - start, operate and close down equipment
  - use diagnostic techniques
  - conduct relevant maintenance requirements
  - use hand tools
  - conduct emergency shutdowns
  - maintain appropriate records
  - dispose of environmentally sensitive oils, fluids and materials

**7. Key Competencies****Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor :** This unit covers the operation of all rail vehicles at the minesite.

<u>Elements</u>	<u>Performance Criteria</u>
U13.1 Plan and Prepare for Operations.	<p>U13.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U13.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U13.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
U13.2	<p>U13.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U13.2.2 Pre-start, start-up, park-up, shut-down procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U13.2.3 Vehicle controls and systems are used to ensure smooth and effective operations.</p> <p>U13.2.4 Vehicle is operated within equipment limitations, and gauges and systems are monitored and responded to in accordance with manufacturer's specifications and site procedures.</p> <p>U13.2.5 Personnel or materials to be carried, embark/disembark or are loaded/unloaded safely in accordance with manager's rules.</p>

U31.2	<p>U13.2.6 Towing and pushing of equipment and plant is carried out safely and in accordance with the authorised equipment and connection capabilities.</p> <p>U13.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>U13.2.8 Work is performed in accordance with the agreed plan and outcomes and within the operating capacities of the equipment.</p>
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<p>U13.3 Carry Out Operator Maintenance.</p>	<p>U13.3.1 Rail vehicle inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U13.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U13.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U13.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U13.3.5 Records are processed in accordance with site requirements.</p>
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**Range Of Variables:**

- 1 Rail vehicle types may be either electric drive, mechanical drive, creeper, single or multiple drive.
- 2 Work details may include nature and scope of work, working conditions, achievement targets, site lighting arrangements, defects on equipment, hazards and potential hazards and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include passenger safety and control, load security and safety, transport rules, emergency braking and operational signals procedures.
- 5 Rail vehicle uses may include personnel, material transport and towing equipment.

6 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment **by day and night and in all weather conditions** within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on rail vehicle operations
  - c. completing rail vehicle pre-start, start-up, park-up and shut-down procedures
  - d. loading, securing and unloading materials
  - e. loading and disembarking passengers
  - f. operation of rail vehicle under heavy load
  - g. applying rail vehicle emergency procedures
  - h. completing operator maintenance
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge.** A knowledge of:
  - operational safety requirements
  - rail vehicle equipment characteristics, technical capabilities and limitations
  - rail vehicle operational procedures
  - location of equipment relative to working environment
  - ventilation system and conditions
  - rail vehicle maintenance requirements and procedures
  - recording, reporting and handover procedures
  - site environmental requirements and constraints related to rail vehicles
6. **Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- start, operate and close down equipment
- use diagnostic techniques
- conduct relevant maintenance requirements
- use hand tools
- conduct emergency shutdowns
- maintain appropriate records
- apply environmental constraints and procedures
- dispose of environmentally sensitive oils, fluids and materials

## 7. Key Competencies

## Level

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the operation of all crawler tracked vehicles and plant at the minesite.**

<u>Elements</u>	<u>Performance Criteria</u>
U14.1 Plan and Prepare for Operations.	<p>U14.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U14.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U14.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
U14.2 Operate Equipment and Associated Attachments.	<p>U14.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U14.2.2 Pre-start, start-up, park-up, shut-down procedures are carried out in accordance with manufacturer’s instructions or site procedures.</p> <p>U14.2.3 Vehicle controls and systems are used to ensure smooth and effective operations.</p> <p>U14.2.4 Vehicle is operated within equipment limitations, and gauges and systems are monitored and responded to in accordance with manufacturer’s specifications and site requirements.</p> <p>U14.2.5 Personnel or materials to be carried,</p>

	<p>embark/disembark or are loaded/unloaded safely in accordance with manager's rules.</p> <p>U14.2.6 Towing and pushing of equipment and plant is carried out safely and in accordance with the authorised equipment and connection capabilities.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
<p>U14.2 (Continued).</p> <p>U14.3 Carry Out Operator Maintenance.</p>	<p>U14.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>U14.2.8 Work is performed in accordance with the agreed plan and outcomes and within the operating capacities of the equipment.</p> <p>U14.3.1 Tracked vehicle/plant inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U14.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U14.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U14.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U14.3.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Tracked vehicle/plant types may be electric drive, mechanical drive, pneumatic drive, single or multiple drive.
- 2 Tracked vehicle/plant may include material transport and towing equipment, dozers, drill platforms, breaker-line supports, feeder-breakers and auxiliary fans.

- 3 Work details may include nature and scope of the work, route, working conditions, achievement targets, site lighting arrangements, defects on equipment, hazards and potential hazards and coordination requirements/issues.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 5 Specific safety requirements are to include passenger safety and control, load security and safety, transport rules and operational signals procedures.
- 6 Associated attachments may include drill rigs, forks, winches, cranes, jibs and blades.
- 7 Operator (operational) maintenance procedures are those established and authorised for the site.



**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on tracked vehicle/plant operations
- c. completing tracked vehicle/plant pre-start, start-up, park-up and shut-down procedures
- d. applying equipment/plant controls to effectively complete given tasks
- e. operating within the authorised capabilities and limitations of the vehicle/plant
- f. applying tracked vehicle/plant emergency procedure
- g. completing operator maintenance

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- operational safety requirements
- tracked vehicle/plant equipment characteristics, technical capabilities and limitations
- tracked vehicle/plant operational procedures
- location of equipment relative to working environment
- ventilation system and conditions
- tracked vehicle/plant maintenance requirements and procedures
- recording, reporting and handover procedures
- site environmental requirements and constraints related to tracked vehicle/plants

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- start, operate and close down equipment
- use diagnostic techniques
- conduct relevant maintenance requirements
- use hand tools
- conduct emergency shutdowns
- maintain appropriate records
- apply environmental constraints and procedures
- dispose of environmentally sensitive oils, fluids and materials

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the operation of all wheeled vehicles at the minesite, excluding those included in Units MNC.G60.A – MNC.G70.A

<u>Elements</u>	<u>Performance Criteria</u>
U15.1 Plan and Prepare for Operations.	<p>U15.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U15.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U15.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
U15.2 Operate Vehicles and Associated Attachments.	<p>U15.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U15.2.2 Pre-start, start-up, park-up, shut-down procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U15.2.3 Vehicle controls and systems are used to ensure smooth and effective operations.</p> <p>U15.2.4 Vehicle is operated within equipment limitations, and gauges and systems are monitored and responded to in accordance with manufacturer's specifications and site requirements.</p> <p>U15.2.5 Personnel or materials to be carried, embark/disembark or are loaded/unloaded safely in accordance with manager's rules.</p>

	<p>U15.2.6 Towing and pushing of equipment and plant is carried out safely and in accordance with the authorised equipment and connection capabilities.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
U15.2 Operate Vehicles and Associated Attachments (Continued).	<p>U15.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>U15.2.8 Work is performed in accordance with the agreed plan and outcomes and within the operating capacities of the equipment.</p>
U15.3 Carry Out Operator Maintenance.	<p>U15.3.1 Wheeled vehicle inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U15.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U15.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U15.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U15.3.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Wheeled Mobile Vehicles do not include vehicles covered in Black Coal Units G60 - 70.
- 2 Wheeled vehicle types may be electric drive, mechanical drive, articulated, single or multiple drive.

- 3 Work details may include vehicle identification, nature and scope of the work, route, working conditions, achievement targets, site lighting arrangements, defects on equipment, hazards and potential hazards and coordination requirements/issues.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 5 Specific safety requirements are to include passenger safety and control, load security and safety, transport rules and operational signals procedures.
- 6 Wheeled vehicle competency applications may include transportation of personnel and materials such as chocks, ballast skip (double articulated: articulated points load capacity) and towing of other equipment.

**Range of Variables: (contd)**

- 7 Associated attachments may include drill rigs, forks, cable winders, pods, winches, jibs, ballast skips, cable winders and stone dusters.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on wheeled vehicle operations
  - c. completing wheeled vehicle pre-start, start-up, park-up and shut-down procedures
  - d. safely completing the loading/unloading of materials and/or the loading/disembarking of passengers
  - e. operating the vehicle safely and efficiently to perform specified task
  - f. operating within the vehicles technical limitations
  - g. fitting and using associated attachments
  - h. applying emergency procedures
  - i. completing operator maintenance
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge.** A knowledge of:
  - operational safety requirements



- wheeled vehicle equipment characteristics, technical capabilities and limitations
- wheeled vehicle operational procedures
- location of equipment relative to working environment
- ventilation system and conditions
- wheeled vehicle maintenance requirements and procedures
- recording, reporting and handover procedures
- site environmental requirements and constraints related to wheeled vehicles

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- start, operate and close down equipment
- use diagnostic techniques
- conduct relevant maintenance requirements
- use hand tools
- conduct emergency shutdowns
- maintain appropriate records
- apply environmental constraints and procedures
- dispose of environmentally sensitive oils, fluids and materials

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor: This unit covers the operation of all underground wheeled graders at the minesite.**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U16.1 Plan and Prepare for Operations.</p>	<p>U16.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U16.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U16.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
<p>U16.2 Operate Vehicles and Associated Attachments.</p>	<p>U16.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U16.2.2 Pre-start, start-up, park-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U16.2.3 Grader controls and functions, including blade, tynes, articulation, wheel tilt and manoeuvre are used to complete the work.</p> <p>U16.2.4 Grader is operated within equipment limitations, and gauges and systems are monitored and responded to in accordance with manufacturer's specifications and site procedures.</p> <p>U16.2.5 Towing of equipment and plant is carried out</p>

	safely and in accordance with the authorised equipment and connection capabilities.
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**MNC.U016.A  
OPERATIONS**

**CONDUCT WHEELED GRADER**

<u>Elements</u>	<u>Performance Criteria</u>
U16.2 Operate Vehicles and Associated Attachments(Continued).	<p>U16.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer’s instructions and site procedures.</p> <p>U16.2.7 Work is performed in accordance with the agreed plan and outcomes and within the operating capacities of the equipment.</p>
U16.3 Plan and Prepare for Operations.	<p>U16.3.1 Wheeled grader inspections and faultfinding are carried out in accordance with manufacturer’s instructions and site requirements.</p> <p>U16.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer’s instructions and site authorised procedures and practices.</p> <p>U16.3.3 Minor maintenance is carried out to manufacturer’s instructions and site requirements.</p> <p>U16.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U16.3.5 Records are processed in accordance with site requirements.</p>

**Range of Variables :**

- 1 Work details may include grader identification/allocation, nature and scope fo the work, working conditions, achievement targets, site lighting arrangements, defects on equipment, hazards and potential hazards and coordination requirements/issues.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager’s rules, OH&S policy, codes of practice, manufacturer’s instructions, safe working or job procedures (or equivalent).

- 3 Specific safety requirements are to include boarding and disembarking procedures, raising and lowering of equipment and operational signal procedures.
- 4 Grader tasks may include grade and form roads and pads, maintenance of surfaces, cutting of drains and ripping.
- 5 Operator (operational) maintenance procedures are those established and authorised for the site.
- 6 Materials include coal or dirt.

**Evidence Guide**

- 1. Context of Assessment.** Competency should be assessed in the work within the bounds of safety.

- 2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- applying personal and operational safety procedures
- interpreting and communicating information on grader operations
- completing grader pre-start, start-up, park-up and shut-down procedures
- smooth and efficient operating procedures
- Completing essential functions including:
  - grading and forming roads
  - pad preparation
  - drainage
- completing operator maintenance

- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

- 5. Underpinning Knowledge.** A knowledge of:

- site and equipment safety requirements
- grader equipment characteristics, technical capabilities, limitations
- grader operational procedures
- grader maintenance systems and procedures
- basic geological and survey data
- site environmental requirements and constraints related to grader operations

- 6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information

- maintain equipment records
- apply eye-hand co-ordination
- apply diagnostic techniques.
- use relevant hand tools
- apply environmental constraints in grading operations
- dispose of environmentally sensitive fluids and materials



<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers ventilation surveys, dust and noise sampling and atmospheric analysis.

<u>Elements</u>	<u>Performance Criteria</u>
U26.1 Prepare and Plan for Monitoring.	<p>U26.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U26.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U26.1.3 Materials and resources required for the work area are estimated, obtained, transported and prepared in accordance with the plan and site requirements.</p> <p>U26.1.4 Safety information and procedures are accessed and applied throughout the work.</p>
U26.2 Carry Out Surveys and Sampling.	<p>U26.2.1 Safe work environment is established and monitored throughout the job.</p> <p>U26.2.2 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U26.2.3 Sampling equipment is inspected and tested, to ensure functionality, safety and compliance with specifications and site requirements.</p> <p>U26.2.4 Surveys and sampling are conducted in accordance with site, manufacturer's and legislative requirements.</p> <p>U26.2.5 Hazardous and emergency situations are recognised and responded to in accordance</p>

	with manufacturer's instructions and site procedures.
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<u>Elements</u>	<u>Performance Criteria</u>
U26.3 Conduct Primary Analysis and Respond to Results.	<p>U26.3.1 The results of sampling and surveys, including ventilation and bag samples, are recorded, analysed and compared with specifications and tolerances.</p> <p>U26.3.2 Action to rectify anomalies are initiated or referred/reported to the appropriate authority for further action.</p>
U26.4 Maintain Equipment.	<p>U26.4.1 Monitoring equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U26.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U26.4.3 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 2 Surveys may involve districts, outbyes and surface areas and may be conducted daily, weekly or monthly.
- 3 Surveys may include ventilation surveys, stonedust samples, seal samples, noise readings, atmospheric analysis and respirable dust samples.
- 4 Sampling may involve but is not limited to districts, outbyes and surface areas and may be conducted by fixed monitoring, volumetric monitoring, personnel monitoring or hand held instruments.
- 5 Primary analysis is that which may be conducted at the mine without recourse to an outside agency. It may include ventilation survey results or bag samples.

6 Operator (operational) maintenance procedures are those established and authorised for the site.

### Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on environmental monitoring
- c. selecting, inspecting and testing sampling equipment
- d. conducting sampling and surveys
- e. reading, interpreting and reporting/recording analytical data
- f. reacting to survey/sample results
- g. maintaining monitoring equipment

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site operational safety procedures
- site and legislative requirements
- survey and sampling methods
- characteristics of samples taken
- tools and sampling equipment and use
- computers for analysis input
- stored gases
- mine plan
- geological and survey data
- monitoring equipment maintenance systems and procedures
- site environmental requirements and constraints related to monitoring

6. **Underpinning Skills.** The ability to:

- apply operational safety requirements
- read mine plan
- operate sampling tools and equipment
- operate computers
- read, interpret and report/record results
- calibrate and test instruments
- comply with environmental requirements

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	2
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	2



NATIONAL MINING ITAB

BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the installation, maintenance and recovery of gas draining systems excluding drilling operations.

<u>Elements</u>	<u>Performance Criteria</u>
U40.1 Plan and Prepare for Operations.	<p>U40.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U40.1.2 Safety information and procedures are accessed and applied throughout the work.</p> <p>U40.1.3 Materials and resources required for the work are obtained, transported and prepared in accordance with the plan and relevant manufacturer's or site requirements.</p>
U40.2 Install and Recover Services.	<p>U40.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U40.2.2 Safe work environment is established and monitored throughout the job.</p> <p>U40.2.3 Services are installed in accordance with site specific installation instructions and practices.</p> <p>U40.2.4 Services are identified and masked in accordance with site hazards.</p> <p>U40.2.5 Installation is inspected and tested to ensure functionality, safety and compliance with specifications.</p> <p>U40.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site</p>

	<p>procedures.</p> <p>U40.2.7 Services are recovered systematically, in accordance with authorised mine procedures and with minimal loss and damage to the recovered equipment and the site.</p>
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**MNC.U040.A  
SYSTEMS**

**INSTALL, MAINTAIN AND RECOVER GAS DRAINAGE**

<u>Elements</u>	<u>Performance Criteria</u>
U40.3 Carry Out Operator Maintenance.	U40.3.1 Services are inspected and maintained in accordance with legislative requirements and site procedures.  U40.3.2 Reports on gas drainage maintenance requirements are processed in accordance with legislative requirements and site procedures.

**Range Of Variables:**

- 1 Gas to be drained may include methane, carbon dioxide and other seam gases.
- 2 Method of drainage may be vacuum or free flow.
- 3 Work requirements may include nature and scope of job, hazards and work environment, related work activities and sequencing of work.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 5 Specific safety requirements are to include observance of safety tagging procedures and isolation.
- 6 Materials required may be bolted pipes, vitaulic pipes, AS clamps, earthing equipment, hand tools, clearance indicators, material handling machinery, indicator and warning signals, hanging and support materials, water/coal fines separator, FRAS hose, valves and outlets, flame arrestor or breathing apparatus.
- 7 Signalling may be by lights, hand, whistles, bells or site specific arrangements.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment **by day and night and in all weather conditions** within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on gas drainage and systems operations
  - c. Completing essential functions including:
    - site preparation
    - material handling and lifting
    - installing, maintaining and recovering gas drainage systems
    - isolating and tagging
  - d. completing operator maintenance
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge.** A knowledge of:
  - site operational safety procedures
  - statutory and environmental requirements related to gas drainage
  - site operational procedures
  - gas characteristics
  - gas related safety requirements and emergency procedures
  - gas drainage installation, recovery and maintenance techniques
  - gas drainage equipment characteristics, technical capabilities and limitations
  - gas drainage operational and maintenance procedures

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- read, interpret and apply technical information
- install, maintain and recover equipment
- identify potential hazards
- identify defects
- isolate, tag and drain
- use relevant hand tools
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the installation and recovery of electrical distribution systems.**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U41.1 Plan and Prepare for Operations.</p>	<p>U41.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U41.1.2 Safety information and procedures are accessed and applied throughout the work.</p> <p>U41.1.3 Materials and resources required for the work are obtained, transported and prepared in accordance with the plan and relevant manufacturer's or site requirements.</p>
<p>U41.2 Install and Recover Services.</p>	<p>U41.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U41.2.2 Services are installed in accordance with site specific installation instructions and practices.</p> <p>U41.2.3 Installation is inspected and checked, to ensure functionality, safety and compliance with specifications.</p> <p>U41.2.4 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>U41.2.5 Services are recovered systematically, in accordance with authorised mine procedures and with minimal loss and damage to the recovered equipment and the site.</p>

	U41.2.6 Site restoration and housekeeping is completed in accordance with site procedures/practices.
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<u>Elements</u>	<u>Performance Criteria</u>
U41.3 Carry Out Operator Maintenance.	<p>U41.3.1 Services are inspected and maintained in accordance with mine site and legislative requirements.</p> <p>U41.3.2 Reports on electrical services maintenance requirements are processed in accordance with site procedures.</p>

**Range Of Variables:**

- 1 Electrical services, installation, maintenance and recovery covered by this unit **does not include** working with live power or any other allied function for which the individual is not specifically authorised.
- 2 Electrical services and materials may include transformer, distribution boxes, motors, starters, lighting, communication devices, HT cables, feeder cables, supply cables, communication devices, cable joiners and cable ties.
- 3 Work requirement details may include the nature and scope of the work, equipment and plant (including any defects), achievement targets, related work activities, routes/plans, sequencing, working conditions, hazards and potential hazards, and coordination requirements/issues.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 5 Specific safety requirements are to include observance of safety tagging procedures, electrical isolation requirements and operational signal procedures.
- 6 Equipment/plant required to support the operation may include cable reelers (machine mounted, skid mounted, air or hydraulic powered), cable baskets (machine mounted, skid mounted) and vehicles (load haul dump and multi-purpose).
- 7 Support materials may include fences, barriers, guards, fire extinguishers, signs, notices and tools.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.

## **Evidence Guide**

- 1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.
- 2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on electrical services operations
  - c. preparing for the allocated work
  - d. isolating and tagging procedures
  - e. Completing essential functions including:
    - identifying and obtaining electrical service materials and resources
    - completing coordination requirements
    - installing a range of service components
    - recovering a range of service components
  - f. completing operator maintenance
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
- 5. Underpinning Knowledge.** A knowledge of:
- statutory electrical safety requirements
  - operational safety requirements
  - site operational procedures
  - electrical services' componentry, its characteristics and uses
  - electrical services installation and recovery procedures
  - electrical services' maintenance procedures
  - isolation and tag out procedures
  - site environmental requirements and constraints related to electrical services
- 6. Underpinning Skills.** The ability to:
- apply operational safety requirements
  - access, read, interpret and apply technical information
  - isolate and tag
  - identify hazards/potential hazards
  - apply equipment handling techniques
  - use hand tools
  - install, maintain and recover electrical componentry
  - identify defects and damage

- observe signalling procedures
- comply with environmental requirements

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**MNC.U042.A INSTALL, MAINTAIN AND RECOVER WATER AND AIR SYSTEMS**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:**                      **This unit covers the installation, maintenance and recovery of fluid and compressed air systems.**

<u>Elements</u>	<u>Performance Criteria</u>
U42.1 Plan and Prepare for Operations.	<div style="border: 1px solid black; padding: 2px;">                     U42.1.1                      Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.                 </div> <p>U42.1.2 Safety information and procedures are accessed and applied throughout the work.</p> <p>U42.1.3 Materials and resources required for the work are obtained, transported and prepared in accordance with the plan and relevant manufacturer's or site requirements.</p>
U42.2 Install and Recover Services.	<p>U42.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U42.2.2 Pre-start, start-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U42.2.3 Services are installed in accordance with site specific installation instructions and practices.</p> <p>U42.2.4 Installation is inspected and tested to ensure functionality, safety and compliance with specifications.</p> <p>U42.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>

	<p>U42.2.6 Services are recovered systematically, in accordance with authorised mine procedures and with minimal loss and damage to the recovered equipment and the site.</p> <p>U42.2.7 Site restoration and housekeeping is completed in accordance with site procedures/practices.</p>
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## MNC.U042.A INSTALL, MAINTAIN AND RECOVER WATER AND AIR SYSTEMS

<u>Elements</u>	<u>Performance Criteria</u>
U42.3 Carry Out Operator Maintenance.	U42.3.1 Services are inspected and maintained in accordance with mine site and legislative requirements.  U42.3.2 Reports on maintenance requirements are made in accordance with site procedures and legal requirements.

### Range Of Variables:

- 1 Work requirement details may include the nature and scope of work, equipment and plant (including any defects), achievement targets, related work activities, routes/plans, sequencing, working conditions, hazards and potential hazards, and coordination requirements/issues.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Specific safety requirements are to include observance of safety tagging procedures, isolation of existing systems and services and operational signal procedures.
- 4 Materials may include pipes, hoses, hydraulic hoses, clamps, hand tools, chains, rope, nylon straps, taps, fire hydrants, valves, hanging and support materials.
- 5 Equipment/plant required to support the operation may include cable reelers (machine mounted, skid mounted, air or hydraulic powered), and vehicles (load haul dump, multi-purpose and pipe handling trailer).
- 6 Operator (operational) maintenance procedures are those established and authorised for the site.

### **Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.
2. **Inter-dependent Assessment of Units**



Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

## MNC.U042.A INSTALL, MAINTAIN AND RECOVER WATER AND AIR SYSTEMS

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on water and air systems operations
  - c. isolating, de-energising and tagging.
  - d. completing pre-start, start-up and shut-down procedures on support equipment/plant

Completing essential functions including:

- e. identifying and obtaining water and air systems materials and resources
  - f. completing coordination requirements
  - g. installing a range of system components
  - h. recovering a range of system components
  - i. Completing operator maintenance.
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

- 5. Underpinning Knowledge.** A knowledge of:

- statutory requirements for air/water systems
- operational safety requirements
- mine operational procedures
- water and air systems componentry, its characteristics and uses
- water and air systems installation and recovery procedures
- water and air systems maintenance procedures
- lifting techniques
- signalling procedures
- site environmental requirements and constraints related to water/air services

- 6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, read, interpret and apply technical information
- isolate and tag
- identify hazards/potential hazards
- apply equipment handling techniques

- use hand tools
- install, maintain and recover equipment and materials
- identify defects and damage
- observe signalling procedures
- comply with environmental requirements

## MNC.U042.A INSTALL, MAINTAIN AND RECOVER WATER AND AIR SYSTEMS

### 7. Key Competencies

### Level

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers working through faults, dykes, and high stress zones.

<u>Elements</u>	<u>Performance Criteria</u>
U44.1 Plan and Prepare.	<p>U44.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U44.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U44.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
U44.2 Construct Special Roadways.	<p>U44.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U44.2.2 Pre-start, start-up park-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U44.2.3 Equipment is operated according to manufacturer's specifications and site requirements.</p> <p>U44.2.4 Roadways/headings are formed to sequence and site conditions, maintaining line and level in accordance with the development plan.</p> <p>U44.2.5 Changes to geological conditions are monitored and ventilation is maintained in accordance with site requirements.</p> <p>U44.2.6 Hazardous and emergency situations are recognised and responded to in accordance</p>

<p>U44.3 Brush Floor and Roof.</p>	<p>with manufacturer's instructions and site procedures.</p> <p>U44.3.1 Survey marks and roof and rib support rules are observed in accordance with site requirements.</p> <p>U44.3.2 Roadways/headings are profiled to sequence and site conditions, maintaining line and level in accordance with the development plan.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
U44.4 Carry Out Maintenance. Operator	<p>U44.4.1 Equipment/plant inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U44.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U44.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U44.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U44.4.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Work requirement details may include nature and scope of task, achievement targets, locations, headings and other essential survey information, working and geological conditions, ventilation conditions, equipment/plant allocation (including any defects), other resources, hazards and potential hazards and coordination requirements/issues.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Hazards and potential hazards include gas accumulation, water, floor, roof and rib (strata) requirements.
- 4 Roadways may be formed or profiled by cutting machines, drilling or blasting.
- 5 Equipment and materials may include continuous miner, shuttlecars, drills, explosives and shearer.

6 Operator (operational) maintenance procedures are those established and authorised for the site.

### **Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the normal work or simulated work environment within the bounds of safety.



**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying operational safety requirements
- b. interpreting and applying relevant geological and survey data and mine plans
- c. ensuring roadway meets mine plan and specifications
- d. identifying and responding to changing environmental conditions
- e. applying special or additional roof, rib and/or floor support
- f. maintaining dust suppression
- g. providing ventilation to meet special requirements

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.**5. Underpinning Knowledge.** A knowledge of:

- operational safety requirements
- geological features of special conditions including faults, dykes and high stress zones
- mine operational procedures
- the impact of changing conditions on equipment plant and mining operations
- support techniques and their applications in special operations
- ventilation techniques for special operations

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information and plans
- predict likely changes in roadway conditions and geology
- operate plant and equipment efficiently in special and difficult conditions
- interpret and apply survey data

## MNC.U042.A INSTALL, MAINTAIN AND RECOVER WATER AND AIR SYSTEMS

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	1
Using mathematical ideas and techniques.	2
Using technology.	

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the non-routine recovery of buried and immobilised equipment.

<u>Elements</u>	<u>Performance Criteria</u>
U45.1 Plan and Prepare for Operations.	<p>U45.1.1 Details of the recovery requirement are obtained, interpreted and clarified.</p> <p>U45.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U45.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U45.1.4 A recovery plan is prepared, confirmed as necessary by site inspection and appropriate authorisation obtained before proceeding.</p> <p>U45.1.5 Materials and resources required for the work are estimated, obtained, transported and prepared in accordance with the plan and manufacturer's and site requirements.</p> <p>U45.1.6 Work site is prepared in accordance with site procedures, to ensure a safe work environment and to enable compliance with job plan/instructions.</p>
U45.2 Recover Equipment.	<p>U45.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U45.2.2 Pre-start, start-up park-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U45.2.3 Recovery equipment and special services are installed in accordance with manufacturer's</p>

	<p>instructions and site specific installation procedures.</p> <p>U45.2.4 Equipment is recovered systematically, using approved methods and equipment in accordance with authorised mine procedures and with minimal loss and damage to equipment.</p> <p>U45.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
U45.2 Recover Equipment (Continued)	U45.2.6 Recovered equipment is placed into the designated holding area.
U45.3 Carry Out Operator Maintenance on Recovery Equipment/Plant.	<p>U45.3.1 Recovery equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U45.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U45.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U45.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U45.3.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Details of the recovery requirement may include the equipment to be recovered, the location of the buried equipment, the extent to which it is buried, the known impact on strata control and ventilation, recovery equipment/plant/resource availability, access ways and routes, site control arrangements, site lighting arrangements, time constraints or targets, cost-benefit limits to be observed and coordination requirements/issues.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Specific safety requirements are to include formal risk assessment and control processes, and may include securing and guarding the work area and accesses, site lighting arrangements, dangers of material under tension and strata support systems.

- 4 Method of recovery may include pulling, excavating and spilling.
- 5 Equipment/plant used for non-routine recovery may include machinery, mine extraction device, hydraulic mine puller, load haul dumps, shuttlecar, breaker line support and mine dozer.
- 6 Devices and materials used to support non-routine recovery operations may include winches, block and tackle, chains, timber and bolters.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work or simulated work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Nil

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on non-routine equipment recovery operations
- c. confirming the feasibility of the recovery plan/method
- d. completing pre-start, start-up, park-up and shut-down procedures
- e. obtaining and moving equipment and resources to the site
- f. preparing the work site for safe operations
- g. placing and installing recovery equipment/plant/services
- h. applying the recovery method
- i. monitoring and adjusting the recovery process to meet changing requirements
- j. inspecting and removing recovered equipment
- k. reporting on equipment and site condition
- l. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- operational safety requirements
- mine operational procedures
- geological and environmental conditions in the recovery area
- risk management process
- potential hazards and remedial or response actions
- a range of available recovery methods
- recovery equipment and materials capabilities and characteristics
- loss and damage causes and control techniques
- recovery site control procedures

- operational signalling procedures
- mine communication systems and procedures



**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical and geological information
- communicate and co-ordinate activities with others
- apply risk analysis processes
- analyse recovery methods suitable to the situation
- operate equipment
- anticipate potential hazards
- analyse and respond to changing circumstances
- apply diagnostic techniques
- use hand tools

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	1
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor: This unit covers the transportation of personnel and materials in shaft and drift operations.**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U46.1 Plan and Prepare for Operations.</p>	<p>U46.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U46.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U46.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U46.1.4 Pre-start, start-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p>
<p>U46.2 Transport Personnel and Materials.</p>	<p>U46.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U46.2.2 A safe work environment is established and monitored throughout the job by compliance with procedures and rules for the loading and transportation of personnel and materials.</p> <p>U46.2.3 Controls are operated in accordance with manufacturer's instructions and site procedures.</p> <p>U46.2.4 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site</p>

	<p>procedures.</p> <p>U46.2.5 Work is performed in accordance with targets or schedules and within the safe operating capacities of the allocated equipment.</p>
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<u>Elements</u>		<u>Performance Criteria</u>
U46.3	Carry Out Maintenance. Operator	<p>U46.3.1 Winding equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U46.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U46.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U46.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U46.3.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Winding operations may include shaft and drift, and may be electrical or diesel powered.
- 2 Haulage includes equipment and/or personnel.
- 3 Work requirement details may include transportation forecasts and schedules, notices of personnel rosters, notices of visitors requiring transport, special ad hoc tasks/loads, equipment defect reports, hazards and potential hazards and coordination requirements/issues.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 5 Specific safety requirements are to include load and speed limits, embarking and disembarking procedures, signalling procedures, personnel carrying limits, load security and restraints and inspection requirements.

6 Operator (operational) maintenance procedures are those established and authorised for the site.

### **Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on winding operations
  - c. preparing for winding operations
  - d. loading and securing equipment
  - e. embarking and disembarking passengers
  - f. operating equipment within technical limitations
  - g. applying emergency procedures
  - h. applying signal communications procedures
  - i. completing operational maintenance
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
- 5. Underpinning Knowledge.** A knowledge of:
- site personal and safety procedures
  - winding equipment characteristics, capabilities and limitations
  - mine winding rules or equivalent
  - emergency plans and procedures related to winding operations
  - load criteria, limits and security (both materials and personnel)
  - winding systems maintenance systems and procedures
  - signal systems
  - slinging and loading techniques
  - site environmental requirements and constraints related to winding operations
- 6. Underpinning Skills.** The ability to:
- apply personal and operational safety requirements
  - access, interpret and apply technical information
  - apply mine traffic rules
  - apply loading techniques
  - apply communications and signal procedures
  - apply hand-eye coordination
  - conduct inspections of rope and cage/shaft as applicable
  - apply diagnostic techniques
  - use relevant hand tools
  - comply with environmental requirements

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**MNC.U048.A**

**CONDUCT SHOTFIRING**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**



**Descriptor:**

**This unit covers the safe use of explosives and procedures for shotfiring.**

<u>Elements</u>	<u>Performance Criteria</u>
U48.1 Plan for Shotfiring.	<p>U48.1.1 Shotfiring requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified.</p> <p>U48.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U48.1.3 Safety information and procedures are accessed and applied throughout the operations.</p> <p>U48.1.4 Calculations are carried out to enable pattern design, loading and wiring of shots within site and legislative requirements.</p>
U48.2 Store and Transport Explosives.	<p>U48.1.5 Pattern design, including loading, stemming and wiring requirements, is completed.</p> <p>U48.2.1 Explosives are stored in facilities which comply with legislative and site requirements.</p> <p>U48.2.2 Explosives inventory control systems are maintained in accordance with legislative requirements and site procedures.</p> <p>U48.2.3 Inspections of the storage and transportation facilities are conducted in accordance with legislative requirements and site procedures.</p>
U48.3 Prepare for Shotfiring.	<p>U48.2.4 Transportation of explosives is in accordance with legislative requirements and site procedures.</p> <p>U48.3.1 Blast area and procedures conform to legislative requirements and site procedures.</p> <p>U48.3.2 Explosives and accessories are ordered and received to conform to legislative requirements and site procedures.</p> <p>U48.3.3 Blast personnel are supervised during loading operations in accordance with legislative requirements and site procedures.</p>

<u>Elements</u>	<u>Performance Criteria</u>
U48.3 Prepare for Shotfiring (Continued).	<p>U48.3.4 Equipment and accessories are tested in accordance with legislative requirements and site procedures.</p> <p>U48.3.5 Priming, loading and stemming is carried out in accordance with legislative requirements and site procedures.</p> <p>U48.3.6 All personnel within the blast area are supervised during wiring and initiation in accordance with legislative requirements and site procedures.</p>
U48.4 Conduct the Blast.	<p>U48.4.1 Wiring is carried out in accordance with the approved plan.</p> <p>U48.4.2 Pre-blasting procedures are carried out in accordance with legislative requirements and site procedures.</p> <p>U48.4.3 The blast is initiated in accordance with legislative requirements and site procedures.</p> <p>U48.4.4 Post-blast inspection is carried out according to legislative requirements and site procedures.</p>
U48.5 Complete the Blast Operation.	<p>U48.4.5 Misfires are dealt with in accordance with legislative requirements and site procedures.</p> <p>U48.5.1 Post-blast co-ordination is carried out in accordance with legislative requirements and site procedures.</p> <p>U48.5.2 Reports are completed in accordance with legislative requirements and site procedures.</p>

**Range of Variables:**

- 1 Shotfiring requirement details may include the nature and scope of the blasting, essential geological information, essential survey information, site environmental conditions,

detailed timings for the blast, detailed responsibilities and coordination requirements / issues.

- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Specific safety requirements are to include warnings, sentries, area clearances, safety distances and control / responsibilities.
- 4 Pattern design, including loading and wiring requirements, may require reference to and consideration of geology, hazards, safety distances and margins, environmental licence conditions and other legislative requirements.
- 5 Calculations may include depth of holes, temperatures, water problems, spacing holes, types of explosive.

**Range of Variables: (contd)**

- 6 Accessories may include exploder, detonators, shotfiring cable and stemming equipment used in treating misfires.
- 7 Testing includes the use of approved testing equipment.
- 8 Explosives inventory control systems are to comply with legislative requirements which may include types of explosives, quantities of explosives, shelf life and distribution records and details.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work and simulated work environment in accordance with relevant legislation and site procedures. Some aspects, for example, dealing with misfires may be handled under simulated conditions.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal operational safety procedures
- b. interpreting and communicating operational shotfiring information
- c. identifying gas concentrations
- d. ensuring adequate ventilation
- e. planning the shot
- f. preparing and maintaining the shot
- g. transporting and storing explosives
- h. loading, stemming, wiring-in and firing the shot
- i. carrying out post-blast inspection and dealing with misfires

**4. Consistency of Performance.** Consistency of performance will, in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site personnel and operational safety requirements
- statutory and minesite shotfiring requirements
- types and characteristics of explosives and protection measures associated with their use
- shotfiring techniques, planning processes and procedures
- explosive handling, transportation and storage requirements
- shotfiring equipment characteristics, technical capabilities and limitations, site operational and maintenance procedures
- geological and survey data essential to shotfiring
- site environmental requirements and constraints related to shotfiring

**6. Underpinning Skills.** The ability to:

- apply personal and operational safety requirements
- read, interpret and apply technical information
- plan a shot
- calculate explosives requirements
- identify potential hazards
- coordinate and supervise all aspects of shot-firing operations
- maintain records
- apply diagnostic techniques
- use relevant and specialist hand tools
- comply with environmental requirements

**7. Key Competencies****Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	1
Using technology.	

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the support for shotfiring including the safe use of explosives, preparation for shot and clean up operations following the shot.

<u>Element</u>	<b>Performance Criteria</b>
U49.1 Plan for Shotfiring.	U49.1.1 Shotfiring requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified.  U49.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.  U49.1.3 Safety information and procedures are accessed and applied throughout the work.
U49.2 Prepare the Shot Site.	U49.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.  U49.2.2 Shot site is established, secured and isolated in accordance with legislative requirements and site procedures.  U49.2.3 Holes are drilled to authorised pattern design, with specific reference to geology, hazards, safety.  U49.2.4 Drill holes are flushed or cleaned and tested in accordance with legislative requirements and site procedures.  U49.2.5 Stone-dust is applied in accordance with legislative requirements and site procedures.  U49.2.6 The explosive is loaded and stemmed in accordance with legislative requirements and site procedures.
U49.3 Clear the Site.	



U49.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.

U49.3.1 Equipment and facilities not required are removed from the shot site in accordance with legislative requirements and site procedures.

U49.3.2 Following the initiation of the blast the shot site is secured and mucked out.

**Range of Variables:**

- 1 Shotfiring requirement details may include the authorised pattern, detailed directions on essential survey data and locations, essential geological information, timings for preparation, detailed responsibilities and coordination requirements / issues.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Specific safety requirements are to include warnings, sentries, area clearances, safety distances and control / responsibilities.
- 4 Accessories may include detonators, shotfiring cable, crack detector, stemming rod and stemming.
- 5 Drilling equipment may include hand borer, air tracks, hand held drilling equipment (air, hydraulic) and machine mounted drilling equipment.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment in accordance with relevant legislation and site specific rules.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal operational safety procedures
- b. interpreting and communicating shotfiring information
- c. preparing the site
- d. drilling, cleaning and testing holes
- e. loading and stemming explosives
- f. handling detonators and explosives
- g. stonedusting
- h. clearing the site

**4. Consistency of Performance.** Consistency of performance will, in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human

or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site personnel and operational safety requirements
- statutory and minesite shotfiring requirements
- types and characteristics of explosives and protection measures associated with their use
- shotfiring techniques and procedures
- explosive handling, transportation and storage requirements
- shotfiring equipment characteristics, technical capabilities and limitations, site operational and maintenance procedures
- geological and survey data essential to shotfiring
- site environmental requirements and constraints related to shotfiring

**6. Underpinning Skills.** The ability to:

- apply personal and operational safety requirements
- access, interpret and apply technical information
- interpret geological and survey data
- drill to pattern
- clean and test holes
- handle explosives and detonators
- use tools required to complete task
- comply with environmental requirements

**7. Key Competencies****Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

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## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the operation of rotational drilling equipment.

<u>Elements</u>	<u>Performance Criteria</u>
U50.1 Plan and Prepare for Operations.	<p>U50.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U50.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U50.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U50.1.4 Materials and resources required for the work are obtained, transported and prepared in accordance with manufacturers and site requirements and legislative requirements.</p> <p>U50.1.5 Work site and equipment are prepared in accordance with site requirements.</p>
U50.2 Operate Drilling Equipment.	<p>U50.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U50.2.2 Pre-start, start-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U50.2.3 Drilling equipment is operated in accordance with manufacturer's instructions or site specific instructions to carry out the function of rotary drilling.</p>

	<p>U50.2.4 Findings and anomalies are recorded and reported in accordance with site specific requirements.</p> <p>U50.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
U50.3 Carry Out Operator Maintenance	<p>U50.3.1 Drilling equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U50.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U50.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U50.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U50.3.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Drill power types may be electric, air or hydraulic.
- 2 Drilling may be for geological exploration, old workings, water or gas.
- 3 Work details may include nature and scope of work, sequencing of operations, achievement targets, locations and essential survey information, working conditions, geological conditions, hazards and potential hazards and coordination requirements/issues.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 5 Site requirements may include SOPs and work instructions.



- 6 Rotary drilling may include collaring, reaming, drilling, coring, core recovery, rod retrieval, standpiping, connecting hose to suction and monitoring suction.
- 7 Hazardous situations may include pollution of work station by release of seam gas, rotating parts, ejection of material from hole, inrush and rod ejection.
- 8 Reports may include logs, work completed, equipment defects and requirements.
- 9 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the normal work or simulated work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on rotational drilling operations
- c. completing pre-start, start-up and shut-down procedures
- d. Completing essential functions including:
  - installing and recovering equipment
  - identifying hazards and potential hazards
  - operating the drilling equipment
  - interpreting and reporting geological and survey information
- h. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site operational safety procedures
- site drilling operations
- drilling equipment characteristics and limitations
- isolation and tagging procedures
- mine gases
- outburst phenomena
- ventilation principles
- geological and survey data
- down hole motor drilling
- down hole survey and logging
- visual inspection procedures

- site drilling equipment maintenance systems and procedures
- recording and reporting
- site environmental requirements and constraints related to drilling

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- read, interpret and apply technical information
- isolate and tag
- install, maintain and recover drilling equipment
- apply geological and survey data
- identify hazards and potential hazards
- read gas detection equipment
- apply emergency procedures
- identify defects and damage
- maintain records and reports
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the operation of down hole motor drilling.

<u>Elements</u>	<u>Performance Criteria</u>
U51.1 Plan and Prepare for Operations.	<p>U51.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U51.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U51.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U51.1.4 Materials and resources required for the work are obtained, transported and prepared in accordance with manufacturer's and site requirements and legislative requirements.</p> <p>U51.1.5 Work site and equipment are prepared in accordance with site requirements.</p>
U51.2 Operate Directional Drilling Equipment.	<p>U51.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U51.2.2 Down hole motor is set up prior to drilling, in accordance with manufacturer's specifications and the work plan to establish and maintain directional control.</p> <p>U51.2.3 Pre-start, start-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U51.2.4 Controls are operated in accordance with</p>

	machine/manufacture's instructions and/or site specific requirements.
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<u>Elements</u>	<u>Performance Criteria</u>
U51.2 Operate Directional Drilling Equipment (Continued).	<p>U51.2.5 Drilling equipment is operated in accordance with manufacturer's instructions or site specific instructions to carry out the function of directional drilling.</p> <p>U51.2.6 Findings and anomalies are identified, mapped, recorded and reported in accordance with site specific requirements.</p> <p>U51.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>U51.2.8 Work is completed in accordance with agreed plan and outcomes and within the operating capacities of the allocated equipment.</p>
U51.3 Carry Out Operator Maintenance.	<p>U51.3.1 Drilling equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U51.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U51.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U51.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U51.3.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Drill power types may be electric, air or hydraulic.
- 2 Drilling may be for geological exploration, old workings, water or gas.
- 3 Work details may include nature and scope of work, sequencing of operations, achievement targets, locations and essential survey information, working conditions, geological conditions, hazards and potential hazards and coordination requirements/issues.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 5 Site requirements may include SOPs and work instructions.

**MNC.U051.A**

**CONDUCT DIRECTIONAL DRILLING**

**Range of Variables: (contd)**

- 6 Rotary drilling may include collaring, reaming, drilling, coring, core recovery, rod retrieval, standpiping, connecting hose to suction and monitoring suction.
- 7 Hazardous situations may include pollution of work station by release of seam gas, rotating parts, ejection of material from hole, inrush and rod ejection.
- 8 Reports may include logs, work completed, equipment defects and requirements.
- 9 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the normal work or simulated work environment within the bounds of safety.
2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.



- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on directional drilling operations
  - c. completing pre-start, start-up and shut-down procedures
  - d. Completing essential functions including:
    - setting up the down hole motor
    - operating drilling equipment
    - interpreting and applying geological and survey information
    - recovering drilling equipment
  - e. completing operator maintenance
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site operational safety procedures
- site drilling operations
- drilling equipment characteristics and limitations
- isolation and tagging procedures
- mine gases
- outburst phenomena
- ventilation principles
- geological and survey data
- down hole motor drilling
- down hole survey and logging
- visual inspection procedures
- site drilling equipment maintenance systems and procedures
- recording and reporting
- site environmental requirements and constraints related to drilling

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- read, interpret and apply technical information
- isolate and tag
- install, maintain and recover drilling equipment
- apply geological and survey data
- identify hazards and potential hazards
- read gas detection equipment
- apply emergency procedures
- identify defects and damage
- maintain records and reports
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	2
Using technology.	



NATIONAL MINING ITAB

BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the installation, erection and maintenance of basic supports.

<u>Elements</u>	<u>Performance Criteria</u>
U53.1 Plan and Prepare for Work.	<p>U53.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U53.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U53.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U53.1.4 Resources required for the work are determined, obtained and transported to the work site.</p>
U53.2 Install and Secure Support.	<p>U53.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U53.2.2 Equipment, materials and services check is carried out in accordance with the work plan, site and legislative requirements.</p> <p>U53.2.3 Pre-start, start-up, park-up and shutdown procedures are carried out on equipment/plant in accordance with manufacturer's instructions and site procedures.</p> <p>U53.2.4 Roof and ribs are scaled down prior to commencing operation.</p> <p>U53.2.5 Support is installed and secured in</p>

	<p>accordance with manufacturer's/site and legislative requirements.</p> <p>U53.2.6 Changing geological conditions are identified / monitored and responded to in accordance with site procedures..</p> <p>U53.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
<p>U53.3 Carry Out Operator Maintenance on Equipment.</p>	<p>U53.3.1 Equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U53.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U53.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U53.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U53.3.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

1. Supports used in basic strata control are to include roof/rib bolts, mesh/straps/timber and props (timber hydraulic and manual).
2. Work instructions may include nature and scope of task, next support sequence, achievement targets, survey data, geological conditions, site lighting conditions, defects on equipment/plant, hazards and potential hazards, and coordination requirements/issues.
3. Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
4. Hazards and potential hazards may include personal injuries, gas accumulation, roof, rib and floor conditions, falls, chemical hazards, compressed air and hydraulic pressure.
5. Resources required for the allocated work may include support materials, equipment/plant, power and water, and personnel.

6. Bolts may be dowel steel, wood and synthetic, and may be anchored chemically or mechanically.
7. Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work or simulated work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on basic strata control operations
- c. identifying the factors acting on the strata
- d. obtaining and positioning the correct resources for the work
- e. completing pre-start, start-up and shut-down procedures on equipment
- f. briefing and/or coordinating with others involved in the work
- g. scaling down roof and rib prior to commencing operations
- h. Installing the following basic support systems:
  - roof/rib bolts
  - mesh/straps/timber
  - props
- i. restoring the equipment, materials and work site
- j. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- statutory requirements for support
- site personnel and equipment safety requirements
- manager's support rules/plan
- types, uses and limitations of basic strata control systems
- strata control equipment characteristics, technical capabilities and limitations



- support installation procedures
- site ventilation procedures
- strata hazard identification techniques
- basic geological and survey data
- site environmental requirements and constraints related to basic support operations
- hazchem related to basic support operations

- 6. Underpinning Skills.** The ability to:
- apply operational safety requirements
  - access, interpret and apply technical information
  - read and interpret mine plans
  - identify basic support equipment and materials
  - communicate orally
  - coordinate team work
  - identify hazards
  - operate basic support equipment
  - install supports
  - use relevant hand tools

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:** This unit covers the installation, erection and maintenance of specialised supports.

<u>Elements</u>	<u>Performance Criteria</u>
U54.1 Plan and Prepare for Work.	<p>U54.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U54.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U54.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U54.1.4 Resources required for the work are determined, obtained and transported to the work site.</p>
U54.2 Install and Secure Support.	<p>U54.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U54.2.2 Equipment, materials and services check is carried out in accordance with the work plan, site and legislative requirements.</p> <p>U54.2.3 Pre-start, start-up, park-up and shutdown procedures are carried out on equipment/plant in accordance with manufacturer's instructions and site procedures.</p> <p>U54.2.4 Roof and ribs are scaled down prior to commencing operation.</p> <p>U54.2.5 Support is installed and secured in</p>

	<p>accordance with manufacturer's/site and legislative requirements.</p> <p>U54.2.6 Changing geological conditions are identified / monitored and responded to in accordance with site procedures.</p> <p>U54.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
<p>U54.3 Carry Out Operator Maintenance on Equipment.</p>	<p>U54.3.1 Equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U54.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U54.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U54.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U54.3.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Supports covered by this unit may include cable bolts, flexi-bolts, mega-bolts, top-hats, mesh, polyurethane injection, shotcrete, arching/square sets, non-powered chocks (timber, fibre crib, cans) and spilling/fore poling.
- 2 Work instructions may include nature and scope of task, next support sequence, achievement targets, survey data, geological conditions, site lighting conditions, defects on equipment/plant, hazards and potential hazards, and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Resources required for the allocated work may include support materials, equipment/plant, power and water, and personnel.

- 5 Hazards and potential hazards may include personal injury, limited vision, gas accumulation, roof, rib and floor conditions, falls, chemical hazards, compressed air and hydraulic pressure.
- 6 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

The Black Coal Industry acknowledges that, due to differences between mines, it is not possible to stipulate a range of specialised support methods as being essential for this unit. The unit may be granted on the basis of one or more of the methods listed at 3h - n below. The actual methods assessed are to be endorsed on all related recognition documents.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on Specialised Strata control operations
- c. identifying the factors acting on the strata
- d. obtaining and positioning the correct resources for the work
- e. completing pre-start, start-up and shut-down procedures
- f. briefing and/or coordinating with others involved in the work
- g. scaling down roof and rib prior to commencing operations
- h. Installing a range (minimum of five) the following support systems:
  - cable bolts
  - flexi-bolts
  - mega-bolts
  - top-hats
  - W straps/Butterflies
  - mesh
  - polyurethane injection
  - shotcrete
  - arching/square sets
  - non-powered chocks
  - spiralling
  - fore-poling
- i. restoring the equipment, materials and work site
- j. completing operator maintenance

#### **4. Consistency of Performance.**

Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.



**5. Underpinning Knowledge.** A knowledge of:

- statutory requirements for support
- site personnel and equipment safety requirements
- manager's support rules/plan
- types, uses and limitations of specialised strata control systems
- equipment characteristics, technical capabilities and limitations
- support installation procedures
- site ventilation procedures
- strata hazard identification techniques
- geological and survey data
- site environmental requirements and constraints related to specialised support operations
- hazchem related to support operations

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret and apply technical information
- read and interpret mine plans
- identify specialised support equipment and materials
- communicate orally
- coordinate team work
- identify hazards
- operate specialised support equipment
- install specialised supports
- use relevant hand tools

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	2
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the maintenance of mine roadways other than those covered in strata control.

<u>Elements</u>	<b>Performance Criteria</b>
U60.1 Plan and Prepare for Maintenance.	<p>U60.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U60.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U60.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U60.1.4 Resources required for the work are coordinated and transported to the work site.</p>
U60.2 Conduct Roadway Maintenance.	<p>U60.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U60.2.2 Equipment, materials and services check is carried out in accordance with the work requirements and site procedures.</p> <p>U60.2.3 Warning signals and signs are erected/posted prior to commencement of task in accordance with site procedures.</p> <p>U60.2.4 Ballast is applied to roadways in accordance with site requirements.</p> <p>U60.2.5 Roadway dust suppression is carried out in accordance with site procedures.</p> <p>U60.2.6 Roof and floor water is diverted and drained in</p>

accordance with site procedures.

U60.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.

<u>Elements</u>	<u>Performance Criteria</u>
U60.3 Finalise Work Procedures.	<p>U60.3.1 Work is performed in accordance with the work requirements and targets and within the operating capabilities of the equipment.</p> <p>U60.3.2 Services are isolated in accordance with site procedures.</p> <p>U60.3.3 Job/task reports are completed in accordance with site requirements and hand over details.</p>
U60.4 Carry out Operator Maintenance on Equipment.	<p>U60.4.1 Equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U60.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U60.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U60.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U60.4.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Work requirement details may include nature and scope of the work, achievement targets, equipment allocation (including any defects), locations of work and essential survey data, locations of service facilities, site working conditions, environmental conditions, hazards and potential hazards, next area of work and coordination requirements / issues.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).

- 3 Resources required for the work may include personnel, machinery, materials, power and water.
- 4 Maintenance of roadways may include grading, contouring, dust suppression, ballasting holes and cutting drains.
- 5 Machinery may include but is not limited to grader, load haul dump and attachments, ram car, roller and bobcat.
- 6 Equipment may include pumps, pumping equipment, signs, barriers and tools.
- 7 Material may include ballast, concrete (readymix and quickset), timber, salt and flyash.

**MNC.U060.A**  
**MAINTENANCE**

**CONDUCT ROADWAY**

**Range of Variables: (contd)**

- 8 Communication may include two-way radio, verbal, hand signals and peds.
- 9 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on roadway maintenance operations
- c. coordinating and transferring required resources to the site
- d. coordinating the work with other involved persons
- e. securing and guarding the worksite
- f. completing the required roadway maintenance
- g. finalising the work procedures
- h. applying emergency procedures
- i. completing operator maintenance

**4. Consistency of Performance.** Consistency of performance will, in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human

or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- mine personnel and operational safety procedure
- mine operational procedures, layout and plan
- road maintenance equipment capabilities, limitations and maintenance requirement
- roadway maintenance materials and their application
- roadway maintenance techniques
- mine geological conditions
- mine environmental requirements and constraints related to roadway maintenance

**6. Underpinning Skills.** The ability to:

- apply personnel and operational safety requirements
- access, interpret, apply and communicate technical information
- use and maintain the roadway maintenance equipment
- identify, select and apply roadway maintenance materials
- perform the maintenance tasks required at the site
- use hand tools
- comply with environmental requirements

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information	1
Communicating ideas and information	1
Planning and organising activities	1
Working with others and in teams	1
Solving problems	1
Using mathematical ideas and techniques	1
Using technology	1

NATIONAL MINING ITAB

BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the application of stonedust in the mine.

<u>Elements</u>	<b>Performance Criteria</b>
<p>U61.1 Plan and Prepare for Stonedusting.</p>	<p>U61.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U61.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U61.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U61.1.4 Resources required on work are co-ordinated and transported to the work site.</p> <p>U61.1.5 Equipment, materials and services are identified, selected and checked in accordance with the work requirement and site procedures and legislative requirements.</p>
<p>U61.2 Apply Stonedust.</p>	<p>U61.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U61.2.2 Warning signals and signs are erected / posted prior to commencement of the work in accordance with site procedures.</p> <p>U61.2.3 Start-up, shut-down and isolation procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U61.2.4 Equipment is operated in accordance with manufacturer's and site requirements.</p>



U61.2.5 Dust is applied in accordance with statutory and site requirements.

U61.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.

<u>Elements</u>	<u>Performance Criteria</u>
U61.3 Finalise Work Procedures.	<p>U61.3.1 Work is performed in accordance with the agreed requirements and achievement targets and within the operating capabilities of the equipment.</p> <p>U61.3.2 Services are isolated in accordance with site procedures.</p> <p>U61.3.3 Worksite is restored in accordance with site procedures / practices.</p> <p>U61.3.4 Job/task reports are completed in accordance with site requirements and hand over details.</p>
U61.4 Carry out Operator Maintenance on Equipment.	<p>U61.4.1 Stonedusting equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U61.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U61.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U61.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U61.4.5 Records are processed in accordance with site requirements.</p>

**Range of Variables:**

- 1 Work requirement details may include nature and scope of the work, achievement targets, equipment allocation (including any defects), locations of work and essential survey data, locations of service facilities, site working conditions, environmental conditions, hazards and potential hazards, next area of work and coordination requirements / issues.

- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Resources required for the work may include personnel, machinery, stonedusting materials and compressed air.
- 4 Machinery may include load haul dump, multipurpose vehicle and ram cars.
- 5 Equipment may include cantons, pods, quick duster, trickle duster and venturi.

**MNC.U061.A  
OPERATIONS**

**CONDUCT STONEDUSTING**

**Range of Variables: (contd)**

- 6 Communication may include two-way radio, phone, Dacs, verbal, hand signals and peds.
- 7 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on stonedusting operations
- c. coordinating and transporting required resources to the site
- d. coordinating the work with other involved persons

- e. securing and guarding the worksite
  - f. operating the stonedusting equipment
  - g. applying the stonedust effectively and efficiently to site specifications
  - h. applying emergency procedures
  - i. restoring the worksite
  - j. completing operator maintenance
- 4. Consistency of Performance.** Consistency of performance will, in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
- 5. Underpinning Knowledge.** A knowledge of:
- mine personnel and operational safety procedures
  - mine operational procedures, layout and plan
  - stonedusting requirements and techniques
  - stonedusting equipment capabilities, limitations and maintenance requirements
  - stonedusting equipment maintenance procedures
  - mine ventilation
  - mine environmental requirements and constraints related to stonedusting

**6. Underpinning Skills.** The ability to:

- apply personnel and operational safety requirements
- access, interpret, apply and communicate technical information
- operate stonedusting equipment
- maintain stonedusting equipment
- identify and respond to changing environmental and ventilation conditions
- use hand tools
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the removal of excess water from roadways and work areas.

<u>Elements</u>	<b>Performance Criteria</b>
U62.1 Plan and Prepare.	<p>U62.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U62.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U62.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U62.1.4 Resources required for the dewatering are coordinated and transported to the site.</p>
U62.2 Install, Dewater and Recover	<p>U62.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U62.2.2 Isolation procedures are carried out in accordance with manufacturer's instructions and site procedures</p> <p>U62.2.3 Pumping systems are installed in accordance with manufacturer's instructions and site procedures.</p> <p>U62.2.4 Pre-start, start-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U62.2.5 Pumping systems are operated in accordance with manufacturer's instructions and site</p>

procedures.

U62.2.6 Roadways and work areas are dewatered to mine site requirements.

<u>Elements</u>	<u>Performance Criteria</u>
U62.2 Install, Dewater and Recover (Continued).	U62.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.
U62.3. Carry Out Operator Maintenance.	U62.2.8 Pumping systems are recovered in accordance with manufacturer's instructions and site procedures.  U62.3.1 Dewatering equipment and systems inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.  U62.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.  U62.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.  U62.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.  U62.3.5 Records are processed in accordance with site requirements.

**Range of Variables:**

- 1 Pump types may include turbine, diaphragm, piston, centrifugal, vacuum and worm/drive.
- 2 Work requirement details may include pump allocation (including any defects), nature and scope of dewatering, achievement targets, location of pumps / sumps, essential survey data, locations of service facilities, site working conditions, environmental conditions, hazards and potential hazards and coordination requirements / issues.



- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Resources required for the work may include personnel, pumps, vehicles, equipment and materials.
- 5 Power Source may include electric, air, hydraulic, gravity feed and syphon.
- 6 Machinery may include load haul dump and multipurpose vehicles.
- 7 Equipment and materials may include valves, pipes, hoses, hand tools, clamps, suction and delivery lines and holding tanks.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.

MNC.U062.A

DEWATER ROADWAYS AND WORK AREAS

### Evidence Guide

**1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying operational safety requirements
- b. identifying the types and application of dewatering systems
- c. planning the work
- d. arranging the transportation of equipment and materials to the site
- e. preparing the site
- f. installing the pump, pipes/lines and associated equipment
- g. testing the system
- h. maintaining the dewatering system
- i. complying with environmental requirements
- j. restoring the site

**4. Consistency of Performance.** Consistency of performance will, in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain

and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- operational safety requirements
- mine operational procedures
- the range of available dewatering methods
- potential hazards and remedial or response actions
- dewatering equipment and materials capabilities, characteristics and limitations
- geological conditions in the dewatering area
- dewatering site control procedures
- operational signalling procedures
- mine communication systems and procedures
- dewatering equipment/systems maintenance procedures
- site environmental requirements and constraints related to dewatering

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret, apply technical and geological information
- communicate and coordinate activities with others
- analyse and select dewatering methods suitable to the situation
- operate pumping equipment
- anticipate potential hazards
- analyse and respond to changing circumstances
- use small hand tools
- comply with environmental requirements

<b>7. Key Competencies</b>	<b>Level</b>	
Collecting, analysing and organising ideas and information	1	
Communicating ideas and information		1
Planning and organising activities	1	
Working with others and in teams	1	
Solving problems	1	
Using mathematical ideas and techniques		1
Using technology	1	

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers laying and recovering rail from minesite roadways.

<u>Elements</u>	<u>Performance Criteria</u>
U63.1 Plan and Prepare.	<p>U63.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U63.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U63.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U63.1.4 Resources required for the work are coordinated and transported to the site.</p> <p>U63.1.5 The site is prepared in accordance with the plan/site requirements and warning signals and signs are erected/posted prior to commencement of task.</p>
U63.2 Lay and Recover Rail.	<p>U63.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U63.2.2 Pre-start, start-up, park-up and shutdown procedures are carried out on equipment in accordance with manufacturer's instructions and site procedures.</p> <p>U63.2.3 Laying and recovery is carried out in accordance with survey requirements, manufacturer's instructions and site procedures.</p>

U63.2.4 Equipment, materials and services check is carried out in accordance with the work requirements and site procedures.

<u>Elements</u>	<u>Performance Criteria</u>
U63.3 Carry Out Rail Maintenance.	<p>U63.3.1 Unused equipment/safety equipment is recovered in accordance with site procedures.</p> <p>U63.3.2 Bent or broken rails, sleepers and associated attachments are repaired or replaced in accordance with site procedures.</p> <p>U63.3.3 Catch points and turns are changed or repaired in accordance with site procedures.</p>
U63.4 Carry Out Operator Maintenance on Equipment.	<p>U63.4.1 Equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U63.4.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U63.4.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U63.4.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U63.4.5 Records are processed in accordance with site requirements.</p>

**Range of Variables:**

- 1 Work requirements details may include the nature and scope of the laying / recovery work, achievement targets, equipment allocation (including any defects), materials required, locations of work and essential survey data, locations of service facilities, site working conditions, environmental conditions, hazard and potential hazards and coordination requirements / issues.

- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Resources required for the work may include personnel, machinery, vehicles, materials, power and water.
- 4 Laying of rail systems may include layout of equipment and materials, establishing line and level, preparation / ballasting, installation of sleepers, laying and installation of rail and test runs.
- 5 Machinery may include loco and flat-top, air winch and lowloader.
- 6 Materials required may include rails, sleepers, ballast, fishplates and consumables.

**Range of Variables: (contd)**

7. Equipment may include hammers, bolts, dogs, clips, rail benders, gauges, spirit levels, air borer, pinch bar and shackles and signs.
8. Communications may be by agreed signals, hand, cap-lamp or radio.
9. Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on rail laying and recovery operations
- c. coordinating and transporting required resources to the site
- d. preparing and guarding the worksite
- e. completing pre-start, start-up and shut-down procedures
- f. laying of rail system to survey
- g. completing final operational checks
- h. carrying out maintenance on rail and associated equipment

4. **Consistency of Performance.** Consistency of performance will, in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- mine personal and operational safety requirements



- mine operational procedures, layout and plan
- rail laying procedures and standards
- rail laying equipment characteristics, application and limitations
- rail maintenance techniques
- mine geological conditions
- mine environmental requirements and constraints related to rail laying and recovery

**6. Underpinning Skills.** The ability to:

- apply personal and operational safety requirements
- access, interpret, apply and communicate technical information
- apply basic survey techniques
- comply with environmental requirements
- use hand tools
- interpret geological and survey data
- access stores systems
- maintain equipment records

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

NATIONAL MINING ITAB

BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the installation, dismantling and maintenance of underground stonedust and water explosion barriers.

<u>Elements</u>	<u>Performance Criteria</u>
U64.1 Plan and Prepare.	<p>U64.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U64.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U64.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U64.1.4 Materials and resources required for work are obtained and prepared in accordance with the work requirements and site procedures.</p>
U64.2 Install and Maintain Explosion Barriers.	<p>U64.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U64.2.2 Work site is prepared in accordance with site procedures to ensure a safe working environment and to enable compliance with job instructions and site procedures.</p> <p>U64.2.3 Barriers are installed in accordance with relevant manufacturer's specifications and site specific installation procedures and practices.</p> <p>U64.2.4 Barriers are filled and maintained in accordance with manufacturer's instructions and site procedures and practices.</p>

	<p>U64.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>U64.2.6 Inspections are carried out in accordance with site and legislative requirements.</p>
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**Range Of Variables:**

- 1 Explosion barriers may include stonedust and water.
- 2 Work requirement details may include the types and specifications of barriers, locations, essential survey data, achievement targets, site conditions, equipment/plant allocation (including any defects), hazards and potential hazards and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Machinery may include load haul dump, multipurpose vehicles, trailer and sled.
- 5 Equipment may include chains, eye bolts, hand tools, jacks, bolter drills and bits, level, tubs, props, trays and bolts.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on barriers
- c. identifying the types, applications and limitations of barriers
- d. planning the work in accordance with operational procedures
- e. arranging the transport of personnel and equipment/material to the site
- f. preparing the site
- g. constructing water and other specified barriers
- h. maintaining the barriers
- i. restoring the site

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- operational safety requirements
- mine operational procedures and mine layout
- types and applications of barriers
- barrier construction processes and techniques
- barrier maintenance procedures
- mine environmental requirements and constraints related to barrier construction

**6. Underpinning Skills.** The ability to:

- applying personal and operational safety requirements
- access, interpret, apply and communicate technical information
- apply construction techniques
- perform barrier maintenance
- use hand tools
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor: This unit covers the construction and maintenance of basic ventilation devices using brattice and plasterboard.**

<u>Elements</u>	<u>Performance Criteria</u>
U65.1 Plan and Prepare for Operations.	<p>U65.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U65.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U65.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U65.1.4 Materials and resources required for the work are obtained, transported and prepared in accordance with the plan, site requirements and hazchem procedures.</p>
U65.2 Construct Basic Ventilation Devices.	<p>U65.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U65.2.2 Work site is prepared in accordance with site procedures to ensure a safe working environment and to enable compliance with job plan instructions and mine site requirements.</p> <p>U65.2.3 Ventilation device is constructed in accordance with manufacturer's and site specific requirements.</p> <p>U65.2.4 Hazardous and emergency situations are recognised and responded to in accordance</p>

	<p>with manufacturer's instructions and site procedures.</p> <p>U65.2.5 Work is performed in accordance with agreed plan and outcomes.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
<p>U65.3 Maintain Basic Ventilation Devices.</p>	<p>U65.3.1 Inspections are carried out in accordance with legislative and site requirements.</p> <p>U65.3.2 Necessary replacement materials/equipment required for the work are obtained, transported and prepared in accordance with work practices.</p> <p>U65.3.3 Maintenance work is carried out in accordance with legislative and site requirements.</p> <p>U65.3.4 Records/reports are maintained in accordance with site practices.</p>

**Range Of Variables:**

- 1 Management plans include the spontaneous combustion management plan.
- 2 Materials for devices under this unit include brattice and plasterboard.
- 3 Types of devices may include stoppings, seals and regulators.
- 4 Work requirement details may include nature and scope of the construction/maintenance tasks, achievement targets, locations of work, essential survey data, environmental conditions, work site conditions, support equipment/plant (including any defects) and coordination requirements/issues.
- 5 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management systems and plans, manager's rules, OH&S policy, codes of practice, safe working procedures and safe job procedures (or equivalent).
- 6 Hazards related to goaf atmospheres may include irrespirable atmospheres, noxious atmospheres, flammable and explosive mixtures.
- 7 Equipment may include grout pumps, cement mixer, compressed air drill, borer, hoses, hand tools, scaffolding, level, water traps, sampling lines, pressure gauges, gas drainage line, shut off valves, oxygen breathing apparatus and gas detection equipment.



## **Evidence Guide**

- 1. Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.
- 2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on constructing and maintaining basic ventilation devices
  - c. obtaining and preparing resources for use
  - d. identifying the types and application of basic ventilation devices
  - e. preparing the site for construction and/or maintenance
  - f. constructing basic ventilation devices using both brattice and plasterboard
  - g. inspecting and maintaining basic ventilation devices
  - h. restoring the site
  
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
  
- 5. Underpinning Knowledge.** A knowledge of:
  - operational safety systems related to ventilation devices
  - basic statutory and site ventilation requirements
  - mine operational procedures
  - basic mine geology and survey information related to ventilation devices
  - types and applications of ventilation and sealing systems
  - ventilation device construction processes and techniques
  - ventilation device equipment and material characteristics including transportation requirements
  - site environmental requirements and constraints related to ventilation devices
  
- 6. Underpinning Skills.** The ability to:
  - apply operational safety requirements
  - access, interpret, apply and communicate technical information
  - use hand and power tools
  - apply construction techniques
  - identify and respond to changing environmental conditions (including spontaneous combustion)
  - inspect and maintain devices, equipment and materials
  - comply with environmental requirements

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

NATIONAL MINING ITAB

BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the construction and maintenance of ventilation devices using primarily pre-fabricated steel, cementitious and/or bricks together with foam materials as necessary.

<u>Elements</u>	<u>Performance Criteria</u>
U66.1 Plan and Prepare for Operations.	<p>U66.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U66.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U66.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U66.1.4 Materials and resources required for the work are obtained, transported and prepared in accordance with the plan, site requirements and hazchem procedures.</p>
U66.2 Construct Ventilation Devices.	<p>U66.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U66.2.2 Work site is prepared in accordance with site procedures to ensure a safe working environment and to enable compliance with job plan instructions and mine site requirements.</p> <p>U66.2.3 Ventilation device is constructed in accordance with manufacturer's and site specific requirements.</p> <p>U66.2.4 Hazardous and emergency situations are</p>

	<p>recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>U66.2.5 Work is performed in accordance with agreed plan and outcomes.</p>
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**MNC.U066.A  
DEVICES**

**CONSTRUCT AND MAINTAIN VENTILATION**

<u>Elements</u>	<u>Performance Criteria</u>
U66.3 Maintain Ventilation Devices.	U66.3.1 Inspections are carried out in accordance with legislative and site requirements.  U66.3.2 Necessary replacement materials/equipment required for the work are obtained, transported and prepared in accordance with work practices.  U66.3.3 Maintenance work is carried out in accordance with legislative and site requirements.  U66.3.4 Records/reports are maintained in accordance with site practices.

**Range Of Variables:**

- 1 Management plans include the spontaneous combustion management plan.
- 2 Materials for devices under this unit may include pre-fabricated steel, cementitious or bricks together with foam or other secondary materials as necessary.
- 3 Types of devices may include stoppings, seals, bulkheads, balance chambers, regulators, overcasts and undercasts.
- 4 Work requirement details may include nature and scope of the construction/maintenance tasks, achievement targets, locations of work, essential survey data, environmental conditions, work site conditions, support equipment/plant (including any defects) and coordination requirements/issues.
- 5 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management systems and plans, manager's rules, OH&S policy, codes of practice, safe working procedures and safe job procedures (or equivalent).
- 6 Hazards related to goaf atmospheres may include irrespirable atmospheres, noxious atmospheres, flammable and explosive mixtures.

7 Equipment may include grout pumps, cement mixer, compressed air drill, borer, hoses, hand tools, scaffolding, level, water traps, sampling lines, pressure gauges, gas drainage line, shut off valves, oxygen breathing apparatus and gas detection equipment.

### **Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the normal work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

### **MNC.U066.A DEVICES**

### **CONSTRUCT AND MAINTAIN VENTILATION**

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on constructing and maintaining ventilation devices
- c. obtaining and preparing resources for use
- d. identifying the types and application of ventilation devices
- e. preparing for construction
- f. constructing ventilation devices
- g. inspecting and maintaining ventilation devices
- h. restoring the site

Because of access limitations, recognition in this unit will be attracted by two of the main construction processes (pre-fabricated steel, brick and/or cementitious). Recognition processes will therefore require an endorsement of the type of materials covered.

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- operational safety systems related to ventilation devices
- statutory and site ventilation requirements
- mine operational procedures
- mine geology and survey information related to ventilation devices
- types and applications of ventilation and sealing systems
- ventilation device construction processes and techniques
- ventilation device equipment and material characteristics including transportation requirements
- site environmental requirements and constraints related to ventilation devices

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret, apply and communicate technical information
- use hand and power tools
- apply construction techniques
- identify and respond to changing environmental conditions (including spontaneous combustion)
- inspect and maintain devices, equipment and materials
- comply with environmental requirements

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the flitting, cutting and loading of coal and materials.

<u>Elements</u>	<u>Performance Criteria</u>
U70.1 Plan and Prepare for Operations.	<p>U70.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U70.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U70.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
U70.2 Cut and Load Coal.	<p>U70.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U70.2.2 Pre-start, start-up, shutdown and isolation procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U70.2.3 Continuous miner is operated in accordance with manufacturer's instructions or site procedures to cut and load coal.</p> <p>U70.2.4 Roadway/headings are cut to sequence and site conditions, maintaining line and level in accordance with the development plan.</p> <p>U70.2.5 Factors adversely affecting production and monitoring systems alarms are rectified or reported in accordance with site procedures.</p>

	<p>U70.2.6 Changing geological conditions are identified/monitored and responded to in accordance with site procedures.</p> <p>U70.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>
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<u>Elements</u>		<u>Performance Criteria</u>
U70.3	Carry Out Maintenance. Operator	<p>U70.3.1 Continuous miner inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U70.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U70.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U70.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U70.3.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Continuous miners may be radio remote controlled, manually operated, single pass or dual pass.
- 2 Work requirement details may include equipment and plant (including any defects), cutting sequence, achievement targets, essential survey data, geological conditions, essential environmental information, hazards and potential hazards and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Hazards/potential hazards may include outburst, gas accumulation, flash, ignition, loss of ventilation, breaking into old workings, roof and rib collapse, water, floor and creep.

- 5 Emergency situations may include roof and rib fall, fire, flood, flash, emergency stop procedures, injury to personnel, explosion, outbursts, evacuation, inrush, frictional ignition, creep and heating.
- 6 Cutting sequence information may include locations and marking of areas to be mined.
- 7 Operator (operational) maintenance procedures are those established and authorised for the site.



## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on continuous miner operations
  - c. preparing and maintaining the worksite
  - d. communicating and coordinating with others at the site
  - e. completing pre-start, start-up, shut-down and isolation procedures
  - f. Completing essential functions including:
    - flitting the miner
    - cutting and loading coal and materials
    - maintaining line and level
  - g. applying emergency procedures
  - h. completing operator maintenance
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge.** A knowledge of:
  - mine operational safety procedures
  - continuous miner characteristics, technical capabilities and limitations
  - continuous miner operational procedures
  - mine geology and survey information
  - mine and face ventilation systems
  - continuous miner maintenance requirements and procedures
  - site environmental requirements and constraints relevant to continuous miners
6. **Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret, apply and communicate technical information
- apply hand eye coordination
- interpret survey and geological data
- maintain horizon
- apply diagnostic and faultfinding techniques
- use hand tools
- access stores systems
- maintain equipment records
- comply with environmental requirements

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1 2
Communicating ideas and information.	1
Planning and organising activities.	2
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	2
Using technology.	

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the loading, transporting and unloading of coal and materials.**

<u>Elements</u>		<u>Performance Criteria</u>
U71.1	Plan and Prepare for Operations.	<p>U71.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U71.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U71.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
U71.2	Operate Shuttle Car.	<p>U71.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U71.2.2 Pre-start, start-up, park-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U71.2.3 Shuttlecar is operated in accordance with manufacturer's instructions or site specific procedures to load, transport and discharge coal.</p> <p>U71.2.4 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>
U71.3	Carry Out Operator Maintenance.	U71.3.1 Shuttle car inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.

	<p>U71.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U71.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U71.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U71.3.5 Records are processed in accordance with site requirements.</p>
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**MNC.U071.A  
OPERATIONS**

**CONDUCT SHUTTLE CAR**

<p><b><u>Range Of Variables:</u></b></p> <ol style="list-style-type: none"> <li>1 Shuttle Car Types may include diesel, electric and battery and involve remote operation of flights by the operator.</li> <li>2 Work requirement details may include equipment and plant (including any defects), cutting sequence, achievement targets, essential survey data, geological conditions, essential environmental information, hazards and potential hazards and coordination requirements/issues.</li> <li>3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&amp;S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).</li> <li>4 Hazards/potential hazards may include outburst, gas accumulation, loss of ventilation, roof and ribs, water, floor and cables.</li> <li>5 Emergency situations may include roof and rib fall, fire, flood, flash, emergency stop procedures, injury to personnel, explosion, outbursts and evacuation.</li> <li>6 Operator (operational) maintenance procedures are those established and authorised for the site.</li> </ol>
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**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on shuttle car operations
- c. communicating and coordinating with others at the site
- d. completing pre-start, start-up, park-up and shut-down procedures
- e. Completing essential functions including:
  - applying cable care and safety
  - loading, transporting and unloading materials
- f. applying emergency procedures
- g. completing operator maintenance

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- mine operational safety systems
- shuttle car operational procedures
- shuttle car characteristics, technical capabilities and limitations
- mine geology and survey information
- mine and face ventilation systems
- shuttle car maintenance requirements and procedures
- site environmental requirements and constraints related to a shuttle car

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret, apply and communicate technical information
- apply hand eye coordination
- interpret survey and geological data
- apply diagnostic and faultfinding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

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NATIONAL MINING ITAB

BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the operation and relocation of breaker feeders.

<u>Elements</u>	<u>Performance Criteria</u>
U72.1 Plan and Prepare for Operations.	U72.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.  U72.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.  U72.1.3 Safety information and procedures are accessed and applied throughout the work.
U72.2 Operate Ratio Feeder.	U72.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.  U72.2.2 Pre-start, start-up, shutdown and isolation procedures are carried out in accordance with manufacturer's instructions and site procedures.  U72.2.3 Route and location plan is received and confirmed, if necessary, by site inspection.  U72.2.4 Roadway preparation and cable routes are completed prior to relocation.  U72.2.5 Cable location and management is carried out according to site rules.  U72.2.6 The feeder breaker is either towed or moved into location and installed in accordance with

	<p>manufacturer's instructions and site procedures.</p> <p>U72.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>
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**MNC.U072.A  
OPERATIONS**

**CONDUCT FEEDER BREAKER**

<u>Elements</u>		<u>Performance Criteria</u>
U72.3	Carry Out Maintenance. Operator	<p>U72.3.1 Feeder breaker inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U72.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U72.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U72.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U72.3.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Breakers may be free wheel or skid, track driven, specific side loader, mobile boot ends and may be remotely controlled.
- 2 Work requirement details may include equipment defects, essential survey data, geological conditions, hazards and potential hazards and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Environmental hazards/potential hazards may include roof, rib, floor and falls.
- 5 Feeder breaker operations include sequencing of operations to set tramming arrangements, relocating, aligning and levelling relative to the belt and reconnecting of services.

6 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating operational information
- c. preparing and maintaining the worksite
- d. conducting pre-start, start-up, shut-down and isolation procedures
- e. applying cable care and safety
- f. sequencing of operations to set tramming arrangement
- g. relocating of breaker feeder to prescribed location
- h. aligning and levelling of breaker feeder relative to belt
- i. reconnecting of services
- j. applying emergency procedures
- k. conducting operator maintenance

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site operational safety systems
- feeder breaker characteristics, technical capabilities and limitations
- feeder breaker operational procedures
- mine geology and survey information
- mine and face ventilation systems
- feeder breaker maintenance requirements and procedures
- site environmental requirements and constraints relevant to feeder breakers

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret, apply and communicate technical information
- interpret survey and geological data
- apply hand eye coordination
- apply diagnostic and faultfinding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

NATIONAL MINING ITAB

BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the provision and maintenance of adequate ventilation at the coal face.

<u>Elements</u>	<u>Performance Criteria</u>
U73.1 Plan and Prepare for Operations.	<p>U73.1.1 Face ventilation requirement details in the form of work briefings, handover details, or work orders are received, understood and clarified.</p> <p>U73.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U73.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U73.1.4 Materials and resources required for the work are obtained, transported and prepared in accordance with the plan, site requirements and hazchem procedures.</p>
U73.2 Ventilate the Face.	<p>U73.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U73.2.2 Work site is prepared in accordance with site procedures to ensure a safe working environment and to enable compliance with job plan instructions and mine site requirements.</p> <p>U73.2.3 Brattice/vent tubes are installed and extended according to site procedures.</p> <p>U73.2.4 Temporary stoppings are erected in accordance with sequence plan and site</p>



	<p>requirements.</p> <p>U73.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>U73.2.6 Ventilation status is reported in accordance with site requirements.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
U73.3 Maintain Face Ventilation	<p>U73.3.1 Routine inspections are carried out in accordance with site requirements.</p> <p>U73.3.2 Necessary replacement materials/equipment required for the work are obtained, transported and prepared in accordance with the plan and relevant site requirements.</p> <p>U73.3.3 Maintenance work is carried out in accordance with legislative and site requirements.</p> <p>U73.3.4 Records/reports are maintained in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Work requirements may include the nature and scope of tasks, equipment defects/requirements, hazards and potential hazards and environmental monitoring.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Types of ventilation methods may include auxiliary fan (forcing and extracting), venturi blower, stoppings and brattice line.
- 4 Brattice methods may include wide side, narrow side, hurdles, wings and screens.
- 5 Defects on equipment may include broken earth wire, damaged ventilation tubes, torn brattice, broken ventilation tube rubbers and fan malfunction.
- 6 Potential hazards may include gas, dust, static electricity, condition of roof, floor and rib, water accumulation and recirculation of ventilating air.
- 7 Environmental monitoring may be dust and gas.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.
2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on face ventilation operations
  - c. preparing the site for installation and/or maintenance
  - d. completing the essential functions of installing and extending ventilation lines
  - e. completing operator maintenance
  
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
  
5. **Underpinning Knowledge.** A knowledge of:
  - site personal and operational safety procedures
  - site ventilation procedures and methods
  - gas characteristics
  - causes and effects of static electricity
  - ventilation line installation and extension procedures
  - auxiliary ventilation rules
  - sequence plan
  - isolation and tagging procedures
  - degassing procedures
  - reporting procedures
  
6. **Underpinning Skills.** The ability to:
  - apply operational safety requirements
  - monitor and identify gas content
  - identify hazards
  - install and extend ventilation equipment
  - read and interpret ventilation plans
  - isolate and tag

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	2
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the special procedural requirements for outburst mining.**

<u>Elements</u>	<u>Performance Criteria</u>
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<p>U74.1 Plan and Prepare for Operations.</p>	<p>U74.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U74.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U74.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U74.1.4 Outburst manning requirements are identified and accessed in accordance with the outburst management plan.</p> <p>U74.1.5 Outburst pre-operational checks are carried out in accordance with the outburst management plan.</p>
<p>U74.2 Conduct Mining Operations in Outburst Conditions.</p>	<p>U74.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U74.2.2 Continuous miner and shuttle car are operated in accordance with outburst management plan.</p> <p>U74.2.3 Strata control operations are carried out in accordance with outburst management plan.</p> <p>U74.2.4 Ventilation is maintained, environmental conditions monitored and action taken in accordance with outburst management plan.</p> <p>U74.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>U74.2.6 Records and reports are completed and maintained in accordance with site requirements.</p>

<u>Elements</u>	<u>Performance Criteria</u>
<p>U74.3 Carry Out Operator Maintenance on Outburst Equipment.</p>	<p>U74.3.1 Equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U74.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U74.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U74.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U74.3.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Outburst Management Plan includes ventilation, prediction procedures, mining systems and procedures, site specific information and authority to mine.
- 2 Work briefings may include cutting sequence, hazards and potential hazards, survey data, previous shift reports/inspections, position of fresh air base/emergency equipment station and monitoring the environment.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Special equipment may include special miner (outburst fitted), filtered air system , compressed air breathing equipment and air supply to face workers.



- 5 Machine operations may include manual and remote.
- 6 Communication may include radio, telephone and signal.
- 7 Pre-operational checks include emergency equipment base, miner, shuttle car and services.
- 8 Monitoring of Environment may include stretch marks, cutters, calcite bands, coal changing colour, mylonite, coal softening/hardening, dyke stringers, cindered coal and change in gas make/type.
- 9 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment **by day and night and in all weather conditions** within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on outburst mining operations
- c. completing pre-start, start-up and shut-down procedures
- d. Completing essential functions including:
  - interpreting the outburst management plan (authority to mine)
  - monitoring processes including geological and environmental conditions
  - applying outburst mining operations
  - responding to emergencies
- e. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site personal and operational safety procedures
- outburst mining procedures
- operation of fresh air base/emergency equipment station
- breathing equipment
- mine/rescue procedures
- initial response first aid
- communications systems
- mine gases and testing procedures
- geological conditions
- mining methods/sequence
- outburst manning equation
- pre-drilling data

**6. Underpinning Skills.** The ability to:

- access and interpret mine rescue procedures and manager's rules
- apply resuscitation
- test and interpret gases
- read/identify geological change
- operate communications system
- operate breathing apparatus
- apply rescue techniques
- access and interpret outburst management plan

**MNC.U074.A  
OPERATIONS**

**CONDUCT OUTBURST MINING**

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	2
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the operation of a shearer on a longwall face.

<u>Elements</u>	<u>Performance Criteria</u>
U75.1 Plan and Prepare.	<p>U75.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U75.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U75.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
U75.2 Shear and Load Coal.	<p>U75.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U75.2.2 Pre-start, start-up, shutdown and isolation procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U75.2.3 Shearer is operated in accordance with manufacturer's instructions or site specific procedures to shear and load coal.</p> <p>U75.2.4 Longwall face is cut to sequence and site conditions, maintaining horizon and quality control in accordance with extraction plan.</p> <p>U75.2.5 Monitoring systems and alarms are acted on or reported in accordance with site procedures.</p> <p>U75.2.6 Parking of shearer is carried out in accordance with site procedures and maintenance plan.</p>

	U75.2.7 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.
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<u>Elements</u>		<u>Performance Criteria</u>
U75.3	Carry Out Maintenance. Operator	<p>U75.3.1 Shearer inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U75.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U75.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U75.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U75.3.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Work requirement details may include equipment (including any defects), cutting height, next cutting sequence, achievement targets, essential survey data, geological conditions, hazards and potential hazards and coordination requirements/issues.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management systems and plans, manager's rules, OH&S policy, codes of practice, safe working procedures and safe job procedures (or equivalent).
- 3 Hazards/potential hazards may include outburst, high pressure hoses, gas accumulation, friction ignition, roof, water, dust, windblast and weighting on the face.
- 4 Emergency situations may include roof and rib fall, fire, flood, flash/ignition, loss of ventilation, emergency stop procedures, injury to personnel, explosion and evacuation.
- 5 Operational coordination may include that with support personnel and chocks, pantech, armoured face conveyors, breaker stage loader and panel belt.

6 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating operational information
- c. preparing and maintaining the worksite
- d. carrying out pre-start, start-up, shutdown and isolation procedures
- e. operating shearer in accordance with geological conditions
- f. applying frictional ignition controls
- g. operating shearer within machine limitations
- h. applying emergency procedures
- i. conducting operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site operational safety procedures
- longwall operational processes and procedures
- shearer operational procedures
- shearer equipment characteristics and limitations
- mine geology and survey information
- mine ventilation systems
- shearer maintenance systems and procedures
- site environmental requirements and constraints relevant to the shearer

6. **Underpinning Skills.** The ability to:

- apply operational safety requirements



- access, interpret, apply and communicate technical information
- interpret survey and geological data
- apply hand eye coordination
- apply diagnostic and faultfinding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements

**7. Key Competencies****Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	2
Planning and organising activities.	1
Working with others and in teams.	2
Solving problems.	1
Using mathematical ideas and techniques.	2
Using technology.	2

**MNC.U076.A CONDUCT LONGWALL FACE ANCILLARY EQUIPMENT OPERATIONS**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:** This unit covers the operations of roof support and armoured face conveyor (AFC) systems.

<u>Elements</u>	<u>Performance Criteria</u>
<p>U76.1 Plan and Prepare for Operations.</p>	<p>U76.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U76.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U76.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
<p>U76.2 Operate Equipment.</p>	<p>U76.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U76.2.2 Pre-start, start-up, shutdown and isolation procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U76.2.3 The armoured face conveyor is operated to convey coal in accordance with manufacturer's instructions and site procedures.</p> <p>U76.2.4 Roof supports are advanced in sequence or according to site conditions to maintain correct face alignment and support roof in accordance with extraction plan.</p> <p>U76.2.5 Changing geological conditions are identified/monitored and responded to in accordance with site procedures.</p>

	<p>U76.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>U76.2.7 Factors adversely affecting production and monitoring systems alarms are rectified or reported in accordance with site procedures.</p>
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## MNC.U076.A CONDUCT LONGWALL FACE ANCILLARY EQUIPMENT OPERATIONS

<u>Elements</u>	<u>Performance Criteria</u>
U76.3 Carry Out Maintenance. Operator	U76.3.1 Longwall face inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.  U76.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.  U76.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.  U76.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.  U76.3.5 Records are processed in accordance with site requirements.

### **Range Of Variables:**

- 1 Longwall face equipment may include power supports and AFC and may, depending on the method of operation, include stage loader/crusher.
- 2 Work requirement details may include equipment (including defects), cutting height, next cutting sequence, achievement targets, essential survey data, geological conditions, hazards and potential hazards and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management systems and plans, manager's rules, OH&S policy, codes of practice, safe working procedures and safe job procedures (or equivalent).
- 4 Hazards and/or potential hazards may include high pressure hoses, high gas, faults, adverse mining conditions, and face spall.

- 5 Emergency Situations may include lack of ventilation, gas inundation (high gas levels), roof/rib fall, fire, flood, flash/ignition, emergency stop procedures, injury to personnel and explosion.
- 6 Chock control type may include manual, adjacent, remote and batch.
- 7 Coordination requirements may include those with the shearer operator and the pantech operator.

## MNC.U076.A CONDUCT LONGWALL FACE ANCILLARY EQUIPMENT OPERATIONS

### Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating facewall equipment operations
  - c. identifying relevant aspects of the longwall management plan and procedures
  - d. preparing and maintaining the worksite
  - e. completing pre-start, start-up, shutdown and isolation procedures
  - f. Completing essential functions including:
    - applying isolation procedures
    - operating chocks manually or free running
    - coordinating the advance of the armoured face conveyor and supports with the shearer
    - operating supports within the geological conditions
  - g. identifying and responding to hazards
  - h. applying emergency procedures
  - i. identifying and responding to equipment/plant faults
  - j. completing operator maintenance
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge.** A knowledge of:
  - site operational safety procedures
  - longwall operational processes and procedures
  - longwall face equipment operational procedures

- longwall face equipment characteristics and limitations
- mine geology and survey information
- mine ventilation systems
- longwall face equipment maintenance systems and procedures
- site environmental requirements and constraints relevant to longwall face equipment



## MNC.U076.A CONDUCT LONGWALL FACE ANCILLARY EQUIPMENT OPERATIONS

### 6. Underpinning Skills. The ability to:

- apply operational safety requirements
- access, interpret, apply and communicate technical information
- interpret survey and geological data
- apply hand eye coordination
- apply diagnostic and faultfinding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements

### 7. Key Competencies

#### Level

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	2
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** For the purpose of this unit Pantech will include the crusher and all equipment outbye.

<u>Elements</u>	<u>Performance Criteria</u>
U77.1 Plan and Prepare for Operations.	<p>U77.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U77.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U77.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
U77.2 Operate Pantech.	<p>U77.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U77.2.2 Pre-start, start-up and shutdown procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U77.2.3 Pantech operations are carried out in accordance with manufacturer's instructions and site specific procedures.</p> <p>U77.2.4 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>U77.2.5 Factors adversely affecting production and monitoring systems alarms are acted upon or reported in accordance with site procedures.</p>

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<u>Elements</u>		<u>Performance Criteria</u>
U77.3	Carry Out Maintenance. Operator	<p>U77.3.1 Pantech inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U77.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U77.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U77.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U77.3.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Pantech operations may include belt retractions, services retractions (air, water, power), pulling pantech, servicing chock pump and tanks, roof and rib support, communication between longwall and outbye and advancing stage loader.
- 2 Equipment is to include tracker drive (monorail) pulling station, conveyor belt, boot end and cables and may, depending on the method of operation, include stage loader/crusher.
- 3 Work requirement details may include equipment (including defects), cutting height, next cutting sequence, achievement targets, essential survey data, geological conditions, hazards and potential hazards and coordination requirements/issues.
- 4 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 5 Hazards/Potential Hazards may include high pressure hoses, gas accumulation, windblast, roof and rib.

- 6 Emergency situations may include lack of ventilation, roof and rib fall, fire, flood, flash/ignition, emergency stop procedures, explosion and outbursts.
- 7 Coordination requirements include those with chock operator and AFC operator.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on gate road and pantech
  - c. preparing and maintaining the worksite
  - d. completing pre-start, start-up and shutdown procedures
  - e. completing a range of pantech operations and functions
  - f. applying emergency procedures
  - g. completing operator maintenance
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge.** A knowledge of:
  - site operational safety procedures
  - longwall operational processes and procedures
  - pantech operational procedures
  - pantech and associated equipment characteristics and limitations
  - mine geology and survey information
  - mine ventilation systems
  - pantech maintenance systems and procedures
  - site environmental requirements and constraints relevant to pantech operations
6. **Underpinning Skills.** The ability to:
  - apply operational safety requirements
  - access, interpret, apply and communicate technical information

- interpret survey and geological data
- apply hand eye coordination
- apply diagnostic and faultfinding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements

**7. Key Competencies****Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1



**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the installation and recovery of longwall face equipment.**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U78.1    Plan and Prepare.</p>	<p>U78.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U78.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U78.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
<p>U78.2    Install        and        Recover               Equipment.</p>	<p>U78.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U78.2.2 Pre-start, start-up, shutdown and isolation procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U78.2.3 Installation, recovery and machine operation is completed in accordance with manufacturer's instructions and the longwall installation/recovery plan.</p> <p>U78.2.4 Factors adversely affecting the installation and recovery are acted upon or reported in</p>

	<p>accordance with site procedures.</p> <p>U78.2.5 Ventilation is maintained, changing geological conditions are identified/monitored and action taken in accordance with site procedures.</p> <p>U78.2.6 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>U78.2.7 Workplace is left safe and in accordance with site procedures.</p>
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<u>Elements</u>	<b>Performance Criteria</b>
<p>U78.3 Carry Out Maintenance. Operator</p>	<p>U78.3.1 Longwall equipment inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U78.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U78.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U78.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U78.3.5 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Longwall equipment to be installed or recovered may include pantech, AFC, pans, tailgate/maingate, breaker line supports, shearer, cables, airhoses, hydraulic chocks, and bretby monorail.
- 2 Work requirement details may include equipment (including defects), cutting height, next cutting sequence, achievement targets, essential survey data, geological conditions, hazards and potential hazards and coordination requirements/issues.

- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Hazards/potential hazards may include heavy machinery, gas accumulation, roof-rib, water, dust, diesel fumes, high pressure hoses, lifting and pulling equipment
- 5 Emergency situations may include roof and rib fall, fire, flood, flash, eemergency stop procedures, explosion, outbursts and evacuation.
- 6 Equipment may include chock transporter, impro, mine dozer (electric or diesel), chainblocks, winches, roof bolters, multipurpose vehicles, re-reelers, load haul dump vehicles, E-Frame and diesel locos.
- 7 Coordination requirements may include those with equipment operators and transportation operators.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on longwall installation and recovery
- c. interpreting and working to the installation and recovery plan
- d. preparing and maintaining the worksite
- e. completing pre-start, start-up and shutdown procedures

Completing essential functions including:

- f. installing longwall equipment
- g. recovering longwall equipment
- h. applying emergency procedures
- i. completing operator maintenance

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site operational safety procedures
- longwall equipment operational processes and procedures
- longwall equipment characteristics, uses and limitations
- site geology and survey information
- site ventilation systems
- longwall equipment maintenance systems and procedures
- site environmental requirements and constraints relevant to longwall equipment installation and recovery

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret, apply and communicate technical information
- interpret survey and geological data
- apply hand eye coordination
- apply diagnostic and faultfinding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	2
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the tramping, setting, storing and recovery of breaker line supports.**

<u>Elements</u>	<b>Performance Criteria</b>
U79.1 Plan and Prepare.	<p>U79.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U79.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U79.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
U79.2 Tram and Position Breaker Line Supports.	<p>U79.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U79.2.2 Pre-start, start-up, shut-down and isolation procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U79.2.3 Breaker line support is operated in accordance with manufacturer's instructions and site procedures.</p> <p>U79.2.4 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>
U79.3 Carry Out Operator Maintenance.	<p>U79.3.1 Breaker line support inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p> <p>U79.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance</p>

	<p>with manufacturer's instructions and site authorised procedures and practices.</p> <p>U79.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U79.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U79.3.5 Records are processed in accordance with site requirements.</p>
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**MNC.U079.A  
SUPPORTS**

**OPERATE BREAKER LINE**

**Range of Variables:**

- 1 Breaker line support operations may include tramming / positioning / storing, setting, lowering, radio / pendant controls, cable handling and shut-down procedures.
- 2 Work requirement details may include machines (including any defects), cutting sequences, cut cycles, essential survey data, geological conditions, essential environment information, hazards and potential hazards and coordination requirements / issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Hazards/potential hazards may include roof, rib and floor, gas accumulation, setting, cable damage.
- 5 Emergency situations may include roof and rib falls.
- 6 Operational procedures may be varied depending on the number of breaker line supports used.
- 7 Coordination requirements may include those with shuttle car operator, cable handler, tradespersons, miner driver and Deputy.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**



**1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal operational safety procedures
- b. interpreting and communicating operational information
- c. preparing and maintaining the worksite
- d. conducting pre-start, start-up, shutdown and isolation procedures
- e. conforming with operational sequencing
- f. operating and relocating BLS
- g. applying local recovery procedures
- h. applying emergency procedures
- i. conducting operator maintenance

**4. Consistency of Performance.** Consistency of performance will, in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**MNC.U079.A  
SUPPORTS**

**OPERATE BREAKER LINE**

**5. Underpinning Knowledge.** A knowledge of:

- site operational safety systems
- site operational procedures and support rules
- breaker line support characteristics, technical capabilities and limitations
- site geology and survey information
- site and face ventilation systems
- breaker line support maintenance requirements and procedures
- site environmental requirements and constraints related to BLS

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret, apply and communicate technical information
- interpret survey and geological data

- apply diagnostic and faultfinding techniques
- use hand tools
- maintain equipment records
- comply with environmental requirements
- apply and-eye coordination

## 7. Key Competencies

## Level

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	2
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

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**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor: This unit covers face operations of the FCT.**

<u>Element</u>	<u>Performance Criteria</u>
<p>U80.1 Plan and Prepare for Operations.</p> <p>U80.2 Operate Flexible Conveyor Train.</p>	<p>U80.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U80.1.2 Geological and survey data required to complete the allocated work is accessed, interpreted and applied in accordance with site procedures.</p> <p>U80.1.3 Safety information and procedures are accessed and applied throughout the work.</p> <p>U80.2.1 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.</p> <p>U80.2.2 Pre-start, start-up, shutdown and isolation procedures are carried out in accordance with manufacturer's instructions and site procedures.</p> <p>U80.2.3 FCT is operated in accordance with manufacturer's instructions and site procedures to load and transport coal.</p> <p>U80.2.4 Monorails, if required, are installed/retracted in accordance with manufacturer's instructions and site procedures.</p> <p>U80.2.5 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p>
<p>U80.3 Carry Out Operator Maintenance.</p>	<p>U80.3.1 Conveyor train inspections and faultfinding are carried out in accordance with manufacturer's instructions and site requirements.</p>

	<p>U80.3.2 Routine operational servicing, lubrication and housekeeping tasks are carried out in accordance with manufacturer's instructions and site authorised procedures and practices.</p> <p>U80.3.3 Minor maintenance is carried out to manufacturer's instructions and site requirements.</p> <p>U80.3.4 Operator support is provided during preparation for, and conduct of, major maintenance tasks in accordance with site requirements.</p> <p>U80.3.5 Records are processed in accordance with site requirements.</p>
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**Range of Variables:**

- 1 FCT types may include roof or floor mounted.
- 2 Work requirement detail may include equipment, including defects, materials required, next cutting sequence, hazards and potential hazards, environmental conditions, survey data and coordination requirements / issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Specific safety requirements are to include housekeeping, continuous cable and monorail monitoring and awareness, isolation procedures and operational signal procedures.
- 5 Hazards / potential hazards may include outburst, gas accumulation, roof and ribs, water, floor, cables, monorail failure and size / weight of rails.
- 6 Emergency situations may include roof and rib fall, fire, flood, flash, emergency stop procedures, injury to personnel, explosion, outbursts and FCT and monorail failure.
- 7 Monorail installations are to include curves / corners as well as straight rails.
- 8 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety measures
- b. interpreting and communicating information of flexible conveyor train
- c. preparing and maintaining the worksite
- d. completing pre-start, start-up, shut-down and isolation procedures
- e. applying cable care and safety
- f. operating the flexible conveyor train

- g. extending monorails including bolting of curves
- h. applying emergency procedures
- i. completing operator maintenance

**4. Consistency of Performance.** Consistency of performance will, in many cases be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- mine operational safety procedures
- FCT operational procedures
- FCT characteristics, technical capabilities and limitations
- site geology and survey information
- mine and face ventilation systems
- FCT maintenance requirements and procedures
- site environmental requirements and constraints relevant to FCT

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret, apply and communicate technical information
- interpret survey and geological data
- apply diagnostic and faultfinding techniques
- use hand tools
- access stores systems
- maintain equipment records
- comply with environmental requirements
- apply and-eye coordination

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1



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## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:**

**This unit covers the operations of the mine lamp cabin including the receipt, storage, issue, maintenance and the recording of lamp cabin activities.**

<u>Elements</u>	<u>Performance Criteria</u>
U91.1 Plan and Prepare for Operations.	U91.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.  U91.1.2 Safety information and procedures are accessed and applied throughout the operations.  U91.1.3 Coordination activities are resolved with others at the site prior to commencement of, and during, the work activity.  U91.1.4 Materials and resources required for work are obtained and prepared in accordance with the work requirements and relevant manufacturers or site requirements.
U91.2 Operate and Maintain Lamp Cabin.	U91.2.1 Safety and personal equipment is maintained in accordance with site requirements and safe working practices.  U91.2.2 Records/lists/logs are maintained in accordance with site requirements.  U91.2.3 Lamp cabin equipment is monitored and faults are identified and responded to in accordance with site requirements.  U91.2.4 Work is performed according to target outcomes.  U91.2.5 Hazardous and environmentally sensitive

	<p>waste products are disposed of in accordance with site procedures.</p> <p>U91.2.6 General maintenance and housekeeping is completed to maintain the lamp cabin in an operational condition.</p>
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**Range Of Variables:**

- 1 Work requirement details may include servicing and maintenance schedules, notice of changes to shift personnel requirements, notice of visitors requiring equipment, defect reports on equipment and coordination requirements/issues.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Scheduled servicing and maintenance requirements are those contained in site procedures or similar authorisations.
- 4 Records and logs are those prescribed under the relevant legislation and site procedures.
- 5 Materials and resources may include cap lamp spares and personnel safety equipment, locked oil flame safety lamp and shot firing apparatus.
- 6 Personnel equipment may include cap lamps, self rescuers and hand held instruments.
- 7 Housekeeping may include area clean-up, clearing of walkways, hosing down, securing of equipment and materials, and disposing of waste products.
- 8 Hazardous and environmentally sensitive waste may include test gases, shellite, battery acid and chemical solvents.
- 9 Operator (operational) maintenance procedures are those established and authorised for the site.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on lamp cabin operations
- c. identifying and preparing for scheduled work requirements
- d. obtaining and maintaining adequate stocks of equipment and materials to support operations
- e. conducting scheduled maintenance on equipment
- f. performing minor maintenance on equipment
- g. maintaining records of equipment issues and maintenance
- h. disposing of environmentally sensitive waste products
- i. completing housekeeping

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

5. **Underpinning Knowledge.** A knowledge of:

- site personal and operational safety procedures
- mine operating procedures
- lamp cabin equipment characteristics, uses and limitations
- manufacturers and site equipment maintenance systems
- site chemical substances information system
- stock control procedures related to the lamp cabin operations
- relevant legislative and enterprise records systems
- site environmental requirements and constraints related to the lamp cabin

6. **Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret, apply and communicate technical information
- plan maintenance and servicing schedules
- dispose of environmentally sensitive materials
- communicate and negotiate with contractors/suppliers and mine employees
- maintain records
- maintain and perform minor repairs on equipment
- use relevant hand tools

7. **Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

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## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the provision of minesite bathroom services.

<u>Elements</u>	<u>Performance Criteria</u>
U92.1 Plan and Prepare for Work.	<p>U92.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U92.1.2 Materials and resources required for work are obtained and prepared in accordance with the work requirements and relevant manufacturer's or site requirements.</p> <p>U92.1.3 Safety information and procedures are accessed and applied throughout the work.</p>
U92.2 Provide Bathroom Services.	<p>U92.2.1 A safe work environment is established and monitored throughout the job.</p> <p>U92.2.2 Service contracts are administered in accordance with site specific requirements.</p> <p>U92.2.3 Bathroom is cleaned and maintained with equipment provided in accordance with site and legislative requirements.</p> <p>U92.2.4 Bathroom equipment and cleaned accessories are maintained in accordance with site requirements.</p> <p>U92.2.5 Security is maintained in accordance with site requirements.</p> <p>U92.2.6 Hazardous and environmentally sensitive materials are disposed of in accordance with site procedures.</p> <p>U92.2.7 Records are maintained in accordance with site requirements.</p>



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**Range Of Variables:**

- 1 Work requirement details may include cleaning and maintenance schedules, notices of personnel rosters, notice of visitors requiring support, defect reports on equipment/accessories and coordination requirements/issues.
- 2 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 3 Materials may include protective clothing, boots , chemicals, detergents and linen.
- 4 Maintenance may include repairing baskets, rollers, lockers and doors.
- 5 Equipment may include heaters, air controllers, dryers, vacuum cleaners, floor brushers and high pressure cleaners.
- 6 Accessories may include heating equipment, showers, taps, toilets and kit baskets/hangers.
- 7 Services contracts may include laundry contracts and clothing issues.
- 8 Hazardous and environmentally sensitive materials include chemicals, soaps and other cleaning materials.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. identifying, obtaining and maintaining stocks of materials and consumables
  - c. maintaining the hygiene of the bathroom to the prescribed standard
  - d. maintaining bathroom equipment in an operable condition

- e. maintaining effective bathroom temperatures/environment
- f. administering service contracts
- g. disposing of environmentally sensitive/hazardous materials

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site personal and operational safety procedures
- mine operating procedures
- minesite chemical substance information system
- bathroom equipment characteristics, uses and limitations
- manufacturer's and site equipment maintenance systems
- stock control procedures related to the bathroom operations
- relevant legislative and enterprise records systems
- site environmental requirements and constraints related to the bathroom

**6. Underpinning Skills.** The ability to:

- apply operational safety requirements
- access, interpret, apply and communicate technical information
- plan maintenance and servicing schedules
- dispose of environmentally sensitive materials
- communicate and negotiate with contractors/suppliers and mine employees
- maintain records
- maintain and perform minor repairs on equipment
- use relevant hand tools

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

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**MNC.U095.A  
PROCESSES**

**MONITOR CONTROL**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor: This unit covers the monitoring of mine equipment, services and processes and the reporting of faults for remedial action**

<u>Elements</u>	<u>Performance Criteria</u>
U95.1 Plan and Prepare for Operations.	<p>U95.1.1 Work requirements in the form of shift briefings, handover details or work orders are obtained, interpreted and clarified / confirmed before proceeding.</p> <p>U95.1.2 Safety information and procedures are accessed and applied throughout the work.</p> <p>U95.1.3 Monitoring equipment is checked in accordance with site procedures and manufacturer's instructions.</p> <p>U95.1.4 All equipment and services under monitoring control are identified and located in accordance with site procedures.</p>
U95.2 Monitor and Control Processes.	<p>U95.2.1 Mine processes are monitored to identify equipment availability, service availability and continuity of production.</p> <p>U95.2.2 Faults within processes, to equipment or services, are reported to the appropriate authority for remedial action in accordance with site procedures.</p> <p>U95.2.3 Hazardous and emergency situations are recognised and responded to in accordance with manufacturer's instructions and site procedures.</p> <p>U95.2.4 Status reports are provided to those who are or may be affected by the faults or disruption to production.</p> <p>U95.2.5 Remedial actions and the effects on production are monitored and reported to the appropriate authority in accordance with site procedures.</p>
U95.3 Record Operational Information.	<p>U95.3.1 Handover reports are provided in accordance with site procedures.</p> <p>U95.3.2 Records are processed in accordance with site requirements.</p>

**Range Of Variables:**

- 1 Monitoring equipment may be located underground or on the surface.
- 2 Work requirement details may include standard operating procedures, status reports, notice of known or anticipated changes, specific responsibilities for the shift and coordination requirements/issues.
- 3 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 4 Equipment used for monitoring may include visual display units, logical programmable control units and two-way radio.
- 5 Equipment, services and processes monitored may include conveyors, fans, sample analysis reports, power and production tonnage/rates.
- 6 Fault indicators may include power failure, ventilation pressure changes, lock out, belt slip, gas concentration and production tonnage/rates.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work or simulated environment within the bounds of safety.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on operational procedures
- c. identifying and locating equipment, services and processes being monitored
- d. identifying faults/potential faults or hazards
- e. reporting changes/variations to person(s) responsible for corrective action
- f. notifying person(s) who may/will be affected by changes/variations
- g. maintaining records, reports and logs to site procedures



4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- site personnel and operational safety procedures
- mining systems in use
- mine operational procedures
- monitoring systems characteristics, uses and limitations
- monitoring equipment and its operations/procedures
- mine plan and layout
- mine system schematics
- site communication procedures

**6. Underpinning Skills.** The ability to:

- apply personal and operational safety requirements
- start, operate and close down monitoring equipment
- read and interpret technical/operational monitoring information and reports
- communicate effectively on monitoring information
- maintain records

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

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**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

Descriptor: This unit covers the knowledge and skills required of a miner in relation to the application of the Spontaneous Combustion Management Plan.

<u>Elements</u>	<u>Performance Criteria</u>
U101.1	U101.1.1 The fundamentals of spontaneous combustion are identified.  U101.1.2 Hazards related to mine gases and variations in barometric pressure are identified.  U101.1.3 The effects of mine ventilation structures and the potential to bring about spontaneous combustion are identified  U101.1.4 Physical spontaneous combustion indicators relevant to the work area identified and clarified.  U101.1.5 Gaseous spontaneous combustion indicators relevant to the work area are identified and clarified.  U101.1.6 The range of causes of spontaneous combustion hazards related to the underground coal stowage and conveyor systems are identified.

U101.2	Identify and Cl	<p>U101.2.1 Relevant statutory requirements and Mine Manager's Rules and Schemes related to spontaneous combustion are identified, accessed, interpreted and applied.</p> <p>U101.2.2 Relevant procedures and responsibilities in the Spontaneous Combustion Management Plan are identified and confirmed.</p> <p>U101.2.3 Methods and purposes of the mine atmosphere monitoring systems are identified.</p> <p>U101.2.4 The methods and purposes of control measures for the elimination or minimisation risks of spontaneous combustion are identified.</p>
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**MNC.U101.A  
MEASURES**

**APPLY SPONTANEOUS COMBUSTION MANAGEMENT**

<u>Elements</u>	<u>Performance Criteria</u>
U101.3 Implement and Contr	U101.3.1 The spontaneous combustion status of the local work area is monitored and reported on.  U101.3.2 The proximity of other workings to the current work location is monitored and incidents of connection to other workings are reported immediately in accordance with mine procedures.  U101.3.3 Hazards associated with the stowage of coal are minimised through: <ul style="list-style-type: none"><li>- inspections and monitoring</li><li>- maintenance of high standards of housekeeping</li><li>- timely reporting of situations requiring further actions</li></ul> U101.3.4 Anomalies in spontaneous combustion procedures are identified and reported.

**Range of Variables:**

- 1 Safety information and procedures may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturer's instructions, safe working or job procedures (or equivalent).
- 2 Mine gases may include seam gases or gases from other than the mined seam such as methane, carbon dioxide and hydrogen sulphide in addition to normal atmospheric gases.
- 3 Ventilation structures may include stoppings, overcasts, regulators, preparation seals, fire doors, bulk heads, goaf seals, final seals and pressure chambers.
- 4 Coal seam characteristics at this level may include a basic knowledge of such factors as rank, moisture content, particle size, seam gas, pyrites or depositional factors such as seam thickness, multi seams and depth of cover.
- 5 Hazards resulting from spontaneous combustion may include production of noxious and irrespirable gases, fires and explosive mixtures.
- 6 Coal stowage hazards may include spillage coal and waste products.

- 7 Mine atmosphere monitoring may include continuous monitoring, portable (hand held) monitoring, collection of bag samples, gas chromatography, ventilation measurements in all areas of the mines including sealed areas and waste workings.
- 8 Physical spontaneous combustion indicators may include smoke, haze, sweating, smell, heat.
- 9 Gaseous spontaneous combustion indicators may include increased production of carbon monoxide, hydrogen and hydrocarbons or the use of indicator ratios such as CO make, Graham's ratio or other ratios as determined suitable.

**Range of Variables: (contd)**

10 Control measures for the elimination or minimisation of spontaneous combustion risks may include grouting, digging-out, sealing, water infusion and inertisation.

11 Status monitoring may include physical indications of spontaneous combustion, gaseous indications of spontaneous combustion, changes in ventilation conditions, defective seals and damage to monitoring systems/equipment.

12 Minimisation of hazards associated with the stowage of coal may involve inspections and monitoring, maintenance of high standards of housekeeping and timely reporting of situations requiring further actions.

**Definitions:**

For the purpose of this standard, the definitions below apply:

- Spontaneous combustion management plan may include procedures for mine atmosphere monitoring, reporting requirements, auditing, ventilation systems and usage, inertisation techniques, mine plan, action plans, response plans, emergency procedures, individual group responsibilities, training and education procedures.
- Inertisation may be defined as the displacing or reducing of oxygen to a level that will not support combustion. It may be either a natural process using seam gases or a process of introducing incombustible gases.

**Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work or simulated environment within the bounds of safety.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on spontaneous combustion management measures
- c. identifying physical indicators of spontaneous combustion



- d. identifying gaseous indicators of spontaneous combustion
- e. identifying and reporting on changes in ventilation conditions
- f. identifying types and purposes of atmospheric monitoring systems and equipment
- g. reporting incidents or potential hazards
- h. identifying and responding to hazards associated with coal stowage

4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

## MNC.U101.A APPLY SPONTANEOUS COMBUSTION MANAGEMENT MEASURES

### 5. Underpinning Knowledge. A knowledge of:

- spontaneous combustion causes and hazards
- spontaneous combustion management plan requirements
- mine ventilation structures
- mine gases
- geological data
- hazard assessment procedure
- mine operation procedures
- gas monitoring systems
- spontaneous combustion indicators
- general housekeeping and reporting measures with respect to spontaneous combustion

### 6. Underpinning Skills. The ability to:

- access, interpret, apply:
  - general information on spontaneous combustion
  - site/legislative requirements with respect to spontaneous combustion
  - records and reports
- briefings and handover details
- plan and organise work
- recognise and report incidents and potential hazards associated with spontaneous combustion

### 7. Key Competencies

#### Level

Collecting, analysing and organising ideas and information.	1
Communicating ideas and information.	1
Planning and organising activities.	1
Working with others and in teams.	1
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	1

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the strategic management functions required to develop and establish a spontaneous combustion management plan.

<u>Elements</u>	<u>Performance Criteria</u>
U102.1 Spontaneous Combustion Hazards and Risks.	U102.1.1 The causes and effects of spontaneous combustion are identified.  U102.1.2 Coal seam characteristics which affect likelihood of spontaneous combustion are identified and clarified.  U102.1.3 The effects of changes in the mine atmosphere on the risks of spontaneous combustion are identified and clarified.  U102.1.4 The impact of ventilation on the risks of spontaneous combustion are identified.  U102.1.5 The impact of water accumulation on the risks of spontaneous combustion are identified and clarified.  U102.1.6 Spontaneous combustion risks associated with the coal stowage systems are identified.

U102.2	Identify and Clarify S	<p>U102.2.1 The method, purpose and procedures for installation and use of mine monitoring systems with regards to spontaneous combustion are identified and evaluated.</p> <p>U102.2.2 The method, purpose and procedures for the installation and use of mine ventilation systems with regard to spontaneous combustion are identified and evaluated.</p> <p>U102.2.3 The methods and purposes of natural and induced inertisation in the goaf and waste workings, in relation to spontaneous combustion, are identified and evaluated.</p> <p>U102.2.4 The scope and impact of seam gas management on spontaneous combustion is identified and clarified.</p> <p>U102.2.5 The scope, impact and uses of water management including water infusion on spontaneous combustion are identified and clarified.</p> <p>U102.2.6 Seal design requirements in terms of geological structures, construction, location and the use of correct materials for the spontaneous combustion risks are identified and clarified.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
<p>U102.3            Design and De</p>	<p>U102.3.1 The legislative, statutory, published guidelines and site requirements related to spontaneous combustion management systems are accessed, interpreted and clarified.</p> <p>U102.3.2 The principles of mine design with respect to spontaneous combustion are identified and clarified.</p> <p>U102.3.3 The principles of mine design are interpreted and applied during the ongoing design and development process.</p> <p>U102.3.4 Factors and issues related to the presence of overlaying and underlaying seams are incorporated into mine design processes.</p> <p>U102.3.5 The effectiveness of mine design process in contributing to the minimisation of the risk of spontaneous combustion is reviewed and the processes amended as required.</p> <p>U102.3.6 Ventilation systems and controls to minimise the risk of spontaneous combustion are incorporated into the development of the management system.</p> <p>U102.3.7 Inertisation systems to satisfy the operational conditions of the mine are incorporated into the development of the system.</p> <p>U102.3.8 Water management measures to minimise the risk of spontaneous combustion are incorporated into the development of the system.</p> <p>U102.3.9 Mine monitoring systems to minimise the risk of spontaneous combustion are incorporated into the development of the system.</p> <p>U102.3.10 Contingency plans to mitigate the effect of a spontan</p>

<u>Elements</u>	<u>Performance Criteria</u>
U102.4	<p>U102.4.1 Spontaneous combustion management objectives, systems descriptions and responsibilities are established and incorporated into the management plan.</p> <p>U102.4.2 Hazard control procedures associated with spontaneous combustion are identified, developed and established.</p> <p>U102.4.3 Spontaneous combustion management monitoring system installation, operation and maintenance procedures are developed and established.</p> <p>U102.4.4 Ventilation control device installation, operation and maintenance procedures are developed and established.</p> <p>U102.4.5 Inertisation system procedures are developed and established.</p> <p>U102.4.6 Spontaneous combustion management systems maintenance procedures are developed and established.</p> <p>U102.4.7 Spontaneous combustion system information recording and reporting procedures are developed and established.</p> <p>U102.4.8 Action levels and responses are established and reviewed to minimise the hazards of spontaneous combustion.</p> <p>U102.4.9 Spontaneous combustion emergency and evacuation procedures are developed and established in the spontaneous combustion management plan.</p> <p>U102.4.10 A program, including systems and procedures, to satisfy the requirements of the spontaneous combustion management plan.</p> <p>U102.4.11 Audit, review and updating procedures are incorporated into the spontaneous combustion management plan.</p>

U102.5	Audit an	<p>U102.5.1 Spontaneous combustion monitoring systems operations are audited for compliance with statutory and gas management plan standards.</p> <p>U102.5.2 Mine ventilation control devices are audited for compliance with statutory and mine site requirements.</p> <p>U102.5.3 Recording systems are audited for compliance with the gas management plan.</p> <p>U102.5.4 The maintenance program and procedures are audited for compliance with the spontaneous combustion management plan.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
U102.5 Audit and Review th	<p>U102.5.5 Spontaneous combustion training program is audited for currency, relevance and compliance with the requirements of the spontaneous combustion management plan.</p> <p>U102.5.6 Spontaneous combustion emergency and evacuation procedures are trailed and audited for compliance with the spontaneous combustion management plan.</p> <p>U102.5.7 Procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit are established.</p> <p>U102.5.8 Future spontaneous combustion management requirements are identified, evaluated and incorporated into planning procedures as stipulated by the gas management plan.</p>

**Definitions:**

For the purposes of this standard, the definitions below apply:

- Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.
- Audit is a validation process to ensure the procedure, process, system fills it's objective.
- Inertisation may be defined as the displacing or reducing of oxygen to a level that will not support combustion. It may be either a natural process using seam gases or a process of introducing incombustible gases.
- Principles of mine design include recovery, reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and access.
- Spontaneous combustion management plan may include procedures for mine atmosphere monitoring, reporting requirements, auditing, ventilation systems and usage, inertisation techniques, mine plan, action plans, response plans, emergency procedures, individual group responsibilities, training and education procedures.



**Range of Variables:**

- 1 Hazards may include irrespirable atmosphere, noxious atmospheres, flammable or explosive mixtures.
- 2 Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs/gobs in the mine.
- 3 Mine gases may include seam gases such as methane, carbon dioxide and hydrogen sulphide, normal atmosphere gases, which are produced from processes of heating.
- 4 Ventilation structures may include stoppings, overcasts, regulators, preparation seals, fire doors, bulk heads, goaf seals, final seals and pressure chambers.
- 5 Geological conditions may include faults, dykes, intrusions and strata deformities.
- 6 Coal seam characteristics may include inherent factors such as rank, petrology, moisture, particle size, seam gas, pyrites or depositional factors such as seam thickness, multi seams, seam dip and depth of cover.
- 7 Mine atmosphere monitoring may include continuous monitoring, portable (hand held) monitoring, collection of bag samples, gas chromatography, ventilation measurements including differential pressure across stoppings, seals and solid coal (intake to return) from all areas of the mine including sealed areas and waste workings.
- 8 Sensory spontaneous combustion indicators may include smoke, haze, sweating, smell, heat.
- 9 Gaseous spontaneous combustion indicators may include increased production of carbon monoxide, hydrogen and hydrocarbons or the use of indicator ratios such as CO make, Graham's ratio, Tricketts, Morris' Oxides of Carbon ratio or other ratios as determined suitable.
- 10 Defects to ventilation structures may include deterioration of materials, quality of construction, effects of surrounding strata, physical damage and water damage.
- 11 Control measures may include coal stowage and transport procedures, procedures for responding to changes in atmosphere, mine atmosphere monitoring systems, procedures relating to the status of the ventilation system, sealing procedures, goaf monitoring systems, goaf sampling systems and the spontaneous combustion inspection system.
- 12 Contingency plans for mitigation of spontaneous combustion may include, quenching, grouting, smothering, excavating, ventilation control by pressure balancing, sealing.

**Evidence Guide**

## 1. Context of Assessment

The ultimate competency outcome is for the candidate to be able to establish a spontaneous combustion management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Spontaneous combustion circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical establishment of a spontaneous combustion management plan may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

### MNC.U102.A ESTABLISH THE SPONTANEOUS COMBUSTION MANAGEMENT PLAN

#### 1. Context of Assessment (contd)

The assessment system for this competency is to cover the following:

- A. Theory and knowledge underpinning the competency which is a mandatory requirement
- B. Application of theory to a generic practical situation / simulation which is a mandatory requirement
- C. Practical establishment of a spontaneous combustion management plan or equivalent activity.

There are special considerations in respect of Assessment C. Within the Black Coal Sector technical management competencies at this level there is a requirement for a candidate to establish a range of safety / hazard management plans (e.g. ventilation, gas management, strata etc.). It is unlikely that all candidates will be able, in terms of access, reasonable economic constraints and reasonable time frames, to physically establish all these plans.

In most cases it would be reasonable to infer competency if a candidate has completed assessments A and B in respect of each required competency and has satisfied assessment C in respect of one of the required plans. This inference is based on the fact that a candidate, who has competently established one plan, would be capable of establishing other plans if they have satisfied the theory and generic applications which form part of the required competencies.

Naturally, if this competency unit is being undertaken as a stand alone unit rather than as one within a qualification cluster, Assessment C is to be treated as a mandatory requirement.

## 2. Inter-dependant Assessment of Units

Whilst there are some common features between the units at this level, commonality is generally limited to science and engineering theory and the planning process. This unit requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on spontaneous combustion management plan operations
  - c. conducting a risk assessment to identify spontaneous combustion hazards and risks
  - d. applying mine design principles to minimise the likelihood of spontaneous combustion
  - e. evaluating and selecting spontaneous combustion control systems
  - f. selecting and developing control systems, responses and procedures
  - g. defining roles and responsibilities for spontaneous combustion management
  - h. identifying spontaneous combustion training needs
  - i. documenting the spontaneous combustion Management Plan
  - j. reviewing and auditing the effectiveness of the Management Plan

MNC.U102.A

**ESTABLISH THE SPONTANEOUS COMBUSTION MANAGEMENT PLAN**

- 4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Spontaneous Combustion Management Plans and their establishment are to meet Legislative and Industry standards.

- 5. Underpinning Knowledge.** A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to design, develop (or cause to be designed and developed) and establish the spontaneous combustion management plan.

- causes and effects of spontaneous combustion
- the effects of coal seam characteristics on spontaneous combustion
- legislative and site requirements and instructions
- mine operation procedures
- geological data
- strata control
- mine design relating to spontaneous combustion
- spontaneous combustion management requirements
- methods of control of spontaneous combustion
- principles of ventilation management

- gas management
- mine and goaf ventilation systems
- mine gases
- inertisation principles and techniques
- underground water management
- seal design and sealing procedures
- spontaneous combustion indicators and ratios
- site environmental monitoring requirements
- risk management procedures
- site statutory inspection requirements
- mine reporting procedures

**6. Underpinning Skills.** The ability to:

- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- apply the principles of mine design
- assess the risks and consequences of spontaneous combustion
- develop procedures appropriate to mine operations for management of spontaneous combustion
- plan and coordinate work
- identify training needs related to spontaneous combustion

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	3 2
Communicating ideas and information.	3
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

**MNC.U103.A IMPLEMENT THE SPONTANEOUS COMBUSTION  
MANAGEMENT PLAN**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:** This unit covers the activities required for the implementation of the Spontaneous Combustion Management Plan by persons responsible for this function.

<u>Elements</u>	<u>Performance Criteria</u>
<p>U103.1 Identify and Apply Resources to the Spontaneous Combustion Management Plan.</p>	<p>U103.1.1 Relevant statutory requirements and Mine Managers Rules and Schemes related to spontaneous combustion are identified, accessed, interpreted and applied.</p> <p>U103.1.2 Procedures and responsibilities in the Spontaneous Combustion Management Plan are identified, interpreted and applied.</p> <p>U103.1.3 Appropriate response procedures are identified and implemented in situations where trigger levels are reached.</p> <p>U103.1.4 Suggestions and recommendations for changes to spontaneous combustion procedures are encouraged, received, reviewed and, where appropriate, implemented.</p>
<p>U103.2 Implement Mine Atmosphere Monitoring Measures.</p>	<p>U103.2.1 Procedures for the installation, operation and maintenance of monitoring systems are implemented.</p> <p>U103.2.2 Systems and procedures for the collection of samples are implemented.</p> <p>U103.2.3 Changes in mine atmosphere status are investigated and, as appropriate, corrective action is implemented and reports prepared and processed.</p>

<p>U103.3 Monitor and Respond to Spontaneous Combustion Indicators.</p>	<p>U103.3.1 The system for identification of and inspections for spontaneous combustion indicators is implemented.</p> <p>U103.3.2 Sensory spontaneous combustion indicators are monitored, variations investigated and findings responded to in accordance with the plan.</p> <p>U103.3.3 Gaseous spontaneous combustion indicators are monitored, variations investigated findings responded to in accordance with the plan.</p>
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**MNC.U103.A IMPLEMENT THE SPONTANEOUS COMBUSTION MANAGEMENT PLAN**

<u>Elements</u>	<u>Performance Criteria</u>
U103.4 Implement Spontaneous Combustion Control Measures.	<p>U103.4.1 Ventilation control measures are implemented in accordance with the spontaneous combustion management plan.</p> <p>U103.4.2 Ventilation monitoring systems and surveys to assess the status of the systems are implemented.</p> <p>U103.4.3 Water management measures to minimise the risk of spontaneous combustion are incorporated into the development of the system.</p> <p>U103.4.4 Inertisation is implemented as required and in accordance with the established plan.</p> <p>U103.4.5 Contingency plans are implemented and effectiveness and currency reviewed.</p> <p>U103.4.6 Systems to prevent and/or respond immediately to the intersection of current and other workings are implemented.</p>
U103.5 Audit Spontaneous Combustion Control Measures.	U103.5.1 The effectiveness of control measures is audited and the procedures/measures amended as required.

**Definitions:**

For the purposes of this standard, the definitions below apply:

- Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.
- Audit is a validation process to ensure the procedure, process, system fills it's objective.
- Inertisation may be defined as the displacing or reducing of oxygen to a level that will not support combustion. It may be either a natural process using seam gases or a process of introducing incombustible gases.
- Principles of mine design include recovery, reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and access.



- Spontaneous combustion management plan may include procedures for mine atmosphere monitoring, reporting requirements, auditing, ventilation systems and usage, inertisation techniques, mine plan, action plans, response plans, emergency procedures, individual group responsibilities, training and education procedures.

## MNC.U103.A IMPLEMENT THE SPONTANEOUS COMBUSTION MANAGEMENT PLAN

### Range of Variables:

- 1 Hazards may include irrespirable atmosphere, noxious atmospheres, flammable or explosive mixtures.
- 2 Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs/gobs in the mine.
- 3 Mine gases may include seam gases such as methane, carbon dioxide and hydrogen sulphide, normal atmosphere gases, which are produced from processes of heating.
- 4 Ventilation structures may include stoppings, overcasts, regulators, preparation seals, fire doors, bulk heads, goaf seals, final seals and pressure chambers.
- 5 Geological conditions may include faults, dykes, intrusions and strata deformities.
- 6 Coal seam characteristics may include inherent factors such as rank, petrology, moisture, particle size, seam gas, pyrites or depositional factors such as seam thickness, multi seams, seam dip and depth of cover.
- 7 Mine atmosphere monitoring may include continuous monitoring, portable (hand held) monitoring, collection of bag samples, gas chromatography, ventilation measurements including differential pressure across stoppings, seals and solid coal (intake to return) from all areas of the mine including sealed areas and waste workings.
- 8 Sensory spontaneous combustion indicators may include smoke, haze, sweating, smell, heat.
- 9 Gaseous spontaneous combustion indicators may include increased production of carbon monoxide, hydrogen and hydrocarbons or the use of indicator ratios such as CO make, Grahams ratio, Tricketts, Morris' Oxides of Carbon ratio or other ratios as determined suitable.
- 10 Defects to ventilation structures may include deterioration of materials, quality of construction, effects of surrounding strata, physical damage and water damage.
- 11 Control measures may include coal stowage and transport procedures, procedures for responding to changes in atmosphere, mine atmosphere monitoring systems, procedures relating to the status of the ventilation system, sealing procedures, goaf monitoring systems, goaf sampling systems and the spontaneous combustion inspection system.
- 12 Contingency plans for mitigation of spontaneous combustion may include quenching, grouting, smothering, excavating, ventilation control by pressure balancing, sealing.

## **MNC.U103.A IMPLEMENT THE SPONTANEOUS COMBUSTION MANAGEMENT PLAN**

### **Evidence Guide**

#### **1. Context of Assessment**

The ultimate competency outcome is for the candidate to be able to implement a spontaneous combustion management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Spontaneous combustion circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical implementation of a spontaneous combustion management plan may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following mandatory requirements:

- A. Theory and knowledge underpinning the competency
- B. Application of theory to a generic practical situation / simulation
- C. Practical implementation of a spontaneous combustion management plan.

#### **2. Inter-dependant Assessment of Units**

Whilst there are some common features between the units at this level, commonality is generally limited to the underpinning science and engineering knowledge. This unit requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.

#### **3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on the spontaneous combustion management plan

- c. communicating spontaneous combustion procedures and responsibilities to employees
- d. implementing the mine atmosphere monitoring system and measures
- e. implementing and monitoring trigger level response procedures
- f. implementing spontaneous combustion control measures
- g. implementing and reviewing contingency plans covering periods of production delay
- h. implementing audits of spontaneous combustion control measure
- i. contributing to the development and maintenance of the spontaneous combustion management plan

**4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Spontaneous Combustion Management Plans and their implementation are to meet Legislative and Industry standards.

## **MNC.U103.A IMPLEMENT THE SPONTANEOUS COMBUSTION MANAGEMENT PLAN**

### **5. Underpinning Knowledge.** A knowledge of:

- causes and effects of spontaneous combustion
- the effects of coal seam characteristics on spontaneous combustion
- legislative and site requirements and instructions
- mine operation procedures
- geological data
- strata control
- mine plan
- mine design relating to spontaneous combustion
- spontaneous combustion management requirements
- methods of control of spontaneous combustion
- principles of ventilation management
- gas management
- mine and goaf ventilation systems
- mine gases
- inertisation principles and techniques
- underground water management
- sealing design
- spontaneous combustion indicators and ratios
- site environmental monitoring requirements
- risk management procedures
- site statutory inspection requirements
- mine reporting procedures

### **6. Underpinning Skills.** The ability to:

- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- prepare technical reports
- apply the principles of mine design
- assess the risks and consequences of spontaneous combustion
- develop procedures appropriate to mine operations for management of spontaneous combustion
- inspect, monitor and record data related to the management of spontaneous combustion
- plan and coordinate work
- identify training needs related to spontaneous combustion

## **MNC.U103.A IMPLEMENT THE SPONTANEOUS COMBUSTION MANAGEMENT PLAN**

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	3
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

NATIONAL MINING ITAB

BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the operational activities related to the minimisation of spontaneous combustion risks to be undertaken by a Deputy or other persons appointed for the purpose.

<u>Elements</u>	<u>Performance Criteria</u>
<p>U104.1 Identify and Clarify Spontaneous Combustion Hazards and Risks.</p>	<p>U104.1.1 The fundamentals of spontaneous combustion are identified.</p> <p>U104.1.2 The effects of mine gases and barometric variations on the risks of spontaneous combustion are identified and clarified.</p> <p>U104.1.3 Hazards associated with goaf and waste working atmosphere are identified and clarified.</p> <p>U104.1.4 The impact of ventilation on the risks of spontaneous combustion is identified.</p> <p>U104.1.5 Spontaneous combustion risks associated with the coal stowage is identified.</p>
<p>U104.2 Identify and Clarify Spontaneous Combustion Control Systems and Procedures.</p>	<p>U104.2.1 The principles of ventilation design and related procedures and their impact on spontaneous combustion management are identified.</p> <p>U104.2.2 The methods and purposes of natural and induced inertisation in the goaf and waste workings, in relation to spontaneous combustion, are identified.</p> <p>U104.2.3 The method, purpose, operation and procedures for installation of mine atmosphere monitoring systems, with regards to spontaneous combustion are identified.</p>

<p>U104.3 Identify and Apply Resources to the Spontaneous Combustion Management Plan.</p>	<p>U104.3.1 Relevant statutory requirements and Mine Managers Rules and Schemes including statutory inspection requirements related to spontaneous combustion are identified, accessed, interpreted and applied.</p> <p>U104.3.2 Procedures and responsibilities in the Spontaneous Combustion Management Plan are identified, interpreted and applied.</p> <p>U104.3.3 The actions of the work group are monitored to ensure the application of required spontaneous combustion procedures.</p> <p>U104.3.4 Appropriate response procedures are identified and implemented in situations where trigger levels are reached.</p> <p>U104.3.5 Contributions are made to the development, review and enhancement of spontaneous combustion procedures in accordance with mine practices.</p>
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**MNC.U104.A            APPLY THE SPONTANEOUS COMBUSTION MANAGEMENT PLAN**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U104.4 Identify and Apply Spontaneous Combustion Indicators.</p>	<p>U104.4.1 Sensory spontaneous combustion indicators are identified, monitored, investigated and reported on.</p> <p>U104.4.2 Gaseous spontaneous combustion indicators are identified, monitored, investigated and reported on.</p> <p>U104.4.3 Indicators are responded to in accordance with mine procedures.</p>
<p>U104.5 Apply Mine Atmosphere Monitoring Systems and Procedures.</p>	<p>U104.5.1 Mine atmosphere monitoring is conducted, the results interpreted and reports are prepared and processed in accordance with approved procedures.</p> <p>U104.5.2 Damage to monitoring systems is identified, reported and, where appropriate, repairs are effected in accordance with approved procedures.</p>



<p>U104.6 Implement Control Measures.</p>	<p>U104.6.1 Changes in ventilation which may affect spontaneous combustion are identified, investigated and reported.</p> <p>U104.6.2 Incidents of connection to other workings are reported in accordance with approved procedures and immediate action taken to isolate other workings if intersected.</p> <p>U104.6.3 Action to remedy the impact of water accumulation on the ventilation system is identified, selected and implemented.</p> <p>U104.6.4 Defects to ventilation structures and seals are identified, rectified and reported.</p> <p>U104.6.5 Hazards associated with the coal stowage and transport systems are identified and action implemented to minimise the spontaneous combustion risks.</p>
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**Range of Variables:**

- 1 Coal seam characteristics may include inherent factors such as rank, petrology, moisture, content, particle size, seam gas, pyrites or depositional factors such as seam thickness, multi seams, seam dip, depth of cover.
- 2 Hazards may include irrespirable atmosphere, noxious atmospheres, flammable or explosive mixtures.
- 3 Mine gases may include seam gases or other gases, such as methane, carbon dioxide and hydrogen sulphide in addition to normal atmosphere gases, which are produced from processes such as heating, goafs or released from strata.
- 4 Ventilation structures may include stoppings, overcasts, regulators, preparation seals/fire doors, bulkheads, goaf seals, final seals and pressure chambers.
- 5 Geological conditions may include faults, dykes, intrusions and strata deformities.
- 6 Mine atmosphere monitoring may include continuous monitoring, portable (hand held) monitoring, collection of bag samples, gas chromatography, ventilation measurements from all areas of the mine including sealed areas and waste workings.
- 7 Work group is a generic term. It may be known locally as gangs, crews, teams or shifts.
- 8 Resources may include equipment, personnel, materials, information and risk assessment methods.
- 9 Communication processes may include verbal, written reports, electronic information and other work instructions.
- 10 Physical spontaneous combustion indicators may include smoke, haze, sweating, smell, heat.
- 11 Gaseous spontaneous combustion indicators may include increased rates of production of carbon monoxide, hydrogen, carbon dioxide and hydrocarbons or the use of indicator ratios such as CO make, Graham's ratio or other ratios as determined suitable.
- 12 Defects to ventilation structures may include deterioration of materials, quality of construction, effects of surrounding strata, physical damage and water damage.

**Definitions:**

For the purpose of this standard the definitions below apply:

- Action (Trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated.
- Inertisation may be defined as the displacing or reducing of oxygen to a level that will not support combustion. It may be either a natural process using seam gases or a process of introducing incombustible gases.
- Spontaneous combustion management plan may include procedures for mine atmosphere monitoring, reporting requirements, auditing, ventilation systems and usage, inertisation techniques, mine plan, action plans, response plans, emergency procedures, individual group responsibilities, training and education procedures.

## **Evidence Guide**

### **1. Context of Assessment**

The ultimate competency outcome is for the candidate to be able to apply a spontaneous combustion management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Spontaneous combustion circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical application of a spontaneous combustion management plan may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following requirements:

- A. Theory and knowledge underpinning the competency
- B. Application of theory to a generic practical situation / simulation
- C. Practical application of a spontaneous combustion management plan.

### **2. Inter-dependant Assessment of Units**

Whilst there are some common features between the units at this level, commonality is limited to the basic underpinning science and engineering knowledge. This unit requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.

### **3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on the spontaneous combustion safety management plan
- c. conducting mine atmosphere monitoring
- d. interpreting and reporting on atmospheric monitoring information
- e. identifying, investigating, monitoring and reporting on physical indicators

- f. identifying, investigating, monitoring and reporting on gaseous indicators
- g. responding to damage to atmospheric monitoring systems
- h. monitoring and responding to changes in mine ventilation
- i. responding to trigger levels

**4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Spontaneous Combustion Management Plans and their application are to meet Legislative and Industry standards.

**5. Underpinning Knowledge.** A knowledge of:

- spontaneous combustion causes and hazards
- methods of control of spontaneous combustion
- mine gases
- legislative, site requirements and instructions
- spontaneous combustion indicators and ratios
- spontaneous combustion management requirements
- mine design and plan relating to spontaneous combustion
- geological data
- mine operation procedures
- site environmental monitoring requirements
- mine and goaf ventilation systems
- sealing procedures
- hazard assessment procedures
- site statutory inspection requirements
- mine reporting procedures

**6. Underpinning Skills.** The ability to:

- access, interpret, apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- plan and co-ordinate work
- identifying spontaneous combustion indicators and ratios
- inspect, monitor and record data related to management of spontaneous combustion
- identify local training needs related to spontaneous combustion
- recognise and investigate incidents and potential hazards associated with spontaneous combustion
- apply spontaneous combustion control procedures or methods

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	2 1
Communicating ideas and information.	2
Planning and organising activities.	1
Working with others and in teams.	2
Solving problems.	1
Using mathematical ideas and techniques.	1
Using technology.	

NATIONAL MINING ITAB

BLACK COAL : UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the strategic management functions required to develop and establish a mine ventilation management plan.

<u>Elements</u>	<u>Performance Criteria</u>
U106.1	<p>U106.1.1 The sources and hazards of gases and fumes are identified and evaluated.</p> <p>U106.1.2 The hazards of airborne and flammable dust are identified and evaluated.</p> <p>U106.1.3 The likely impact of gas drainage is identified, analysed and evaluated.</p> <p>U106.1.4 The hazards of fire and explosion are identified, analysed and evaluated.</p> <p>U106.1.5 The potential for and impact of ventilation pressure differentials are identified, analysed and evaluated.</p> <p>U106.1.6 The effect of changes in air temperature and humidity are identified, analysed and evaluated.</p> <p>U106.1.7 The potential for and likely impact of spontaneous combustion on mine ventilation is identified, analysed and evaluated.</p>
U106.2 Identify, Analyse and Evaluate Events Which Impact on Ventilation	<p>U106.2.1 The impact of disruption to the ventilation system is identified and evaluated.</p> <p>U106.2.2 The causes and effects of recirculation are identified and evaluated.</p> <p>U106.2.3 The potential for and likely impact of windblast is identified, analysed and evaluated.</p> <p>U106.2.4 The potential for and likely impact of outburst is identified, analysed and evaluated.</p>



	<p>U106.2.5 The impacts of holing into previous workings are identified, analysed and evaluated.</p> <p>U106.2.6 The impact of water is identified, analysed and evaluated.</p> <p>U106.2.7 The potential for , and likely impact of, fires and explosion are identified and analysed and evaluated.</p>
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**MNC.U106.A  
PLAN**

**ESTABLISH THE VENTILATION MANAGEMENT**

<u>Elements</u>	<u>Performance Criteria</u>
U106.3 Identify, Analyse and Evaluate Mine Ventilation Control Options and Measures.	<p>U106.3.1 The types, applications and limitations of the ventilation control devices are identified, analysed and evaluated.</p> <p>U106.3.2 The impact of mine design on the ventilation system is identified and evaluated.</p> <p>U106.3.3 The methods, purposes and limitations of mine monitoring systems and processes are identified and evaluated.</p>
U106.4	<p>U106.4.1 The legislative, statutory and site requirements related to ventilation management are accessed, interpreted and clarified.</p> <p>U106.4.2 The objectives and criteria for a safe and effective mine ventilation system are identified, analysed and confirmed.</p> <p>U106.4.3 The principles and requirements of mine ventilation including the effects of mine gases are incorporated into the design and development of the ventilation system.</p> <p>U106.4.4 Design criteria and specifications for ventilation networks are identified and incorporated into the design and development of the mine ventilation system.</p> <p>U106.4.5 The requirements for mine fans are identified, evaluated and incorporated into the design and development of the ventilation system.</p> <p>U106.4.6 Ventilation control device options are evaluated against requirements and incorporated into the design and development of the ventilation system.</p> <p>U106.4.7 Ventilation and environmental monitoring systems are incorporated into the design and development of the ventilation system.</p>
U106.5	U106.5.1 Mine ventilation objectives, systems descriptions and responsibilities are established and incorporated into the ventilation management plan.

	<p>U106.5.2 Procedures for the installation, functioning and maintenance of ventilation monitoring systems are established in the ventilation management plan.</p> <p>U106.5.3 Procedures for the installation, operation and changes to ventilation devices are prepared and established in the ventilation management plan.</p> <p>U106.5.4 A system of early warning for each identified hazard is developed, including action requirements for each event, and incorporated into the ventilation management plan.</p> <p>U106.5.5 Ventilation system maintenance program and procedures are formulated and incorporated into the ventilation management plan.</p>
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**MNC.U106.A  
PLAN**

**ESTABLISH THE VENTILATION MANAGEMENT**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U106.5 Establish the Ventilation Management Plan</p>	<p>U106.5.6 Audit, review and updating procedures for the ventilation systems are incorporated into the ventilation management plan.</p> <p>U106.5.7 Ventilation emergency and evacuation plans and procedures are developed and established in the ventilation management plan.</p> <p>U106.5.8 A program, including systems and procedures, to satisfy identified ventilation management training requirements is established.</p> <p>U106.5.9 A procedure for planning, controlling, implementing, recording and communicating changes to mine ventilation systems and components is established and incorporated into the ventilation management plan.</p>
<p>U106.6 Audit and Review the Ventilation Management Plan.</p>	<p>U106.6.1 Ventilation standards are audited for compliance with statutory and ventilation management plan specifications.</p> <p>U106.6.2 Ventilation control devices are audited for compliance with statutory and ventilation management plan requirements.</p> <p>U106.6.3 Monitoring systems are audited for compliance with statutory and ventilation management plan standards.</p> <p>U106.6.4 Ventilation recording systems are audited for compliance with the ventilation management plan.</p> <p>U106.6.5 Ventilation system maintenance program and procedures are audited for compliance with the ventilation management plan.</p> <p>U106.6.6 The ventilation management training program is audited for currency, relevance and compliance with the requirements of the ventilation management plan.</p>

U106.6.7 Ventilation, emergency and evacuation plans are trialed and audited for compliance with the ventilation management plan.

U106.6.8 Future ventilation requirements are identified, evaluated and incorporated into the mine ventilation plan.

U106.6.9 Procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit are established.

**Definitions:**

For the purposes of this competency, the definitions below apply:

- 1 Ventilation system is one which covers all the mine workings, including waste and sealed areas, and it includes all surface and underground fans and ventilation devices which control or impact on the mine ventilation.
- 2 Mine ventilation control device means a door, regulator, seal, stopping, air crossings, pressure chambers or other control device to control or direct ventilation flows in a mine.
- 3 Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZS 4360 : 1995).
- 4 Hazard is a source of potential harm or a situation with a potential to cause loss.
- 5 Mine ventilation management plans establish procedures for maintaining optimum mine ventilation including:
  - hazard identification and quantification
  - emergency and evacuation procedures
  - risk assessment
  - authority and responsibility
  - controls established to manage identified risks
  - reporting and communication
  - document control
  - audit and review
- 6 Principles of mine design include reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and seam access.
- 7 Action (alarm or trigger) is a generic term used to describe an event determined at the mine site at which action is initiated or a response made.
- 8 Audit is a validation process to ensure the system, procedures and processes, meet the established objectives and are implemented.
- 9 Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

- 1 Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.
- 2 Geological conditions may include faults, dykes, intrusions and strata deformities, as well as existing or induced stress or strain.
- 3 Coal seam characteristics may include inherent factors such as rank, petrology, moisture, cleat, coal hardness, seam gas, friability, pyrites or depositional factors such as seam thickness, multiple and rider seams, seam dip and depth of cover.
- 4 Gas devices and options may include gas drainage, infusion, scrubbers, automatic gas detectors, tube bundle systems, degassing device on auxiliary fans and gas monitoring systems.
- 5 Mine gas may include seam gases or gases from other introduced sources and may include, but are not limited to, methane, carbon dioxide, carbon monoxide, oxides of nitrogen, hydrogen, sulphur dioxide, hydrogen sulphide, hydrocarbons and combinations.
- 6 Other air contaminants may include respirable, irrespirable and combustible dust, fumes and particulants.
- 7 Types of fires may include solid, liquid, gas or metals.
- 8 Ignition sources may include electrical, static discharge, friction, contraband, spontaneous combustion, naked flame, chemical or explosives.
- 9 Hazards from fires and explosions may include noxious and flammable gases, heat, contaminants, altered ventilation pressures / flows, direct physical impacts and weakening of the strata, complete disruption to the ventilation system.
- 10 Disruptions / ventilation pressure changes may include those resulting from planned disruptions, changes in barometric pressure, fall of ground, fan changes / failure, ventilation control device changes / failure, outburst, holing into previous workings, recirculation, ventilation circuit changes, natural ventilation pressure changes, explosions, changes in ambient temperature / humidity, fires, equipment moves and flooding of roadways.
- 11 Factors which may impact on temperature / humidity may include climatic conditions, ventilation quantities, location of workplaces, mine layout and design, location of mine entries, depth, adjacent strata type, number and types of machinery and seam gas composition under varying temperatures and pressures.
- 12 Recirculation causes may include or be related to the underground auxiliary / booster fans, scrubber systems, leaking ducts, failure or poor design of mining and ventilation systems,

- ventilation velocity pressures, natural ventilation pressures, gas densities, layering and wind blast.
- 13 Effect of recirculation may include build up of contaminant concentration (gas, fumes, dust, heat) and a decrease in oxygen.
- 14 Criteria for safe mine ventilation may include statutory and regulatory requirements, mine ventilation management plan, measures to reduce and/or control seam gas, introduced gas, fumes and dust, temperature / humidity and maximum / minimum velocity specifications and for ventilation efficiency.
- 15 Mine design impacts on ventilation may be related to surface access, mining method / rate, barrier pillars and segregation of roadways, system of mining, bleeder or back returns, number of headings, bleeders and geological features.



**Range of Variables: (contd)**

- 16 Mining systems may include longwall, highwall, multiple or single entry, bord and pillar (total or partial extraction).
- 17 Factors which impact on the selection of ventilation control systems may include the life of the installation, ground conditions (stress / heave), operating duty (pressure / quantity), mining method, design, explosion rating, statutory requirements, water and seam gas (make / composition).
- 18 Methods of ventilation may include exhaust / force, antitropical, homotropical, flank returns, ascensional / descensional, bleeder, Z/U/Y systems and other combinations.
- 19 Analytical and interpretative tools may include, fan laws, airway resistance, network analysis, computer simulation, gas laws, psychrometry and ventilation laws.
- 20 Fan types are axial flow, venturi and centrifugal.
- 21 Fan design considerations include types, mine layout, user requirements and fan laws, characteristics, duty control (speed / variable pitch), configuration (parallel / series), explosion / protection doors, dampers, auxiliary drive, restart procedures and maintenance requirements.
- 22 Ventilation control devices may include doors, regulators, seals, stoppings, air crossings, bulk heads, goaf seals and pressure chambers, air locks and fans.
- 23 Ventilation management training applies to mine workers, tradespeople, permanent employees, contractors, mine officials and other special requirements.
- 24 Monitoring devices may include barograph, tube bundle, real time telemetry, portable (hand held) monitoring, bag samples and gas chromatography.
- 25 Water may impact on the mine ventilation management plan through liberation of dissolved gases, capture of soluble gases and fumes, gas drainage efficiency, seam moisture infusion or drainage, dust liberation and suppression, large ingresses disrupting ventilation networks, ventilation requirements for pumping stations, influence on sponcom propensity, humidity and hydrostatic pressure.
- 26 Alarm systems and action plans may include those for gas concentration / make, spontaneous combustion (physical and gaseous), combustion indicators, condition monitoring for fans (vibration / temperature / current / failures), ventilation devices and monitoring hardware.
- 27 Surveys may include pressure / quantity / temperature survey and gas / dust survey.

28 Standards and procedures required to support the ventilation management plan may include those for construction, action response, permit to work, condition monitoring, auditing, maintenance, document control, atmosphere monitoring, ventilation system control, communication systems, survey procedures, sealing procedures, changes, training and systems recording / reporting.

29 Defects to ventilation control devices may include inferior design, deterioration of materials, inadequate quality of construction, physical damage and water damage.

30 Maintenance of the ventilation system may include inspection, servicing and repair.

## **Evidence Guide**

### **1. Context of Assessment**

The ultimate competency outcome is for the candidate to be able to establish a ventilation management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Ventilation management circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical establishment of a ventilation management plan may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following:

- A. Theory and knowledge underpinning the competency which is a mandatory requirement
- B. Application of theory to a generic practical situation / simulation which is a mandatory requirement
- C. Practical establishment of a ventilation management plan or equivalent activity.

There are special considerations in respect of Assessment C. Within the Black Coal Sector technical management competencies at this level there is a requirement for a candidate to establish a range of safety / hazard management plans (e.g. ventilation, gas management, strata etc.). It is unlikely that all candidates will be able, in terms of access, reasonable economic constraints and reasonable time frames, to physically establish all these plans.

In most cases it would be reasonable to infer competency if a candidate has completed assessments A and B in respect of each required competency and has satisfied assessment C in respect of one of the required plans. This inference is based on the fact that a candidate, who has competently established one plan, would be capable of establishing other plans if they have satisfied the theory and generic applications which form part of the required competencies.

Naturally, if this competency unit is being undertaken as a stand alone unit rather than as one within a qualification cluster, Assessment C is to be treated as a mandatory requirement.

### **2. Inter-dependant Assessment of Units**

Whilst there are some common features between the units at this level, commonality is generally limited to science and engineering theory and the planning process. This unit requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on ventilation
  - c. forecasting, calculating and planning for future ventilation requirements
  - d. analysing ventilation risks and hazards and selecting achievable ventilation responses
  - e. establishing the contents of a mine ventilation management plan
  - f. establishing, documenting and communicating ventilation system procedures
  - g. establishing mine ventilation monitoring, recording and reporting systems
  - h. establishing the ventilation system maintenance program
  - i. evaluating and controlling changes to mine ventilation systems
  - j. auditing and reviewing ventilation plans
  - k. establishing the training component of the ventilation management plan
- 4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Ventilation Management Plans and their establishment are to meet Legislative and Industry standards.
- 5. Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to design, develop (or cause to be designed and developed) and establish the ventilation management plan.**
- legislative and statutory requirements for ventilation including air quality, maximum values, control and distribution, flammable gas and dust limits, ventilation fans, gas monitoring, respirable dust limits and inspections and recording/reporting.
  - the methods of mine ventilation and their applications / limitations including exhaust / force, antitropical, homotropical, flank returns, ascensional / descensional, bleeder, ZUY systems and other combinations.
  - the methods of panel ventilation and their applications / limitations including homotropical and antitropical auxiliary fans, coursed ventilation (narrow side / wide side), machine mounted scrubber systems, compressed air venturis and bleeders.
  - the impact of mining techniques and mine and panel design on ventilation.
  - the impact of coal characteristics and coal seam gradients on mine ventilation design.
  - the principles and impacts on the ventilation system of gas drainage, spontaneous combustion, outburst and windblast.
  - mine gases; the types and their characteristics under varying circumstances, sources, physiological effects and methods of detection.

- dust, fumes and other particulate matter; the types, sources, physical and physiological effect, and control/mitigation methods.
- mine fires; the types, sources of ignition, possible effects on the ventilation circuit and prevention / control / mitigation methods.
- mine explosions; the types, ignition sources, possible effects on the ventilation circuits and prevention / control / mitigation methods.
- pressure changes; causes, the impacts on the ventilation system, and responses (to include the causes and effects of natural ventilation and recirculation).

**5. Underpinning Knowledge (Continued).** A knowledge of:

- heat / humidity; the sources and factors which may impact on mine ventilation and personnel.
- mine roadways and shafts; their design parameters and impact on mine ventilation.
- mine fans; fan laws, fan types, performance characteristics, configurations, applications and limitations.
- ventilation control devices; the types, purposes, design criteria and specifications, distribution / placement criteria and limitations.
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders.
- ventilation networks and individual circuit design criteria, specifications and design processes.
- fixed ventilation monitoring systems types, characteristics, uses and limitations.
- portable monitoring equipment, types, characteristics, uses and limitations
- functions, capabilities, advantages, limitations and uses of computer modelling and simulation techniques
- computer-based systems for mine environment analysis.
- ventilation management plan development requirements and processes.
- ventilation surveys; the types, frequency and method for conducting including pressure / quantity / temperature and gas / dust
- processes and techniques for determining alarms and trigger points / levels.
- audit and review processes and techniques.
- emergency response and disaster planning processes and techniques.
- general uses and applications of ventilation theory, including:
  - Atkinson's equation
  - methods of determining frictional resistance
  - frictional resistance values for mine airways and ducts
  - psychrometry and heat
  - gas laws including Charles and Boyle
  - natural ventilation pressures
  - static/velocity/total pressures and shock loss
  - control device leakage
  - duct leakage
  - determination of mine resistance curves
  - combining system resistance and fan curves
  - regulator and equivalent orifice calculation
  - determination of fan operating / duty points.
  - Kirchoff's laws

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information

- access and analyse archival and historical ventilation information related to the mine
- interpret and apply mathematical and scientific theorems / laws related to ventilation
- perform ventilation planning mathematical calculations
- access, evaluate and apply design criteria for ventilation systems and devices
- interpret computer spreadsheets and ventilation modelling / simulations
- collect, collate and evaluate ventilation data
- establish technical procedures relating to ventilation
- conduct enquiries / investigations and prepare reports
- communicate effectively in the workplace
- access, evaluate and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- establish ventilation training requirement, programs, systems and procedures
- apply risk management processes and techniques



<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	3
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2

NATIONAL MINING ITAB

BLACK COAL : UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the routine operational management required to implement a ventilation management plan.

<u>Elements</u>	<u>Performance Criteria</u>
U107.1	<p>U107.1.1 The legislative, statutory and site requirements related to ventilation management are identified and interpreted.</p> <p>U107.1.2 The Ventilation Management Plan is accessed, interpreted and clarified.</p> <p>U107.1.3 Roles and responsibilities, as specified in the Ventilation Management Plan, are identified, clarified and communicated to all involved persons.</p> <p>U107.1.4 Resources required for the implementation of the Ventilation Management Plan are identified, forecast, obtained and allocated / scheduled.</p> <p>U107.1.5 The ventilation management training program is implemented.</p> <p>U107.1.6 Suggestions and recommendations for changes to ventilation management implementation procedures are encouraged, received, reviewed and, where appropriate, implemented.</p>
U107.2 Implement the Ventilation Management Plan.	<p>U107.2.1 The impact of changes to the ventilation system on the mine atmosphere is identified and interpreted.</p> <p>U107.2.2 Procedures for the installation and operation of monitoring systems and equipment are implemented.</p> <p>U107.2.3 Ventilation control devices are incorporated into the ventilation system in accordance with the ventilation management plan.</p> <p>U107.2.4 Procedures for monitoring, recording and</p>

	<p>reporting on mine ventilation are implemented according to statutory requirements and those of the ventilation management plan.</p> <p>U107.2.5 Procedures for the collection and analysis of ventilation data are implemented.</p> <p>U107.2.6 Monitoring system data is processed, recorded and reported in accordance with the requirements of the ventilation management plan.</p> <p>U107.2.7 Measured data is interpreted and compared with statutory requirements and those stipulated by the ventilation management plan and action requirements.</p>
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**MNC.U107.A  
PLAN**

**IMPLEMENT THE VENTILATION MANAGEMENT**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U107.2 Implement the Ventilation Management Plan (continued).</p>	<p>U107.2.8 Water management procedures are implemented in accordance with the ventilation management plan.</p> <p>U107.2.9 Alarms raised are responded to in accordance with the ventilation management plan.</p> <p>U107.2.10 Ventilation emergency and evaluation plans are implemented in accordance with the Ventilation Management Plan.</p>
<p>U107.3 Implement the Maintenance of and Changes to the Mine Ventilation System.</p>	<p>U107.3.1 Inspections, repair and maintenance activities are implemented in accordance with the ventilation management plan.</p> <p>U107.3.2 The system of recording, reporting and reviewing maintenance requirements and activities is implemented.</p> <p>U107.3.3 Changes to the mine ventilation systems are implemented in accordance with the ventilation management plan.</p>
<p>U107.4 Audit the Effectiveness of the Ventilation Management Plan</p>	<p>U107.4.1 Ventilation standards are audited for compliance with statutory and ventilation management plan specifications.</p> <p>U107.4.2 Ventilation control devices are audited for compliance with statutory and ventilation management plan requirements.</p> <p>U107.4.3 Monitoring systems operations are audited for compliance with to statutory and ventilation management plan standards.</p> <p>U107.4.4 Periodic review of alarm settings is implemented in accordance with the ventilation management plan.</p> <p>U107.4.5 Recording systems are audited for compliance with the ventilation management plan.</p> <p>U107.4.6 Ventilation system maintenance program and</p>

procedures are audited for compliance with the ventilation management plan.

U107.4.7 Ventilation emergency and evacuation plans are trialed and audited for compliance with the Ventilation Management Plan.

U107.4.8 The ventilation management training program is audited for currency, relevance and compliance with the ventilation management plan.

**Definitions:**

For the purposes of this competency, the definitions below apply:

- 1 Ventilation system is one which covers all the mine workings, including waste and sealed areas, and it includes all surface and underground fans and ventilation devices which control or impact on the mine ventilation.
- 2 Mine ventilation control device means a door, regulator, seal, stopping, air crossings, pressure chambers or other control device to control or direct ventilation flows in a mine.
- 3 Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZS 4360 : 1995).
- 4 Hazard is a source of potential harm or a situation with a potential to cause loss.
- 5 Mine ventilation management plans establish procedures for maintaining optimum mine ventilation including:
  - hazard identification and quantification
  - emergency and evacuation procedures
  - risk assessment
  - authority and responsibility
  - controls established to manage identified risks
  - reporting and communication
  - document control
  - audit and review
- 6 Principles of mine design include reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and seam access.
- 7 Action (alarm or trigger) is a generic term used to describe an event determined at the mine site at which action is initiated or a response made.
- 8 Audit is a validation process to ensure the system, procedures and processes, meet the established objectives and are implemented.
- 9 Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

- 1 Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.

- 2 Geological conditions may include faults, dykes, intrusions and strata deformities, as well as existing or induced stress or strain.
- 3 Coal seam characteristics may include inherent factors such as rank, petrology, moisture, cleat, coal hardness, seam gas, friability, pyrites or depositional factors such as seam thickness, multiple and rider seams, seam dip and depth of cover.
- 4 Gas devices and options may include gas drainage, infusion, scrubbers, automatic gas detectors, tube bundle systems, degassing device on auxiliary fans and gas monitoring systems.

**Range of Variables: (continued)**

- 5 Mine gas may include seam gases or gases from other introduced sources and may include, but are not limited to, methane, carbon dioxide, carbon monoxide, oxides of nitrogen, hydrogen, sulphur dioxide, hydrogen sulphide, hydrocarbons and combinations.
- 6 Other air contaminants may include respirable, irrespirable and combustible dust, fumes and particulants.
- 7 Types of fires may include solid, liquid, gas or metals.
- 8 Ignition sources may include electrical, static discharge, friction, contraband, spontaneous combustion, naked flame, chemical or explosives.
- 9 Hazards from fires and explosions may include noxious and flammable gases, heat, contaminants, altered ventilation pressures / flows, direct physical impacts and weakening of the strata, complete disruption to the ventilation system.
- 10 Disruptions / ventilation pressure changes may include those resulting from planned disruptions, changes in barometric pressure, fall of ground, fan changes / failure, ventilation control device changes / failure, outburst, holing into previous workings, recirculation, ventilation circuit changes, natural ventilation pressure changes, explosions, changes in ambient temperature / humidity, fires, equipment moves and flooding of roadways.
- 11 Factors which may impact on temperature / humidity may include climatic conditions, ventilation quantities, location of workplaces, mine layout and design, location of mine entries, depth, adjacent strata type, number and types of machinery and seam gas composition under varying temperatures and pressures.
- 12 Recirculation causes may include or be related to the underground auxiliary / booster fans, scrubber systems, leaking ducts, failure or poor design of mining and ventilation systems, ventilation velocity pressures, natural ventilation pressures, gas densities, layering and wind blast.
- 13 Effect of recirculation may include build up of contaminant concentration (gas, fumes, dust, heat) and a decrease in oxygen.
- 14 Criteria for safe mine ventilation may include statutory and regulatory requirements, mine ventilation management plan, measures to reduce and/or control seam gas, introduced gas, fumes and dust, temperature / humidity and maximum / minimum velocity specifications and for ventilation efficiency.
- 15 Mine design impacts on ventilation may be related to surface access, mining method / rate, barrier pillars and segregation of roadways, system of mining, bleeder or back returns, number of headings, bleeders and geological features.



- 16 Mining systems may include longwall, highwall, multiple or single entry, bord and pillar (total or partial extraction).
- 17 Factors which impact on the selection of ventilation control systems may include the life of the installation, ground conditions (stress / heave), operating duty (pressure / quantity), mining method, design, explosion rating, statutory requirements, water and seam gas (make / composition).
- 18 Methods of ventilation may include exhaust / force, antitropical, homotropical, flank returns, ascensional / descensional, bleeder, Z/U/Y systems and other combinations.
- 19 Analytical and interpretative tools may include, fan laws, airway resistance, network analysis, computer simulation, gas laws, psychrometry and ventilation laws.

**MNC.U107.A**  
**PLAN**

**IMPLEMENT THE VENTILATION MANAGEMENT**

**Range of Variables: (continued)**

- 20 Fan types are axial flow, venturi and centrifugal.
- 21 Fan design considerations include types, mine layout, user requirements and fan laws, characteristics, duty control (speed / variable pitch), configuration (parallel / series), explosion / protection doors, dampers, auxiliary drive, restart procedures and maintenance requirements.
- 22 Ventilation control devices may include doors, regulators, seals, stoppings, air crossings, bulk heads, goaf seals and pressure chambers, air locks and fans.
- 23 Ventilation management training applies to mine workers, tradespeople, permanent employees, contractors, mine officials and other special requirements.
- 24 Monitoring devices may include barograph, tube bundle, real time telemetry, portable (hand held) monitoring, bag samples and gas chromatography.
- 25 Water may impact on the mine ventilation management plan through liberation of dissolved gases, capture of soluble gases and fumes, gas drainage efficiency, seam moisture infusion or drainage, dust liberation and suppression, large ingresses disrupting ventilation networks, ventilation requirements for pumping stations, influence on sponcom propensity, humidity and hydrostatic pressure.
- 26 Alarm systems and action plans may include those for gas concentration / make, spontaneous combustion (physical and gaseous), combustion indicators, condition monitoring for fans (vibration / temperature / current / failures), ventilation devices and monitoring hardware.
- 27 Surveys may include pressure / quantity / temperature survey and gas / dust survey.

28 Standards and procedures required to support the ventilation management plan may include those for construction, action response, permit to work, condition monitoring, auditing, maintenance, document control, atmosphere monitoring, ventilation system control, communication systems, survey procedures, sealing procedures, changes, training and systems recording / reporting.

29 Defects to ventilation control devices may include inferior design, deterioration of materials, inadequate quality of construction, physical damage and water damage.

30 Maintenance of the ventilation system may include inspection, servicing and repair.

## **Evidence Guide**

### **1. Context of Assessment**

The ultimate competency outcome is for the candidate to be able to implement a ventilation management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Ventilation management circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical implementation of a ventilation management plan may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

**1. Context of Assessment (contd)**

The assessment system for this competency is to cover the following mandatory requirements:

- A. Theory and knowledge underpinning the competency
- B. Application of theory to a generic practical situation / simulation
- C. Practical implementation of a ventilation management plan.

**2. Inter-dependant Assessment of Units**

Whilst there are some common features between the units at this level, commonality is generally limited to the underpinning science and engineering knowledge. This unit requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on implementing mine ventilation plans
- c. identifying and responding to ventilation risks and hazards
- d. interpreting the contents of a mine ventilation management plan
- e. implementing and communicating ventilation system procedures
- f. implementing mine ventilation monitoring, recording and reporting systems
- g. implementing the ventilation system maintenance program
- h. interpreting changes to mine ventilation systems
- i. implementing changes to mine ventilation system
- j. reviewing ventilation systems performance
- k. audit ventilation systems performance
- l. implementing and auditing ventilation training programs
- m. responding to ventilation system failure and other allied emergency situations

**4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry.

Ventilation Management Plans and their implementation are to meet Legislative and Industry standards.

**5. Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to perform the routine operational management required to implement an established ventilation management plan.**

- legislative and statutory requirements for ventilation including air quality, maximum values, control and distribution, flammable gas and dust limits, ventilation fans, gas monitoring, respirable dust limits and inspections and recording/reporting.
- the methods of mine ventilation and their applications / limitations including exhaust / force, antitropical, homotropical, flank returns, ascensional / descensional, bleeder, z/u/y systems and other combinations.
- the methods of panel ventilation and their applications / limitations including homotropical and antitropical auxiliary fans, coursed ventilation (narrow side / wide side), machine mounted scrubber systems, compressed air venturis and bleeders.
- the impact of mining techniques and mine and panel design on ventilation.
- mine roadways and shafts and their impact on mine ventilation.
- the impact of coal characteristics and coal seam gradients on mine ventilation design.
- the impacts on the ventilation system of gas drainage, spontaneous combustion, outburst and windblast.
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection.
- dust, fumes and other particulate matter; the types, sources, physical and physiological effect, and control/mitigation methods.
- mine fires; the types, sources of ignition, possible effects on the ventilation circuit and prevention / control / mitigation methods.
- mine explosions; the types, ignition sources, possible effects on the ventilation circuits and prevention / control / mitigation methods.
- pressure changes; causes, the impacts on the ventilation system, and responses (to include the causes and effects of natural ventilation and recirculation).
- heat / humidity; the sources and factors which may impact on mine ventilation and personnel.
- mine fans; fan types, applications and limitations
- ventilation control devices; the types, purposes, design criteria and specifications, distribution / placement criteria and limitations.
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders.
- fixed ventilation monitoring systems types, uses and limitations.
- portable monitoring equipment, types, characteristics, uses and limitations.
- functions, capabilities, advantages, limitations and use of computer modelling tools and simulation techniques.
- computer-based systems for mine environment analysis.
- ventilation management plan development requirements and processes.
- ventilation surveys; the types, frequency and method for conducting including pressure / quantity / temperature and gas
- dust surveys for irrespirable quantity

- processes and techniques for determining alarms and trigger points / levels.
- audit and review processes and techniques.
- emergency and disaster plan response / measures.
- the general use and application of ventilation theory including:
  - Atkinson's equation
  - methods of determining frictional resistance
  - frictional resistance values for mine airways and ducts
  - psychrometry and heat
  - gas laws including Charles and Boyle
  - natural ventilation pressures
  - static/velocity/total pressures and shock loss
  - control device leakage
  - duct leakage
  - determination of mine resistance curves

**5. Underpinning Knowledge. (contd)**

- combining system resistance and fan curves
- regulator and equivalent orifice calculation
- determination of fan operating / duty points.
- Kirchoff's laws

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- access and analyse archival and historical ventilation information related to the mine
- measure air quantity
- perform routine operational mathematical calculations (quantity, pressure, prediction)
- interpret and apply design criteria for ventilation systems and devices
- interpret computer spreadsheets and ventilation modelling / simulations
- collect, collate and interpret ventilation data
- conduct enquiries / investigations and prepare reports
- communicate effectively in the workplace
- access, interpret and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- implement the ventilation management training program
- apply risk management processes and techniques

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	3
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2

NATIONAL MINING ITAB

BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the application and monitoring of controls and systems established in the ventilation management plan.

<u>Elements</u>	<u>Performance Criteria</u>
U108.1	<p>U108.1.1 The legislative, statutory and site requirements related to ventilation management are identified and interpreted.</p> <p>U108.1.2 The ventilation management plan is accessed, interpreted and clarified.</p> <p>U108.1.3 Roles and responsibilities, as specified in the ventilation management plan, are identified and clarified.</p> <p>U108.1.4 Work Group and individual responsibilities and tasks are communicated and clarified in an effective and timely manner.</p> <p>U108.1.5 Resources required for the application of the ventilation management plan are identified, obtained and allocated.</p> <p>U108.1.6 Individual training needs are identified and satisfied through accessing the established ventilation management training program and systems.</p>
U108.2 Apply the Ventilation Management Plan.	<p>U108.2.1 The impact of changes to the ventilation system on the mine atmosphere is identified and interpreted.</p> <p>U108.2.2 Installation and operation procedures for monitoring systems</p>



	<p>and equipment are applied.</p> <p>U108.2.3 Ventilation control devices are installed, monitored and maintained in the ventilation system in accordance with the ventilation management plan.</p> <p>U108.2.4 Procedures for monitoring, recording and reporting on mine ventilation are applied according to statutory requirements and those of the ventilation management plan.</p> <p>U108.2.5 Mine control devices are adjusted in accordance with the ventilation management plan.</p> <p>U108.2.6 Collection and analysis of ventilation data is carried out in accordance with the ventilation management plan.</p> <p style="text-align: right;">U108.2.7 Monitoring system data is recorded and reported in accordance with the requirements of the ventilation management plan.</p>
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**MNC.U108.A APPLY AND MONITOR THE VENTILATION MANAGEMENT PLAN**

<u>Elements</u>	<u>Performance Criteria</u>
U108.2 Apply the Ventilation Management Plan (continued)	U108.2.8 Water management procedures are applied in accordance with the ventilation management plan.
	U108.2.9 Alarms raised are responded to in accordance with the ventilation management plan.
	U108.2.10 Ventilation emergency and evacuation procedures are applied in accordance with the Ventilation Management Plan.
U108.3 Apply Ventilation System Maintenance Procedures	U108.2.11 Systems audit and review requirements are contributed to in accordance with the ventilation management plan.
	U108.3.1 Inspections, repair and maintenance

	<p>activities are scheduled and carried out in accordance with the ventilation management plan.</p> <p>U108.3.2 Maintenance requirements and activities are recorded, reported and reviewed in accordance with the ventilation management plan.</p>
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**Definitions:**

For the purposes of this competency, the definitions below apply:

- 1 Ventilation system is one which covers all the mine workings, including waste and sealed areas, and it includes all surface and underground fans and ventilation devices which control or impact on the mine ventilation.
- 2 Mine ventilation control device means a door, regulator, seal, stopping, air crossings, pressure chambers or other control device to control or direct ventilation flows in a mine.
- 3 Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZS 4360 : 1995).
- 4 Hazard is a source of potential harm or a situation with a potential to cause loss.
- 5 Mine ventilation management plans establish procedures for maintaining optimum mine ventilation including:
  - hazard identification and quantification
  - emergency and evacuation procedures
  - risk assessment
  - authority and responsibility
  - controls established to manage identified risks
  - reporting and communication
  - document control
  - audit and review
- 6 Principles of mine design include reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and seam access.

## MNC.U108.A APPLY AND MONITOR THE VENTILATION MANAGEMENT PLAN

### **Definitions: (contd)**

- 7 Action (alarm or trigger) is a generic term used to describe an event determined at the mine site at which action is initiated or a response made.
- 8 Audit is a validation process to ensure the system, procedures and processes, meet the established objectives and are implemented.
- 9 Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

### **Range of Variables:**

- 1 Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.
- 2 Geological conditions may include faults, dykes, intrusions and strata deformities, as well as existing or induced stress or strain.
- 3 Coal seam characteristics may include inherent factors such as rank, petrology, moisture, cleat, coal hardness, seam gas, friability, pyrites or depositional factors such as seam thickness, multiple and rider seams, seam dip and depth of cover.
- 4 Gas devices and options may include gas drainage, infusion, scrubbers, automatic gas detectors, tube bundle systems, degassing device on auxiliary fans and gas monitoring systems.
- 5 Mine gas may include seam gases or gases from other introduced sources and may include, but are not limited to, methane, carbon dioxide, carbon monoxide, oxides of nitrogen, hydrogen, sulphur dioxide, hydrogen sulphide, hydrocarbons and combinations.
- 6 Other air contaminants may include respirable, irrespirable and combustible dust, fumes and particulants.
- 7 Types of fires may include solid, liquid, gas or metals.
- 8 Ignition sources may include electrical, static discharge, friction, contraband, spontaneous combustion, naked flame, chemical or explosives.
- 9 Hazards from fires and explosions may include noxious and flammable gases, heat, contaminants, altered ventilation pressures / flows, direct physical impacts and weakening of the strata, complete disruption to the ventilation system.

10 Disruptions / ventilation pressure changes may include those resulting from planned disruptions, changes in barometric pressure, fall of ground, fan changes / failure, ventilation control device changes / failure, outburst, holing into previous workings, re-circulation, ventilation circuit changes, natural ventilation pressure changes, explosions, changes in ambient temperature / humidity, fires, equipment moves and flooding of roadways.

11 Factors which may impact on temperature / humidity may include climatic conditions, ventilation quantities, location of workplaces, mine layout and design, location of mine entries, depth, adjacent strata type, number and types of machinery and seam gas composition under varying temperatures and pressures.

**MNC.U108.A      APPLY AND MONITOR THE VENTILATION MANAGEMENT PLAN**

**Range of Variables: (continued)**

12 Recirculation causes may include or be related to the underground auxiliary / booster fans, scrubber systems, leaking ducts, failure or poor design of mining and ventilation systems, ventilation velocity pressures, natural ventilation pressures, gas densities, layering and wind blast.

13 Effect of recirculation may include build up of contaminant concentration (gas, fumes, dust, heat) and a decrease in oxygen.

14 Criteria for safe mine ventilation may include statutory and regulatory requirements, mine ventilation management plan, measures to reduce and/or control seam gas, introduced gas, fumes and dust, temperature / humidity and maximum / minimum velocity specifications and for ventilation efficiency.

15 Mine design impacts on ventilation may be related to surface access, mining method / rate, barrier pillars and segregation of roadways, system of mining, bleeder or back returns, number of headings, bleeders and geological features.

16 Mining systems may include longwall, highwall, multiple or single entry, bord and pillar (total or partial extraction).

17 Factors which impact on the selection of ventilation control systems may include the life of the installation, ground conditions (stress / heave), operating duty (pressure / quantity), mining method, design, explosion rating, statutory requirements, water and seam gas (make / composition).

18 Methods of ventilation may include exhaust / force, antitropical, homotropical, flank returns, ascensional / descensional, bleeder, Z/U/Y systems and other combinations.

19 Analytical and interpretative tools may include, fan laws, airway resistance, network analysis, computer simulation, gas laws, psychrometry and ventilation laws.

20 Fan types are axial flow, venturi and centrifugal.

21 Fan design considerations include types, mine layout, user requirements and fan laws, characteristics, duty control (speed / variable pitch), configuration (parallel / series), explosion / protection doors, dampers, auxiliary drive, restart procedures and maintenance requirements.

22 Ventilation control devices may include doors, regulators, seals, stoppings, air crossings, bulk heads, goaf seals and pressure chambers, air locks and fans.

23 Ventilation management training applies to mine workers, tradespeople, permanent employees, contractors, mine officials and other special requirements.

- 24 Monitoring devices may include barograph, tube bundle, real time telemetry, portable (hand held) monitoring, bag samples and gas chromatography.
- 25 Water may impact on the mine ventilation management plan through liberation of dissolved gases, capture of soluble gases and fumes, gas drainage efficiency, seam moisture infusion or drainage, dust liberation and suppression, large ingresses disrupting ventilation networks, ventilation requirements for pumping stations, influence on sponcom propensity, humidity and hydrostatic pressure.
- 26 Alarm systems and action plans may include those for gas concentration / make, spontaneous combustion (physical and gaseous), combustion indicators, condition monitoring for fans (vibration / temperature / current / failures), ventilation devices and monitoring hardware.
- 27 Surveys may include pressure / quantity / temperature survey and gas / dust survey.

**Range of Variables: (continued)**

28 Standards and procedures required to support the ventilation management plan may include those for construction, action response, permit to work, condition monitoring, auditing, maintenance, document control, atmosphere monitoring, ventilation system control, communication systems, survey procedures, sealing procedures, changes, training and systems recording / reporting.

29 Defects to ventilation control devices may include inferior design, deterioration of materials, inadequate quality of construction, physical damage and water damage.

30 Maintenance of the ventilation system may include inspection, servicing and repair.

**Evidence Guide**

**1. Context of Assessment**

The ultimate competency outcome is for the candidate to be able to apply and monitor a ventilation management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Ventilation management circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical application of a ventilation management plan may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following requirements:

- A. Theory and knowledge underpinning the competency
- B. Application of theory to a generic practical situation / simulation
- C. Practical application and monitoring of a ventilation management plan.

**2. Inter-dependant Assessment of Units**

Whilst there are some common features between the units at this level, commonality is limited to the basic underpinning science and engineering knowledge. This unit requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.



## **MNC.U108.A      APPLY AND MONITOR THE VENTILATION MANAGEMENT PLAN**

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on mine ventilation
- c. interpreting ventilation risks and hazards
- d. interpreting the contents of a mine ventilation management plan
- e. applying statutory and mine ventilation monitoring, recording and reporting systems
- f. applying the ventilation system maintenance program
- g. interpreting changes to mine ventilation systems
- h. ensuring control device construction and maintenance is carried out to specified standards
- i. identifying workplace training/competency requirements
- j. responding to ventilation system failure and other allied emergency situations

**4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Ventilation Management Plans and their application are to meet Legislative and Industry standards.

**5. Underpinning Knowledge.** A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to apply and monitor controls and systems in a ventilation management plan.

- legislative and statutory requirements for ventilation including air quality, maximum values, control and distribution, flammable gas limits, ventilation fans, gas monitoring, dust limits and inspections and recording/reporting.
- the methods of mine ventilation and their applications / limitations including exhaust / force, antitropical, homotropical, flank returns, ascensional / descensional, bleeder, ZUY systems and other combinations.
- the methods of panel ventilation and their applications / limitations including homotropical and antitropical (and in conjunction with these, the use of goaf bleed or back return), auxiliary fans, coursed ventilation (narrow side / wide side), machine mounted scrubber systems, compressed air venturis, bleeders, sails and hurdles.
- the impact of mining techniques on panel ventilation.
- the impact of differing geological features and conditions on ventilation including faults, dykes, intrusions and strata deformities
- the impact of coal characteristics and coal seam gradients on mine ventilation design.
- the effects on the ventilation system of spontaneous combustion, outburst, gas drainage and windblast.
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection.

- dust and other particulate matter; the types, sources, physical and physiological effect, and control/mitigation methods.
- mine fires; the types, sources of ignition, possible effects on the ventilation circuit and prevention / control / mitigation methods.
- mine explosions; the types, ignition sources, possible effects on the ventilation circuits and prevention / control / mitigation methods.
- pressure changes; causes, the impacts on the ventilation system, and responses (to include the causes and effects of natural ventilation and recirculation).
- heat / humidity; the sources and factors which may impact on mine ventilation and personnel.
- mine fans; fan types, applications and limitations.
  - ventilation control devices; the types, purposes, specifications, distribution / placement criteria and limitations.
  - fixed ventilation monitoring systems types, uses and limitations
  - portable monitoring equipment, types, uses and limitations.

## **MNC.U108.A      APPLY AND MONITOR THE VENTILATION MANAGEMENT PLAN**

### **5. Underpinning Knowledge. : (contd)**

- computer-based systems for mine environment analysis.
- ventilation management plan development requirements and processes.
- ventilation surveys; the types, frequency and method for conducting including pressure / quantity / temperature and gas
- dust surveys for irrespirable quantity
- types, characteristics, purposes and responses to alarms and trigger points / levels.
- audit and review processes and techniques.
- emergency and disaster plan responses.
- the general use and application of ventilation theory including:
  - gas laws including Charles and Boyle
  - natural ventilation pressures
  - air quantity measurement
  - control device leakage
  - duct leakage
  - Kirchoff's laws

### **6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- interpret and apply a limited range of mathematical and scientific theorems / laws related to ventilation
- perform basic mathematical calculations
- collect, collate and interpret ventilation data
- interpret and apply ventilation device construction / installation specifications
- conduct enquiries / investigations and prepare reports

- communicate effectively in the workplace
- access, interpret and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- apply risk management processes and techniques
- initiate ventilation training

**MNC.U108.A      APPLY AND MONITOR THE VENTILATION MANAGEMENT PLAN**

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2

**MNC.U109.A MANAGE, OPERATE AND MAINTAIN THE MINE VENTILATION SYSTEM**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:** This unit covers the functions to be performed by the Ventilation Officer or other person appointed for the purpose, to manage, contribute to the development of, to operate and to maintain the mine ventilation system.

<u>Elements</u>	<u>Performance Criteria</u>
U109.1	U109.1.1 The sources, hazards and risks of gases and fumes are identified, analysed and evaluated.
	U109.1.2 The likelihood and risks of spontaneous combustion are identified and evaluated.
	U109.1.3 The hazards and risks of airborne and flammable dust are identified, analysed and evaluated.
	U109.1.4 The potential for and likely impact of wind blast and outburst on the ventilation system are identified, analysed and evaluated.
	U109.1.5 The impacts of fire, ignition and explosion on the ventilation system are identified, analysed and evaluated.
	U109.1.6 The potential for and impact of ventilation pressure differentials are identified, analysed and evaluated.
	U109.1.7 The effect of changes in air temperature and humidity are identified, analysed and evaluated.
U109.2 Identify, Analyse and Evaluate Ventilation Control Options and Measures.	U109.1.8 The causes and effects of recirculation are identified, analysed and evaluated.
	U109.1.9 The impact associated with disruption to the

	<p>ventilation system is identified, analysed and evaluated.</p> <p>U109.1.10 The impacts of holing into previous workings are identified, analysed and evaluated.</p> <p>U109.2.1 The types, applications and limitations of the ventilation control devices are identified, analysed and evaluated.</p> <p>U109.2.2 The impact of mine design on the ventilation system is identified, analysed and evaluated.</p>
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**MNC.U109.A MANAGE, OPERATE AND MAINTAIN THE MINE VENTILATION SYSTEM**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U109.2 Ventilation Control Options and Measures (Continued).</p>	<p>U109.2.3 The methods, purposes and limitations of mine monitoring systems and processes are identified, analysed and evaluated.</p> <p>U109.2.4 Inertisation techniques and applications are identified, analysed and evaluated.</p> <p>U109.2.5 The impact of seam gas management on the ventilation system is identified, analysed and evaluated.</p>
<p>U109.3 Contribute to the Development and Maintenance of the Mine Ventilation Management Plan.</p>	<p>U109.2.6 The impact of water management on the ventilation system is identified, analysed and evaluated.</p> <p>U109.3.1 The objectives and criteria for safe and effective ventilation are identified, analysed and confirmed.</p> <p>U109.3.2 The principles and requirements of mine ventilation are incorporated into the mine development plan.</p> <p>U109.3.3 The requirements for mine fans are identified, analysed and evaluated and appropriate selections made.</p> <p>U109.3.4 Design criteria and specifications for ventilation networks and individual circuits are evaluated and applied.</p> <p>U109.3.5 Ventilation control device options are evaluated against requirements and selected.</p> <p>U109.3.6 Design criteria for ventilation and environmental monitoring systems are established and appropriate selections made.</p>

	<p>U109.3.7 Procedures for the installation, establishment and operation of ventilation management systems are prepared and incorporated into the Ventilation Management Plan.</p> <p>U109.3.8 A system for early warning for each identified hazard is developed, including action requirements for each event, and incorporated into the Ventilation Management Plan.</p> <p>U109.3.9 Maintenance program and procedures are formulated and implemented as part of the Ventilation Management Plan.</p> <p>U109.3.10 Procedures for the audit, review and updating of the ventilation system are incorporated into the Ventilation Management Plan.</p> <p>U109.3.11 Ventilation training requirements are identified and incorporated into the Ventilation Management Plan.</p>
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**MNC.U109.A MANAGE, OPERATE AND MAINTAIN THE MINE VENTILATION SYSTEM**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U109.4 Implement Mine Ventilation Monitoring, Recording and Reporting Systems.</p>	<p>U109.4.1 Procedures for monitoring, recording and reporting on the ventilation system are implemented according to Statutory requirements and those of the Ventilation Management Plan.</p> <p>U109.4.2 Procedures for the installation and operation of monitoring systems and equipment are implemented.</p> <p>U109.4.3 Procedures for the collection and analysis of ventilation data are implemented.</p> <p>U109.4.4 Monitoring system data are processed, recorded and reported in accordance with the requirements of the Ventilation Management Plan.</p> <p>U109.4.5 Measured data are interpreted and compared with statutory requirements and those stipulated by the Ventilation Management Plan and action requirements implemented.</p>
<p>U109.5 Coordinate and Control the Maintenance of and Changes to the Mine Ventilation System.</p>	<p>U109.4.6 The periodic review of alarm settings and alarms raised is included in the Ventilation Management Plan and implemented.</p> <p>U109.5.1 The ventilation system maintenance program is reviewed, confirmed and communicated to responsible parties.</p> <p>U109.5.2 Maintenance activities, including inspections, repair and maintenance are coordinated in accordance with the Ventilation Management Plan.</p> <p>U109.5.3 The system of recording and reporting maintenance requirements and activities is implemented.</p> <p>U109.5.4 Changes to the ventilation system are</p>

	<p>planned, controlled and implemented in accordance with the Ventilation Management Plan.</p> <p>U109.5.5 Mine ventilation plans are prepared and maintained in accordance with Statutory requirements and mine standards.</p>
U109.6 Audit and Review the Effectiveness of the Mine Ventilation System.	<p>U109.6.1 The effectiveness of the ventilation system is audited in accordance with the Ventilation Management Plan in order to ensure that:</p> <ol style="list-style-type: none"> <li>(1) Ventilation control devices comply with statutory and Ventilation Management Plan requirements.</li> <li>(2) Ventilation standards comply with statutory and Ventilation Management Plan specifications.</li> <li>(3) Mine monitoring systems operate to statutory and Ventilation Management Plan standards.</li> <li>(4) Ventilation recording systems are maintained accurately and data processed in accordance with the Ventilation Management Plan.</li> </ol>

**MNC.U109.A MANAGE, OPERATE AND MAINTAIN THE MINE VENTILATION SYSTEM**

U109.6 Audit and Review the Effectiveness of the Mine Ventilation System. : (contd)	<p>U109.6.1: (contd)</p> <ol style="list-style-type: none"> <li>(5) Ventilation system maintenance program and procedures are implemented and recorded in accordance with the Ventilation Management Plan.</li> <li>(6) The content of the Ventilation Management Plan is communicated to and understood by the workforce.</li> </ol> <p>U109.6.2 The ventilation system is reviewed in accordance with the Ventilation Management Plan in order to ensure that:</p> <ol style="list-style-type: none"> <li>(1) Emergency plans are consistent with the Ventilation Management Plan.</li> <li>(2) The ventilation standards remain appropriate.</li> <li>(3) The training of mine employees is current, relevant and is conducted in accordance with the requirements of the Ventilation Management Plan.</li> </ol>
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	U109.6.3 Future ventilation requirements are identified, assessed and incorporated into the ventilation planning procedures as stipulated by the Ventilation Management Plan.
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**Definitions:**

For the purposes of this standard, the definitions below apply:

- 1 Ventilation system is one which covers all the mine workings, including waste and sealed areas, and it includes all surface and underground fans and ventilation devices which control or impact on the mine ventilation.
- 2 Ventilation control device means a door, regulator, seal, stopping, air crossings or other control device to control or direct ventilation flows in a mine.
- 3 Mine Safety Management Plans (Ventilation, Spontaneous Combustion, Gas, Outburst) establish procedures for maintaining a safe environment including:
  - hazard identification and quantification
  - risk assessment
  - authority and responsibility
  - controls established to manage identified risks (mine design, monitoring, procedures, trigger levels and response plans)
  - reporting and communication
  - document control
  - audit and review
- 4 Principles of mine design include reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and seam access.
- 5 Inertisation may be defined as the displacing or reducing of oxygen to a level that will not support combustion. It may be either a natural process using seam gases or a process of introducing inert gases.

## **MNC.U109.A MANAGE, OPERATE AND MAINTAIN THE MINE VENTILATION SYSTEM**

### **Definitions: (contd)**

- 6 Action (alarm or trigger) is a generic term used to describe an event determined at the mine site at which action is initiated or a response made.
- 7 Audit is a validation process to ensure the system, procedures, processes, meet the established objective and are implemented.
- 8 Ignition is the rapid chemical reaction of a combustible material with oxygen when exposed to sufficient heat.
- 9 Explosion is the sudden release of energy generated from the confinement of the rapid volumetric expansion of an ignition.

### **Range of Variables:**

- 1 Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs/gobs in the mine.
- 2 Geological conditions may include faults, dykes, intrusions and strata deformities.
- 3 Coal seam characteristics may include inherent factors such as rank, petrology, moisture, cleat, coal hardness, seam gas, friability, pyrites or depositional factors such as seam thickness, multiple and rider seams, seam dip and depth of cover.
- 4 Spontaneous combustion hazards may include potential ignition sources, flammable gases, fire, explosion, irrespirable atmosphere, noxious atmosphere, smoke, roof collapse, reversal of ventilation and watergas.
- 5 Mechanisms which contribute to spontaneous combustion may include coal seam characteristics, ventilation pressure difference, mining system, mine design, humidity, temperature and moisture.
- 6 Physical spontaneous combustion indicators may include smoke, haze, sweating, smell, temperature.
- 7 Gaseous spontaneous combustion indicators may include increased production of carbon monoxide, hydrogen and hydrocarbons or the use of indicator ratios such as CO make, Graham's ratio or other ratios as determined suitable.

- 8 Mine gases may include seam gases or gases from other introduced sources and may include methane, carbon dioxide, carbon monoxide, oxides of nitrogen, hydrogen, sulphur dioxide, hydrogen sulphide, hydrocarbons and combinations.
- 9 Air contaminants may include respirable and combustible dust.
- 10 Mechanisms which contribute to an outburst may include maceral composition, depth of cover, gas content and composition, porosity, permeability, geology, stress and mining rate.
- 11 Outburst hazards may include ejection of materials, asphyxiant, toxic or flammable gas mixtures, entrapment, roof falls and ventilation disruption.
- 12 Outburst detection methods may include geological mapping, long-hole drilling, gas sampling, micro-seismic detection, changing face conditions and gas emission rates.

### **MNC.U109.AMANAGE, OPERATE AND MAINTAIN THE MINE VENTILATION SYSTEM**

#### **Range of Variables: (contd)**

- 13 Outburst amelioration measures may include pre-drainage and methods of work.
- 14 Types of fires may include solid, liquid, gas or metals.
- 15 Ignition sources may include electrical, friction, contraband, spontaneous combustion, naked flame, chemical or explosives.
- 16 Hazards from fires and explosions may include contaminants, altered ventilation pressures / flows, direct physical impacts and complete disruption to the ventilation system.
- 17 Ventilation pressure changes may include those resulting from changes in barometric pressure, fall of ground, fan changes / failure, ventilation control device changes / failure, outburst, holing into previous workings, re-circulation, ventilation circuit changes, natural ventilation pressure changes, explosions, changes in ambient temperature / humidity, fires and equipment moves.
- 18 Factors which may impact on temperature / humidity may include climatic conditions, ventilation quantities, location of workplaces, mine layout and design, location of mine entries, depth, adjacent strata type and seam gas composition.
- 19 Sources of heat / humidity may include strata, equipment, oxidation, fire / spontaneous combustion, auto compression, exothermic chemical reactions and seam moisture content.
- 20 Recirculation causes may include or be related to the underground auxiliary / booster fans, scrubber systems, leaking ducts, failure or poor design of ventilation system, ventilation velocity pressures, natural ventilation pressures, gas densities, layering and wind blast.

- 21 Effect of recirculation may include build up of contaminant concentration (gas, dust, heat) and a decrease in oxygen.
- 22 Criteria for safe mine ventilation may include statutory and regulatory requirements, mine ventilation management plan, measures to reduce and/or control seam gas, introduced gas, fumes and dust, temperature / humidity and maximum / minimum velocity specifications and criteria for ventilation efficiency.
- 23 Mine design impacts on ventilation may be related to surface access, mining method / rate, barrier pillars and segregation of roadways, system of mining, bleeder or back returns, number of headings, bleeders and geological features.
- 24 Mining systems may include longwall, main gate or single entry, board and total or partial pillar and pillar extraction methods.
- 25 Factors which impact on the selection of ventilation control systems may include the life of the installation, ground conditions (stress . heave), operating duty (pressure / quantity), mining method, design, explosion rating, statutory requirements, water and seam gas (make / composition).
- 26 Methods of ventilation may include exhaust / force, antitropal, homotropal, flank returns, ascensional / descensional, bleeder, Z/U/Y systems and other combinations.
- 27 Analytical and interpretive tools may include Ellicot diagrams, Cowards triangle, fire-gas ratios, gas makes, trending, fan laws, airway resistance, network analysis, computer simulation, gas laws, psychrometry and ventilation laws.

## **MNC.U109.A MANAGE, OPERATE AND MAINTAIN THE MINE VENTILATION SYSTEM**

### **Range of Variables: (contd)**

- 28 Inertisation methods may include pressure swing absorption, natural oxidation, evaporative and pumped liquefied inert gas, seam gas, exhaust gases (Thomlinson Boiler or jet engine) and water.
- 29 Fan types are axial flow and centrifugal.
- 30 Fan design considerations include types, mine layout, user requirements and fan laws, characteristics, duty control (speed / variable pitch), configuration (parallel / series), explosion / protection doors, dampers, auxiliary drive, restart procedures and maintenance requirements.
- 31 Ventilation control devices may include doors, regulators, seals, stoppings, air crossings, bulk heads, goaf seals and pressure chambers.
- 32 Ventilation training may include induction, basic miner, deputy and ventilation systems operators / special requirements.
- 33 Monitoring may include tube bundle, real time telemetry, portable (hand held) monitoring, bag samples, gas chromatography, fire monitoring, condition monitoring of ventilation devices.
- 34 Design criteria for fixed monitoring systems / equipment may include contingency for power outage, alarms for process faults including PC / PLC failure, analyser / sensor failure, communications failure, alarm system latching, alarm system fail-safe requirement, alarm / sensor likely gas matrix determination requirement, required ranges and accuracies, provision for calibration, statutory compliance, surface analysers combined gas monitoring capabilities, logistic and maintenance support.
- 35 Design criteria for portable monitoring equipment may include battery capacity (full shift), battery recharge requirements, statutory compliance, required ranges and accuracies, provision for calibration, size, weight, light facility, ease of operation and robust construction.
- 36 Alarm systems and action plans may include those for gas concentration / make, spontaneous combustion (physical and gaseous), combustion indicators, condition monitoring for fans (vibration / temperature / current / failures), ventilation devices and monitoring hardware.
- 37 Surveys may include pressure / quantity / temperature survey and gas / dust survey.
- 38 Procedures required to support the ventilation management plan may include those for construction, action response, permit to work, condition monitoring, auditing,

maintenance, document control, atmosphere monitoring, ventilation system control, communication systems, survey procedures, sealing procedures, changes, training and recording / reporting.

39 Defects to ventilation devices may include inferior design, deterioration of materials, inadequate quality of construction, physical damage and water damage.

40 Disruptions to ventilation circuits may result from changes in barometric pressure, fall of ground, ventilation device changes / failure, outburst, holing into previous workings, re-circulation, ventilation circuit changes, natural ventilation pressure changes, failure (planned) unplanned, explosions, changes in ambient temperature / humidity, fires and equipment moves.

41 Maintenance of the ventilation system may include inspection, servicing and repair.



## **MNC.U109.AMANAGE, OPERATE AND MAINTAIN THE MINE VENTILATION SYSTEM**

### **Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. analysing ventilation risks and hazards and selecting achievable ventilation responses
- b. preparing the contents of a mine ventilation management plan
- c. preparing, documenting and communicating ventilation system procedures
- d. implementing mine ventilation monitoring, recording and reporting systems
- e. implementing the ventilation system maintenance program
- f. evaluating and controlling changes to mine ventilation systems
- g. auditing and reviewing ventilation systems performance
- h. forecasting, calculating and planning for future ventilation requirements
- i. responding to ventilation system failure

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** A knowledge of:

- legislative and statutory requirements for ventilation including air quality, maximum values, control and distribution, flammable gas limits, ventilation fans, gas monitoring, dust limits and inspections and recording/reporting.
- the methods of mine ventilation and their applications / limitations including exhaust / force, antitropal, homotropal, flank returns, ascensional / descensional, bleeder, z/u/y systems and other combinations.
- the methods of panel ventilation and their applications / limitations including homotropal and antitropal (and in conjunction with these, the use of goaf bleed or back return), auxiliary fans, coursed ventilation (narrow side / wide side), machine mounted scrubber systems, compressed air venturi and bleeders.
- the impact of mining techniques and mine and panel design on ventilation.

- inertisation techniques and applications including pressure swing absorption, natural oxidation, evaporative and pumped liquefied inert gas, seam gas, exhaust gases (Thomlinson boiler or jet engine) and water.
- the impact of differing geological features and conditions on ventilation including faults, dykes, intrusions and strata deformities.
- the impact of coal characteristics and coal seam gradients on mine ventilation design.
- the effects of ventilation on the spontaneous combustion risk.
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection.

## **MNC.U109.AMANAGE, OPERATE AND MAINTAIN THE MINE VENTILATION SYSTEM**

### **5. Underpinning Knowledge (Continued).** A knowledge of:

- dust and other particulate matter; the types, sources, physical and physiological effect, and control/mitigation methods.
- mine fires; the types, sources of ignition, possible effects on the ventilation circuit and prevention / control / mitigation methods.
- mine explosions; the types, ignition sources, possible effects on the ventilation circuits and prevention / control / mitigation methods.
- pressure changes; causes, the impacts on the ventilation system, and responses (to include the causes and effects of natural ventilation and recirculation).
- heat / humidity; the sources and factors which may impact on mine ventilation and personnel.
- mine roadways and shafts; their design parameters and impact on mine ventilation.
- mine fans; fan laws, fan types, performance characteristics, configurations, applications and limitations.
- ventilation control devices; the types, purposes, design criteria and specifications, distribution / placement criteria and limitations.
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders.
- ventilation networks and individual circuit design criteria, specifications and design processes.
- fixed ventilation monitoring systems types, uses / limitations, design criteria, specifications and design processes.
- portable monitoring equipment, types, uses / limitations, design criteria and specifications.
- the use of computer modelling and simulation techniques and applications relevant to mine ventilation planning; their functions, capabilities, advantages and limitations.
- computer-based systems for mine environment analysis.
- ventilation management plan development requirements and processes.
- ventilation surveys; the types, frequency and method for conducting including pressure / quantity / temperature and gas / dust.
- processes and techniques for determining alarms and trigger points / levels.
- audit and review processes and techniques.
- emergency response and disaster planning processes and techniques.
- analytical and interpretative processes for gas mixtures and flammability including coward triangle, Ellicot diagram, gas make calculations and post explosion gases.
- applied ventilation theory including:
  - Atkinsons equation
  - methods of determining frictional resistance
  - frictional resistance values for mine airways and ducts
  - psychrometry and heat
  - gas laws including Charles, Boyle and Dalton
  - air density calculations

- natural ventilation pressures
- static velocity total pressures and shock loss
- leakage
- duct leakage
- determination of mine resistance curves
- combining system resistance and fan curves
- regulator and equivalent orifice calculation
- determination of fan operating / duty points.
- Kirchoffs law

## MNC.U109.A MANAGE, OPERATE AND MAINTAIN THE MINE VENTILATION SYSTEM

### 6. Underpinning Skills. The ability to:

- access, interpret and apply technical information
- access and analyse archival and historical ventilation information related to the mine
- interpret and apply mathematical and scientific theorems / laws related to ventilation
- perform mathematical calculations to key competency level a
- interpret and apply design criteria for ventilation systems and devices
- interpret computer spreadsheets and ventilation modelling / simulations
- collect, collate and interpret ventilation data
- prepare technical procedures relating to ventilation
- conduct enquiries / investigations and prepare reports
- communicate effectively in the workplace
- access data from monitoring systems and equipment
- operate hand held monitoring equipment
- analyse and report on ventilation training needs
- apply risk management processes and techniques

### 7. Key Competencies

#### Level

Collecting, analysing and organising ideas and information.	3
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the strategic management requirements to develop and establish a gas management plan.

<u>Elements</u>	<u>Performance Criteria</u>
U111.1 Identify, Analyse and Evaluate Gas Hazards and Risks	<p>U111.1.1 Coal seam characteristics and mine conditions which contribute to flammable or irrespirable atmospheres are identified, evaluated and clarified.</p> <p>U111.1.2 Hazards and risks relating to gases are identified, analysed and evaluated.</p> <p>U111.1.3 The requirements for ventilation in relation to the types and amounts of gas are identified, analysed and evaluated.</p> <p>U111.1.4 Gas hazards caused by disruption to the ventilation system are identified, analysed and evaluated.</p> <p>U111.1.5 The impacts of fire, ignition and explosion on the gas hazards are identified, analysed and evaluated</p>
U111.2 Identify, Analyse and Evaluate Gas Control Options and Measures	<p>U111.2.1 The types and advantages/disadvantages of gas control options and management methods are identified, analysed and evaluated.</p> <p>U111.2.2 The method, purpose and uses of gas monitoring systems are identified, analysed and evaluated.</p> <p>U111.2.3 Methods to maximise the effectiveness of a gas management program are identified, analysed and evaluated.</p>

<p>U111.3 Design and Develop Gas Management Systems</p>	<p>U111.3.1 The legislative, statutory and site requirements related to gas management systems are accessed, interpreted and clarified.</p> <p>U111.3.2 Gas management systems are designed to satisfy the operational conditions of the mine.</p> <p>U111.3.3 A surface infrastructure which eliminates the risk of induced hazards in relation to gas is designed and developed.</p> <p>U111.3.4 Gas monitoring systems to minimise the potential hazards of gas are incorporated into the design and development of the gas management system.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
U111.3 Design and Develop Gas Management Systems (Continued)	U111.3.5 Ventilation systems and controls to minimise the risk of gas leakage are incorporated into the design and development of the gas management system.
	U111.3.6 Contingency systems to mitigate the risks and hazards of gas are incorporated into the design and development of the gas management system.
U111.4 Establish the Gas Management Plan	U111.4.1 Gas management objectives, systems, descriptions and responsibilities are established and incorporated into the management plan.
	U111.4.2 Hazard control procedures, including inertisation techniques, associated with gas management are identified, developed and established.
	U111.4.3 Gas management monitoring system installation, operation and maintenance procedures are developed and established.
	U111.4.4 Gas control device installation, operation and maintenance procedures are developed and established.
	U111.4.5 Gas management systems maintenance procedures are developed and established.
	U111.4.6 Gas management system information recording and reporting procedures are developed and established.
	U111.4.7 Action levels and responses are determined and reviewed to minimise the hazards of gas.
	U111.4.8 Gas emergency and evacuation procedures are developed and established in the Gas Management Plan.
	U111.4.9 A program, including systems and procedures, to satisfy identified gas management training requirements is established.
	U111.4.10 Audit, review and updating procedures are incorporated into the gas management plan.



<u>Elements</u>	<u>Performance Criteria</u>
U111.5 Audit and Review the Gas Management Plan	<p>U111.5.1 Mine gas monitoring systems operations are audited for compliance with statutory and gas management plan standards</p> <p>U111.5.2 Mine gas control devices are audited for compliance with statutory and mine site requirements.</p> <p>U111.5.3 Recording systems are audited for compliance with the gas management plan</p> <p>U111.5.4 The maintenance program and procedures are audited for compliance with the gas management plan.</p> <p>U111.5.5 Gas management training program is audited for currency, relevance and compliance with the requirements of the gas management plan.</p> <p>U111.5.6 Procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit are established.</p> <p>U111.5.7 Instances of non-compliance and other discrepancies / deficiencies revealed by audit are responded to promptly and the management plan is modified where appropriate.</p> <p>U111.5.8 Future gas management requirements are identified, evaluated and incorporated into planning procedures as stipulated by the gas management plan.</p>

**Definitions:**

For the purposes of this competency, the definitions below apply:

- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Mine gas management plans establish procedures for maintaining a safe environment including:
  - hazard identification and quantification

- risk assessment
  - authority and responsibility
  - controls established to manage identified risks
  - reporting and communication
  - document control
  - audit and review
- Principles of mine design include recovery, reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and access.

**Definitions: (contd)**

- Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.
- Audit is the validation process to ensure the system, procedures and processes meet the established objectives and are implemented.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

- 1 Gas management plan may include procedures for mine atmosphere monitoring, reporting requirements, auditing, ventilation systems and usage, inertisation techniques, mine plan, action plans, response plans, emergency procedures, individual group responsibilities, training and education procedures.
- 2 Hazards may include irrespirable atmosphere, noxious atmospheres, flammable or explosive mixtures and induced outburst.
- 3 Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs/gobs in the mine.
- 4 Mine gases may include seam gases or gases from introduced sources, and may include but not be limited to, methane, carbon dioxide, oxides of nitrogen, hydrogen, carbon monoxide, sulphur dioxide, hydrogen sulphide, hydrocarbons and combinations.
- 5 Ventilation devices may include stoppings, overcasts, regulators, preparation seals, ventilation doors, bulk heads, goaf seals, final seals, pressure chambers and air locks.
- 6 Explosive control devices may include water barriers, stone dust barriers, trickle dusters, calcium chloride, stone dust and triggered barriers.
- 7 Gas management devices and options may include gas drainage, infusion, scrubbers, automatic gas detectors, tube bundle systems, gassing device on auxiliary fans and gas monitoring systems.
- 8 Geological conditions may include faults, dykes, intrusions and strata deformities, as well as existing or induced stress or strain.

- 9 Coal seam characteristics may include inherent factors such as rank, petrology, moisture, particle size, seam gas, pyrites or depositional factors such as seam thickness, multiple and rider seams, seam dip, depth of cover, cleats and friability.
- 10 Mine atmosphere monitoring may include continuous monitoring, portable (hand held) monitoring, collection of bag samples, gas chromatography, ventilation measurements from all areas of the mine including sealed areas and waste workings.
- 11 Infrastructure may include pipes, valves, hoses, pumps, drainage plant , flame arresters, power supply to bore holes and cleaning equipment.

**Range of Variables: (continued)**

- 12 Gas management training applies to mine workers, tradespeople, permanent employees, contractors, mine officials and other special requirements.
- 13 Types of fires may include solid, liquid, gas or metals.
- 14 Ignition sources may include electrical, static discharge, friction, contraband, spontaneous combustion, naked flame, chemical or explosives.
- 15 Disruptions / ventilation pressure changes may include those resulting from planned disruptions, changes in barometric pressure, fall of ground, fan changes / failure, ventilation control device changes / failure, outburst, holing into previous workings, recirculation, ventilation circuit changes, natural ventilation pressure changes, explosions, changes in ambient temperature / humidity, fires, equipment moves and flooding of roadways.
- 16 Effect of recirculation may include build up of contaminant concentration (gas, fumes, dust, heat) and a decrease in oxygen.
- 17 Criteria for safe mine ventilation may include statutory and regulatory requirements, mine ventilation management plan, measures to reduce and/or control seam gas, introduced gas, fumes and dust, temperature / humidity and maximum / minimum velocity specifications and for ventilation efficiency.
- 18 Monitoring devices may include barograph, tube bundle, real time telemetry, portable (hand held) monitoring, bag samples and gas chromatography.
- 19 Monitoring includes that related to atmospheric pressures, temperature, fire and the condition monitoring of ventilation devices.
- 20 Methods of ventilation may include exhaust / force, anistropal (antitropal), homotropal, flank returns, ascensional / descensional, bleeder, Z/U/Y systems, overlapping systems and other combinations.
- 21 Alarm systems and action plans may include those for gas concentration / make, spontaneous combustion (physical and gaseous), combustion indicators, condition monitoring for fans (vibration / temperature / current / failures), ventilation devices and monitoring hardware.
- 22 Procedures required to support the gas management plan may include those for construction, action response, permit to work, condition monitoring, auditing, maintenance, document control, atmosphere monitoring, ventilation system control, communication systems, survey procedures, sealing procedures, changes, training and recording / reporting.

23 Maintenance of the ventilation system may include inspection, servicing and repair.

## Evidence Guide

- 1. Context of Assessment.** The ultimate competency outcome is for the candidate to be able to establish a gas management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Gas management circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical establishment of a gas management plan may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following:

- A. Theory and knowledge underpinning the competency which is a mandatory requirement
- B. Application of theory to a generic practical situation / simulation which is a mandatory requirement
- C. Practical establishment of a gas management plan or equivalent activity.

There are special considerations in respect of Assessment C. Within the Black Coal Sector technical management competencies at this level there is a requirement for a candidate to establish a range of safety / hazard management plans (e.g. ventilation, gas management, strata etc.). It is unlikely that all candidates will be able, in terms of access, reasonable economic constraints and reasonable time frames, to physically establish all these plans.

In most cases it would be reasonable to infer competency if a candidate has completed assessments A and B in respect of each required competency and has satisfied assessment C in respect of one of the required plans. This inference is based on the fact that a candidate, who has competently established one plan, would be capable of establishing other plans if they have satisfied the theory and generic applications which form part of the required competencies.

Naturally, if this competency unit is being undertaken as a stand alone unit rather than as one within a qualification cluster, Assessment C is to be treated as a mandatory requirement.

## 2. Inter-dependant Assessment of Units

Whilst there are some common features between the units at this level, commonality is generally limited to science and engineering theory and the planning process. This unit requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.



- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on gas management
  - c. conducting a risk assessment to identify gas hazards and risks
  - d. applying mine design principles to minimise the likelihood of gas risks
  - e. evaluating and selecting gas management control systems
  - f. establishing the contents of the gas management plan
  - g. establishing statutory and mine gas monitoring, recording and reporting systems
  - h. establishing gas management control systems, responses and procedures
  - i. defining roles and responsibilities for gas management
  - j. establishing the training component of the gas management plan
  - k. establishing and communicating gas management procedures
  - l. reviewing and auditing the effectiveness of the gas management plan
  - m. establishing gas emergency response procedures
- 4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Gas Management Plans and their establishment are to meet Legislative and Industry standards.
- 5. Underpinning Knowledge.** A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to design, develop (or cause to be designed and developed) and establish the gas management plan.
- legislative and statutory requirements for including air quality, maximum values, control and distribution, flammable gas limits, ventilation fans, gas monitoring and inspections and recording/reporting.
  - the methods of mine ventilation and their applications / limitations including exhaust / force, antitropical, homotropical, flank returns, ascensional / descensional, bleeder, z/u/y systems and other combinations.
  - the methods of panel gas management and their applications / limitations including homotropical and antitropical (and in conjunction with these, the use of goaf bleed or back return), auxiliary fans, coursed ventilation (narrow side / wide side), machine mounted scrubber systems, compressed air venturis and bleeders.
  - the impact of mining techniques and mine and panel design on gas management.
  - the impact of coal characteristics and coal seam gradients on mine gas systems.
  - mine gases; the types and their characteristics, sources, physiological effects and methods of detection.
  - mine fires; the types, sources of ignition and possible impacts on gas management.
  - mine explosions; the types, ignition sources and possible impacts on gas management.
  - pressure changes; causes and the impacts on gas management.
  - heat / humidity; the sources and factors which may impact on gas management.

- mine fans; fan laws, fan types, performance characteristics, configurations, applications and limitations.
- gas control devices; the types, purposes, design criteria and specifications, distribution / placement criteria and limitations.
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders.
- fixed gas monitoring systems types, characteristics, uses and limitations.
- portable monitoring equipment, types, characteristics, uses and limitations
- functions, capabilities, advantages, limitations and uses of computer modelling and simulation techniques for gas management.
- computer-based systems for mine gas analysis.
- gas management plan development requirements and processes.
- gas surveys; the types, frequency and methods for conducting

**MNC.U111.A**

**ESTABLISH THE GAS MANAGEMENT PLAN**

### **5. Underpinning Knowledge (continued):**

- processes and techniques for determining alarms and trigger points / levels.
- audit and review processes and techniques.
- emergency response and disaster planning processes and techniques.
- general uses and applications of gas management theory, including:
  - psychrometry and heat
  - gas laws including Charles and Boyle
  - natural ventilation pressures
  - Coward's triangle
  - Hughe's and Raybould triangle
  - Graham's Ratio
  - Ellicot Diagram
  - gas make
  - Morris' Ratio
  - Trickett's Ratio
  - Oxides of carbon ratio
  - control device leakage
  - duct leakage
  - Kirchoff's laws
- geological data
- principles of ventilation management
- mine and goaf ventilation systems
- underground water management principles
- gas management drilling techniques
- site environmental monitoring requirements
- risk management procedures
- inertisation principles and techniques

### **6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information

- access and analyse archival and historical gas information related to the mine
- interpret and apply mathematical and scientific theorems / laws related to gas management
- perform gas planning mathematical calculations
- access, evaluate and apply design criteria for gas management
- interpret computer spreadsheets and gas modelling / simulations
- collect, collate and evaluate gas data
- establish technical procedures relating to gas management
- conduct enquiries / investigations and prepare reports
- communicate effectively in the workplace
- access, evaluate and apply data from monitoring systems and equipment
- establish gas training requirement, programs, systems and procedures
- apply risk management processes and techniques

## 7. Key Competencies

## Level

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	3
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the routine operational management functions required to implement a gas management plan.

<u>Elements</u>	<u>Performance Criteria</u>
U112.1 Plan and Prepare for the Implementation of the Gas Management Plan	<p>U112.1.1 The legislative, statutory and site requirements related to gas management systems are accessed, interpreted and clarified.</p> <p>U112.1.2 The gas management plan is accessed, interpreted and clarified.</p> <p>U112.1.3 Roles and responsibilities, as specified in the gas management plan, are identified, clarified and communicated to all involved persons.</p> <p>U112.1.4 Resources required for the implementation of the gas management plan are identified, forecast, obtained and allocated / scheduled.</p> <p>U112.1.5 The program to satisfy identified gas management training requirements is implemented.</p> <p>U112.1.6 Suggestions and recommendations for changes to gas management procedures are encouraged, received, reviewed and, where appropriate, implemented.</p>

<p>U112.2 Implement Mine Gas Monitoring Measures.</p>	<p>U112.2.1 The likelihood and impacts of gas changes and hazards on the mine atmosphere are identified and interpreted.</p> <p>U112.2.2 Procedures for the installation, operation and maintenance of monitoring systems are implemented.</p> <p>U112.2.3 Systems and procedures for the collection and analysis of samples are implemented.</p> <p>U112.2.4 Monitoring system data is recorded and reported in accordance with the gas management plan.</p> <p>U112.2.5 Changes in mine atmosphere status are investigated and, as appropriate, corrective action is implemented and reports prepared and processed.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
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<p>U112.3 Implement Ventilation/Gas Control Measures.</p>	<p>U112.3.1 Gaseous indicators are monitored and actioned to in accordance with the gas management plan.</p> <p>U112.3.2 Ventilation control measures are implemented in accordance with the agreed plan.</p> <p>U112.3.3 Appropriate response procedures are identified and implemented in situations where trigger levels are reached.</p> <p>U112.3.4 Ventilation and gas monitoring systems and surveys to assess the status of the systems are implemented.</p> <p>U112.3.5 Systems to prevent and/or respond immediately to the intersection of current and other workings are implemented.</p> <p>U112.3.6 Gas emergency and evacuation procedures are implemented in accordance with the Gas Management Plan.</p>
<p>U112.4 Audit Gas Management Systems.</p>	<p>U112.4.1 The effectiveness of the gas management systems is reviewed in accordance with the requirements of the gas management plan.</p> <p>U112.4.2 Mine gas monitoring systems operations are audited for compliance with statutory and gas management plan standards.</p> <p>U112.4.3 Mine gas control devices are audited for compliance with statutory and mine site requirements.</p> <p>U112.4.4 Recording systems are audited for compliance with the gas management plan</p> <p>U112.4.5 The maintenance program and procedures are audited for compliance with the gas management plan.</p> <p>U112.4.6 Gas emergency and evacuation procedures are trialed and audited for compliance with the Gas Management Plan.</p> <p>U112.4.7 The gas management training program is audited for currency, relevancy and compliance with the gas management plan.</p>

**Definitions:**

For the purposes of this competency, the definitions below apply:

- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Mine gas management plans establish procedures for maintaining a safe environment including:
  - hazard identification and quantification
  - risk assessment
  - authority and responsibility
  - controls established to manage identified risks
  - reporting and communication
  - document control
  - audit and review
- Principles of mine design include recovery, reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and access.
- Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.
- Audit is the validation process to ensure the system, procedures and processes meet the established objectives and are implemented.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

- 1 Gas management plan may include procedures for mine atmosphere monitoring, reporting requirements, auditing, ventilation systems and usage, inertisation techniques, mine plan, action plans, response plans, emergency procedures, individual group responsibilities, training and education procedures.
- 2 Hazards may include irrespirable atmosphere, noxious atmospheres, flammable or explosive mixtures and induced outburst.
- 3 Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs/gobs in the mine.



- 4 Mine gases may include seam gases or gases from introduced sources, and may include but not be limited to, methane, carbon dioxide, oxides of nitrogen, hydrogen, carbon monoxide, sulphur dioxide, hydrogen sulphide, hydrocarbons and combinations.
- 5 Ventilation devices may include stoppings, overcasts, regulators, preparation seals, ventilation doors, bulk heads, goaf seals, final seals, pressure chambers and air locks.
- 6 Explosive control devices may include water barriers, stone dust barriers, trickle dusters, calcium chloride, stone dust and triggered barriers.

**Range of Variables: (continued)**

- 7 Gas management devices and options may include gas drainage, infusion, scrubbers, automatic gas detectors, tube bundle systems, gassing device on auxiliary fans and gas monitoring systems.
- 8 Geological conditions may include faults, dykes, intrusions and strata deformities, as well as existing or induced stress or strain.
- 9 Coal seam characteristics may include inherent factors such as rank, petrology, moisture, particle size, seam gas, pyrites or depositional factors such as seam thickness, multiple and rider seams, seam dip, depth of cover, cleats and friability.
- 10 Mine atmosphere monitoring may include continuous monitoring, portable (hand held) monitoring, collection of bag samples, gas chromatography, ventilation measurements from all areas of the mine including sealed areas and waste workings.
- 11 Infrastructure may include pipes, valves, hoses, pumps, drainage plant, flame arresters, power supply to bore holes and cleaning equipment.
- 12 Gas management training applies to mine workers, tradespeople, permanent employees, contractors, mine officials and other special requirements.
- 13 Types of fires may include solid, liquid, gas or metals.
- 14 Ignition sources may include electrical, static discharge, friction, contraband, spontaneous combustion, naked flame, chemical or explosives.
- 15 Disruptions / ventilation pressure changes may include those resulting from planned disruptions, changes in barometric pressure, fall of ground, fan changes / failure, ventilation control device changes / failure, outburst, holing into previous workings, re-circulation, ventilation circuit changes, natural ventilation pressure changes, explosions, changes in ambient temperature / humidity, fires, equipment moves and flooding of roadways.
- 16 Effect of recirculation may include build up of contaminant concentration (gas, fumes, dust, heat) and a decrease in oxygen.
- 17 Criteria for safe mine ventilation may include statutory and regulatory requirements, mine ventilation management plan, measures to reduce and/or control seam gas, introduced gas, fumes and dust, temperature / humidity and maximum / minimum velocity specifications and for ventilation efficiency.
- 18 Monitoring devices may include barograph, tube bundle, real time telemetry, portable (hand held) monitoring, bag samples and gas chromatography.

- 19 Monitoring includes that related to atmospheric pressures, temperature, fire and the condition monitoring of ventilation devices.
- 20 Methods of ventilation may include exhaust / force, anistropal (antitropal), homotropal, flank returns, ascensional / descensional, bleeder, Z/U/Y systems, overlapping systems and other combinations.
- 21 Alarm systems and action plans may include those for gas concentration / make, spontaneous combustion (physical and gaseous), combustion indicators, condition monitoring for fans (vibration / temperature / current / failures), ventilation devices and monitoring hardware.

**Range of Variables: (continued)**

22 Procedures required to support the gas management plan may include those for construction, action response, permit to work, condition monitoring, auditing, maintenance, document control, atmosphere monitoring, ventilation system control, communication systems, survey procedures, sealing procedures, changes, training and recording / reporting.

23 Maintenance of the ventilation system may include inspection, servicing and repair.

**Evidence Guide****1. Context of Assessment**

The ultimate competency outcome is for the candidate to be able to implement a gas management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Gas management circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical implementation of a gas management plan may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following mandatory requirements:

- A. Theory and knowledge underpinning the competency
- B. Application of theory to a generic practical situation / simulation
- C. Practical implementation of a gas management plan.

**2. Inter-dependant Assessment of Units**

Whilst there are some common features between the units at this level, commonality is generally limited to the underpinning science and engineering knowledge. This unit requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on gas management
  - c. implementing gas management control measures
  - d. implementing and communicating gas management procedures and responsibilities
  - e. implementing the statutory and mine gas monitoring, recording and reporting procedures
  - f. implementing and monitoring trigger level response procedures
  - g. implementing the gas management training program
  - h. reviewing and auditing gas management systems performance
  - i. implementing gas emergency response procedures
- 4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Gas Management Plans and their implementation are to meet Legislative and Industry standards.
- 5. Underpinning Knowledge.** A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to perform the routine operational management required to implement an established gas management plan.
- legislative and statutory requirements for gas management including air quality, maximum values, control and distribution, flammable gas limits, ventilation fans, gas monitoring, inspections and recording/reporting.
  - the methods of mine ventilation and their applications / limitations including exhaust / force, antitropical, homotropical, flank returns, ascensional / descensional, bleeder, z/u/y systems and other combinations.
  - the methods of panel gas management and their applications / limitations including homotropical and antitropical (and in conjunction with these, the use of goaf bleed or back return), auxiliary fans, coursed ventilation (narrow side / wide side), machine mounted scrubber systems, compressed air venturis and bleeders.
  - the impact of mining techniques and mine and panel design on gas management.
  - the impact of coal characteristics and coal seam gradients on mine gas management systems.
  - mine gases; the types and their characteristics, sources, physiological effects and methods of detection.
  - mine fires; the types and possible impacts on gas management.
  - mine explosions; the types, ignition sources and possible impacts on gas management.
  - pressure changes; causes and the impacts on gas management.
  - heat / humidity; the sources and factors which may impact on mine gas management.
  - mine fans; fan types, applications and limitations.

- gas control devices; the types, purposes, design criteria and specifications, distribution / placement criteria and limitations.
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders.
- fixed gas monitoring systems types, uses and limitations.
- portable monitoring equipment, types, characteristics, uses and limitations.
- computer-based systems for mine gas analysis.
- gas management plan development requirements and processes.
- techniques for determining alarms and trigger points / levels.
- audit and review processes and techniques.
- emergency and disaster plan response / measures.
- the general use and application of ventilation theory including:
  - gas laws including Charles and Boyle
  - natural ventilation pressures

**5. Underpinning Knowledge: (contd)**

- Coward's Triangle
- Graham's Ratio
- Ellicott Diagram
- gas make
- Morris' Ratio
- Trickett's Ratio
- leakage
- duct leakage
- geological data
- principles of ventilation management
- mine and goaf ventilation systems
- underground water management techniques
- site environmental monitoring requirements
- risk management procedures
- inertisation techniques

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- access and analyse archival and historical gas information related to the mine
- interpret and apply mathematical and scientific theorems / laws related to gas
- collect, collate and evaluate gas management data
- conduct inquiries / investigations and prepare reports
- communicate effectively in the workplace
- access, evaluate and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- implement gas management training requirement, programs, systems and procedures
- apply risk management processes and techniques



<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	3
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the application and monitoring of controls and systems established in a gas management plan.

<u>Elements</u>	<u>Performance Criteria</u>
U113.1 Plan and Prepare for the Application of the Gas Management Plan	<p>U113.1.1 The legislative, statutory and site requirements related to gas management systems are identified and interpreted.</p> <p>U113.1.2 The gas management plan is accessed, interpreted and clarified.</p> <p>U113.1.3 Roles and responsibilities, as specified in the gas management plan, are identified and clarified.</p> <p>U113.1.4 Work group and individual responsibilities and tasks are communicated and clarified in an effective and timely manner.</p> <p>U113.1.5 Resources required for the application of the gas management plan are identified, obtained and allocated.</p> <p>U113.1.6 Individual training needs are identified and satisfied through accessing the established gas management training program and systems.</p> <p>U113.1.7 Suggestions and recommendations for changes to gas management procedures are encouraged, received, reviewed and, where appropriate, applied.</p>

<p>U113.2 Apply the Gas Management Plan.</p>	<p>U113.2.1 The impacts of gas changes and hazards on the mine atmosphere are identified and interpreted.</p> <p>U113.2.2 Procedures for the installation and operation of monitoring systems are applied.</p> <p>U113.2.3 Procedures for the installation and operation of gas control devices and systems are applied.</p> <p>U113.2.4 Systems and procedures for the collection of samples are applied.</p> <p>U113.2.5 Monitoring system data is recorded and reported in accordance with the gas management plan.</p> <p>U113.2.6 Changes in mine atmosphere status are investigated and reports prepared and processed.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
U113.2 Apply the Gas Management Plan. (continued):	<p>U113.2.7 Alarms raised are responded to in accordance with the gas management plan.</p> <p>U113.2.8 Gas emergency and evacuation procedures are applied in accordance with the Gas Management Plan.</p> <p>U113.2.9 Systems to prevent and/or respond immediately to the intersection of current and other workings are applied.</p> <p>U113.2.10 Systems audit and review requirements are contributed to in accordance with the gas management plan.</p>
U113.3 Apply Gas Management System Maintenance Procedures.	<p>U113.3.1 Inspections, repair and maintenance activities are carried out in accordance with the gas management plan.</p> <p>U113.3.2 Maintenance activities are recorded, reported and reviewed in accordance with the gas management plan.</p>

**Definitions:**

For the purposes of this competency, the definitions below apply:

- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Mine gas management plans establish procedures for maintaining a safe environment including:
  - hazard identification and quantification
  - risk assessment
  - authority and responsibility
  - controls established to manage identified risks
  - reporting and communication
  - document control
  - audit and review

- Principles of mine design include recovery, reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and access.
- Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.
- Audit is the validation process to ensure the system, procedures, processes meet the established objectives and are implemented.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

- 1 Gas management plan may include procedures for mine atmosphere monitoring, reporting requirements, auditing, ventilation systems and usage, inertisation techniques, mine plan, action plans, response plans, emergency procedures, individual group responsibilities, training and education procedures.
- 2 Hazards may include irrespirable atmosphere, noxious atmospheres, flammable or explosive mixtures and induced outburst.
- 3 Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs/gobs in the mine.
- 4 Mine gases may include seam gases or gases from introduced sources, and may include but not be limited to, methane, carbon dioxide, oxides of nitrogen, hydrogen, carbon monoxide, sulphur dioxide, hydrogen sulphide, hydrocarbons and combinations.
- 5 Ventilation devices may include stoppings, overcasts, regulators, preparation seals, ventilation doors, bulk heads, goaf seals, final seals, pressure chambers and air locks.
- 6 Explosive control devices may include water barriers, stone dust barriers, trickle dusters, calcium chloride, stone dust and triggered barriers.
- 7 Gas management devices and options may include gas drainage, infusion, scrubbers, automatic gas detectors, tube bundle systems, gassing device on auxiliary fans and gas monitoring systems.
- 8 Geological conditions may include faults, dykes, intrusions and strata deformities, as well as existing or induced stress or strain.
- 9 Coal seam characteristics may include inherent factors such as rank, petrology, moisture, particle size, seam gas, pyrites or depositional factors such as seam thickness, multiple and rider seams, seam dip, depth of cover, cleats and friability.
- 10 Mine atmosphere monitoring may include continuous monitoring, portable (hand held) monitoring, collection of bag samples, gas chromatography, ventilation measurements from all areas of the mine including sealed areas and waste workings.
- 11 Infrastructure may include pipes, valves, hoses, pumps, drainage plant, flame arresters, power supply to bore holes and cleaning equipment.
- 12 Gas management training applies to mine workers, tradespeople, permanent employees, contractors, mine officials and other special requirements.
- 13 Types of fires may include solid, liquid, gas or metals.

14 Ignition sources may include electrical, static discharge, friction, contraband, spontaneous combustion, naked flame, chemical or explosives.

15 Disruptions / ventilation pressure changes may include those resulting from planned disruptions, changes in barometric pressure, fall of ground, fan changes / failure, ventilation control device changes / failure, outburst, holing into previous workings, re-circulation, ventilation circuit changes, natural ventilation pressure changes, explosions, changes in ambient temperature / humidity, fires, equipment moves and flooding of roadways.

**Range of Variables:** (continued)

- 16 Effect of recirculation may include build up of contaminant concentration (gas, fumes, dust, heat) and a decrease in oxygen.
- 17 Criteria for safe mine ventilation may include statutory and regulatory requirements, mine ventilation management plan, measures to reduce and/or control seam gas, introduced gas, fumes and dust, temperature / humidity and maximum / minimum velocity specifications and for ventilation efficiency.
- 18 Monitoring devices may include barograph, tube bundle, real time telemetry, portable (hand held) monitoring, bag samples and gas chromatography.
- 19 Monitoring includes that related to atmospheric pressures, temperature, fire and the condition monitoring of ventilation devices.
- 20 Methods of ventilation may include exhaust / force, anistropal (antitropal), homotropal, flank returns, ascensional / descensional, bleeder, Z/U/Y systems, overlapping systems and other combinations.
- 21 Alarm systems and action plans may include those for gas concentration / make, spontaneous combustion (physical and gaseous), combustion indicators, condition monitoring for fans (vibration / temperature / current / failures), ventilation devices and monitoring hardware.
- 22 Procedures required to support the gas management plan may include those for construction, action response, permit to work, condition monitoring, auditing, maintenance, document control, atmosphere monitoring, ventilation system control, communication systems, survey procedures, sealing procedures, changes, training and recording / reporting.
- 23 Maintenance of the ventilation system may include inspection, servicing and repair.

**Evidence Guide****1. Context of Assessment**

The ultimate competency outcome is for the candidate to be able to apply and monitor a gas management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Gas management circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical application of a gas management plan may be assessed in the workplace. To bridge this potential gap



and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following requirements:

- A. Theory and knowledge underpinning the competency
- B. Application of theory to a generic practical situation / simulation
- C. Practical application and monitoring of a gas management plan.

## 2. Inter-dependant Assessment of Units

Whilst there are some common features between the units at this level, commonality is limited to the basic underpinning science and engineering knowledge. This unit requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.

## 3. Critical Aspects of Evidence.

The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on gas management
- c. interpreting gas risks and hazards
- d. interpreting the contents of a mine gas management plan
- e. applying statutory and mine gas monitoring, recording and reporting systems
- f. applying the gas system maintenance program
- g. interpreting changes to mine gas systems
- h. ensuring control device construction and maintenance is carried out to specified standards
- i. identifying workplace training/competency requirements
- j. responding to gas system failure and other emergency situations

## 4. Consistency of Performance.

Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Gas Management Plans and their application are to meet Legislative and Industry standards.

## 5. Underpinning Knowledge.

A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to apply and monitor controls and systems in a gas management plan.

- legislative and statutory requirements for ventilation including air quality, maximum values, control and distribution, flammable gas limits, ventilation fans, gas monitoring inspections and recording/reporting.
- the methods of panel gas management and their applications / limitations including homotropical and antitropical (and in conjunction with these, the use of goaf bleed or back return), auxiliary fans, coursed ventilation (narrow side / wide side), machine mounted scrubber systems, compressed air venturis and bleeders.
- the impact of mining techniques on panel gas management.
- the impact of differing geological features and conditions on gas management including faults, types, intrusions and strata deformities

- the impact of coal characteristics and coal seam gradients on mine gas management.
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection.
- mine fires; the types, possible impacts on gas management.
- mine explosions; the types, ignition sources and possible effects on gas management.
- pressure changes; causes and the impacts on gas management.
- heat / humidity; the sources and factors which may impact on gas management.
- mine fans; fan types, applications and limitations.
- gas control devices; the types, purposes, specifications, distribution / placement criteria and limitations.

**MNC.U113.A**

## **APPLY AND MONITOR THE GAS MANAGEMENT PLAN**

### **5. Underpinning Knowledge: (contd)**

- fixed gas monitoring systems types, uses and limitations
- portable monitoring equipment, types, uses and limitations.
- computer-based systems for mine gas analysis.
- gas management plan development requirements and processes.
- types, characteristics, purposes and responses to alarms and trigger points / levels.
- audit and review processes and techniques.
- emergency and disaster plan responses.
- the general use and application of ventilation theory including:
  - gas laws including Charles and Boyle
  - natural ventilation pressures
  - Coward's Triangle
  - Graham's Ratio
  - Ellicott's Triangle
  - gas make
  - air quantity measurement
  - control device leakage
- duct leakage
- geological data
- mine and goaf ventilation systems
- underground water management techniques
- site environmental monitoring requirements
- risk management procedures
- inertisation techniques

### **6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- access and interpret archival and historical gas information related to the mine
- interpret and apply mathematical and scientific theorems / laws related to gas management
- collect, collate and evaluate gas data

- conduct enquiries / investigations and prepare reports
- communicate effectively in the workplace
- access, evaluate and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- access ventilation training programs, systems and procedures
- apply risk management processes and techniques

## 7. Key Competencies

## Level

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	3
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:** This unit covers the strategic management requirements to develop and establish the Gas Drainage Management Plan.

<u>Elements</u>	<u>Performance Criteria</u>
<p>U116.1 Identify, Analyse and Evaluate Gas Drainage Hazards, Risks and Needs.</p>	<p>U116.1.1 Coal seam characteristics and conditions which could lead to a requirement for gas drainage are identified, evaluated and clarified.</p> <p>U116.1.2 The effects of gas drainage on mine atmosphere are identified and clarified.</p> <p>U116.1.3 The requirements for ventilation in relation to gas drainage are identified.</p> <p>U116.1.4 The impacts of water accumulation on gas drainage are identified and clarified.</p>
<p>U116.2 Identify, Analyse and Evaluate Gas Drainage Control Options and Measures</p>	<p>U116.2.1 The types and advantages/disadvantages of gas drainage methods are identified and evaluated.</p> <p>U116.2.2 Hazards relating to gas drainage are identified and evaluated.</p> <p>U116.2.3 The method, purpose and procedures for installation and use of mine monitoring systems with regards to gas drainage are identified and evaluated.</p> <p>U116.2.4 Methods to maximise the effectiveness of a gas drainage program are identified.</p>

<p>U116.3 Design and Develop Gas Drainage Management Systems</p>	<p>U116.3.1 The legislative, statutory and site requirements related to gas drainage systems are accessed, interpreted and clarified.</p> <p>U116.3.2 Gas drainage systems to satisfy the operational conditions of the mine are incorporated into the design and development.</p> <p>U116.3.3 A surface infrastructure which eliminates the risk of induced hazards in relation to gas drainage is designed and developed.</p> <p>U116.3.4 Gas drainage systems to minimise the potential hazards of gas are incorporated into the design and development of the gas draining management system.</p> <p>U116.3.5 Gas draining systems and controls to minimise the risk of gas leakage are incorporated into the design and development of the gas drainage management system.</p> <p>U116.3.6 Contingency systems to mitigate the risks and hazards of gas are incorporated into the design and development of the gas drainage management system.</p>
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**MNC.U116.A  
PLAN**

**ESTABLISH THE GAS DRAINAGE MANAGEMENT**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U116.4 Establish the Gas Drainage Management Plan</p>	<p>U116.4.1 Gas drainage objectives, systems, descriptions and responsibilities are established and incorporated into the management plan.</p> <p>U116.4.2 Hazard control procedures associated with gas drainage are identified, developed and established.</p> <p>U116.4.3 Gas monitoring system installation, operation and maintenance procedures are developed and established.</p> <p>U116.4.4 Gas drainage service extension and recovery procedure is developed and established.</p> <p>U116.4.5 Gas drainage system maintenance requirement procedure is developed and established.</p> <p>U116.4.6 A procedure incorporating methods and practices to minimise potential damage to the gas drainage system is developed and established</p> <p>U116.4.7 Action levels are determined and reviewed to minimise the hazards of gas drainage.</p> <p>U116.4.8 Gas drainage system information recording and reporting procedure is developed and established</p> <p>U116.4.9 A program, including systems and procedures, to satisfy identified gas drainage training requirements is established.</p> <p>U116.4.10 Audit, review and updating procedures are incorporated into the gas drainage management plan.</p>

<p>U116.5 Audit and Review the Effectiveness of the Gas Drainage Management Plan</p>	<p>U116.5.1 Gas drainage monitoring systems are audited for compliance with statutory and management plan standards.</p> <p>U116.5.2 Gas drainage control devices are audited for compliance with statutory and mine site requirements.</p> <p>U116.5.3 Recording systems are audited for compliance with the gas drainage management plan.</p> <p>U116.5.4 Gas drainage extension and recovery procedures are effective and meet current statutory and management plan requirements.</p> <p>U116.5.5 The gas drainage system maintenance program and procedures are implemented in accordance with management plan and are effective.</p> <p>U116.5.6 The gas drainage management training program is audited for currency, relevance and compliance with the requirements of the gas drainage management plan.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
<p>U116.5 Audit and Review the Effectiveness of the Gas Drainage Management Plan (continued)</p>	<p>U116.5.7 Future gas drainage requirements are identified, assessed and incorporated into the gas drainage planning procedures as stipulated by the management plan.</p> <p>U116.5.8 Procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit are established.</p>

**Definitions:**

For the purposes of this competency, the definitions below apply:

- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360 : 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Gas drainage management plans establish procedures for maintaining a safe environment including:
  - hazard identification and quantification
  - risk assessment
  - authority and responsibility
  - controls established to manage identified risks
  - reporting and communication
  - document control
  - audit and review
- Principles of mine design include recovery, reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and access.
- Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.
- Audit is the validation process to ensure the system, procedures and processes meet the established objectives and are implemented.

- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

- 1 Gas drainage management plan may include procedures for gas drainage drilling program, gas or geological anomaly detection, mine atmosphere monitoring, stimulation techniques, goaf wells, reporting requirements, auditing, ventilation systems and usage, mine plan, action plans, systems of mining, response plans, emergency procedures, individual and group responsibilities, training and education procedures.
- 2 Hazards may include irrespirable atmosphere, noxious atmosphere, flammable or explosive mixtures, outbursts, induced outburst, gas under pressure, location of drainage pipes and static electricity.
- 3 Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.
- 4 Mine gases may include seam gases or gases from introduced sources and may include but not be limited to methane, carbon dioxide and hydrogen sulphide.
- 5 Ventilation systems may include the use of main mine fan, auxiliary fans, brattice, regulators, seals, stoppings, overcasts, ventilation doors, surface drainage boreholes and pressure chambers.
- 6 Geological conditions may include faults, dykes, intrusions, strata deformities, induced stresses, depth of overlaying strata, strength of immediate strata, under and over the coal seam and mining lease gas make.
- 7 Coal seam characteristics may include inherent factors such as rank, petrology, moisture, particle size, seam gas make, pyrites or depositional factors such as seam thickness, multi seams, seam dip, depth of cover, cleats, friability, interaction of other coal seams and gas makes, clay bands within the coal seam and molorite zones.
- 8 Gas make characteristics may include gas content, gas pressure, adsorption, desorption, hydrostatic pressure, strata moisture content, permeability and porosity, tectonic stress.
- 9 Gas drainage monitoring may include continuous monitoring, leakage monitoring (laser beam technology), portable (hand held) monitoring, collection of bag samples, pipeflow and pressure measurements, gas chromatography and ventilation measurements from relevant areas.
- 10 Gas drainage infrastructure may include vacuum pumps, pipes, stand pipes, gas separators and casing, surface installations, gas drainage plant including building, valves, hoses, water pumps, flame and lightning arresters, power supply to bore holes, cleaning equipment, air compressors, electricity and water services, pressure gauges and hydration plants.

- 11 Gas management training applies to mine workers, tradespeople, permanent employees, contractors, mine officials and other special requirements.
- 12 Alarm systems and action plans may include those for gas concentration / make, combustion indicators, condition monitoring for fans (vibration / temperature / current failures), ventilation devices, monitoring hardware and temperature alarms.
- 13 Procedures required to support the gas drainage management plan may include those for construction, action response, permit to work, condition monitoring, auditing, maintenance, document control, atmosphere monitoring, ventilation system control, communication systems, survey procedures, standard operating procedures, changes, training and recording / reporting.
- 14 Maintenance of the gas drainage system may include inspection, servicing and repair.

## **1. Context of Assessment**

The ultimate competency outcome is for the candidate to be able to establish a gas drainage management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Gas drainage circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical establishment of a gas drainage management plan may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following:

- A. Theory and knowledge underpinning the competency which is a mandatory requirement
- B. Application of theory to a generic practical situation / simulation which is a mandatory requirement
- C. Practical establishment of a gas drainage management plan or equivalent activity.

There are special considerations in respect of Assessment C. Within the Black Coal Sector technical management competencies at this level there is a requirement for a candidate to establish a range of safety / hazard management plans (e.g. ventilation, gas management, strata etc.). It is unlikely that all candidates will be able, in terms of access, reasonable economic constraints and reasonable time frames, to physically establish all these plans.

In most cases it would be reasonable to infer competency if a candidate has completed assessments A and B in respect of each required competency and has satisfied assessment C in respect of one of the required plans. This inference is based on the fact that a candidate, who has competently established one plan, would be capable of establishing other plans if they have satisfied the theory and generic applications which form part of the required competencies.

Naturally, if this competency unit is being undertaken as a stand alone unit rather than as one within a qualification cluster, Assessment C is to be treated as a mandatory requirement.

## **2. Inter-dependant Assessment of Units**

Whilst there are some common features between the units at this level, commonality is generally limited to science and engineering theory and the planning process. This unit

requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on gas drainage
  - c. conducting a risk assessment to identify gas hazards and risks
  - d. applying mine design principles to minimise the likelihood of gas risks
  - e. evaluating and selecting gas drainage control systems
  - f. establishing control systems, responses and procedures
  - g. defining roles and responsibilities for gas drainage
  - h. establishing the contents of the gas drainage management plan
  - i. establishing and communicating gas drainage management procedures
  - j. establishing the training component of the gas drainage management plan
  - k. reviewing and auditing the effectiveness of the Gas Drainage Management Plan
- 4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Gas Drainage Management Plans and their establishment are to meet Legislative and Industry standards.
- 5. Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to design, develop (or cause to be designed and developed) and establish the gas drainage management plan.**
- legislative and statutory requirements may include those for gas drainage drilling, gas drainage installation, ventilation requirements, return airways gas levels, intake airway gas accumulated levels, gas control and distribution, environmental management, local government requirements, inspections and reporting.
  - the methods of gas drainage and their applications / limitations against the mine design, mine and panel ventilation systems, systems of mining and current and future mine development.
  - the impact of gas drainage on mining techniques, mine and panel design and production output.
  - the impact of the strata geology and coal seam characteristics on the gas drainage management plan including coal seam gradient, moisture content, friability, permeability, gas content, gas composition, the porous features of the coal seam, stresses and intrusions.
  - outburst mining monitoring procedures.
  - drilling options and related equipment and techniques including directional drilling techniques
  - hazard management processes and techniques

- content, composition and pressure
- the effects of the gas in the coal seam.
- the effects of gas characteristics from roof
- the impacts of accumulation of coal dust after gas drainage has been completed.
- pressure changes; causes, the impacts on the ventilation system, and the effects on gas drainage.
- heat / humidity; the sources and factors which may impact on gas drainage and personnel.
- mine fans; fan laws, fan types, performance characteristics, configurations, applications and limitations in association with the gas drainage management plan.



**5. Underpinning Knowledge (Continued).** A knowledge of:

- ventilation control devices; the types, purposes, design criteria and specifications, distribution / placement criteria and limitations in association with the gas drainage management plan.
- ventilation control devices; the types, purposes, design criteria and specifications, distribution / placement criteria and limitations.
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders.
- fixed gas drainage monitoring systems types, characteristics, uses and limitations.
- portable monitoring equipment for gas drainage purposes, types, characteristics, uses and limitations
- functions, capabilities, advantages, limitations and uses of gas drainage computer modelling and simulation techniques
- computer-based systems for mine environment analysis.
- gas drainage management plan development requirements and processes.
- gas drainage surveys; the types, frequency and method for conducting including pressure / quantity / temperature and gas.
- processes and techniques for determining alarms and trigger points / levels.
- audit and review processes and techniques.
- emergency response and disaster planning processes and techniques.
- general uses and applications of ventilation theory, including:
  - Atkinsons equation
  - methods of determining frictional resistance
  - gas laws including Charles and Boyle
  - natural ventilation pressures
  - gas make
  - leakage
  - determination of mine resistance curves
  - regulator and equivalent orifice calculation
  - determination of fan operating / duty points.
  - Kirchoff's laws
- mine operational procedures
- strata control systems and their effects on gas drainage
- mine and goaf ventilation systems
- underground water management principles and systems
- impacts of intersecting holes and hole design
- site environmental monitoring requirements
- statutory and mine reporting procedures

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information

- access and analyse archival and historical gas information related to the mine
- interpret and apply mathematical and scientific theorems / laws related to gas drainage
- access, interpret and apply geological reports
- perform gas drainage planning mathematical calculations
- access, evaluate and apply design criteria for gas drainage systems and devices
- interpret computer spreadsheets and modelling / simulations
- collect, collate and evaluate gas drainage data
- establish technical procedures relating to gas drainage
- conduct enquiries / investigations and prepare reports
- access, evaluate and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- apply risk management processes and techniques

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	3 2
Communicating ideas and information.	3
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

NATIONAL MINING ITAB

BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the routine operational management functions required to implement a gas drainage management plan.

<u>Elements</u>	<u>Performance Criteria</u>
U117.1 Plan and Prepare for the Implementation of the Gas Management Plan	U117.1.1 The legislative, statutory and site requirements related to gas management systems are identified and interpreted. U117.1.2 The gas management plan is accessed, interpreted and clarified. U117.1.3 Roles and responsibilities, as specified in the gas management plan are identified, clarified and communicated to the relevant persons. U117.1.4 Resources required for the implementation of the gas management plan are forecast, obtained and scheduled / allocated. U117.1.5 The program to satisfy identified gas drainage training requirements is implemented. U117.1.6 Suggestions and recommendations for changes to gas management procedures are encouraged, received, reviewed and, where appropriate, implemented.

<p>U117.3 Implement the Gas Drainage Management Procedures.</p>	<p>U117.2.1 Hazard control procedures associated with gas drainage are identified, implemented and established.</p> <p>U117.2.2 Gas monitoring system installation, operation and maintenance procedures are implemented.</p> <p>U117.2.3 Gas drainage service extension and recovery procedures are implemented.</p> <p>U117.2.4 Gas drainage system maintenance requirement procedures are implemented.</p> <p>U117.2.5 Procedures incorporating methods and practices to minimise potential damage to the gas drainage system are implemented.</p> <p>U117.2.6 Action levels established to minimise the hazards of gas drainage are implemented.</p> <p>U117.2.7 Gas drainage system information recording and reporting procedures are implemented.</p>
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**MNC.U117.A  
PLAN**

**IMPLEMENT THE GAS DRAINAGE MANAGEMENT**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U117.3 Implement Systems for Audit, Review and Continuous Improvement of Gas Drainage Systems and Equipment</p>	<p>U117.3.1 Gas drainage monitoring systems are audited for compliance with statutory and management plan standards.</p> <p>U117.3.2 Gas drainage control devices are audited for compliance with statutory and mine site requirements.</p> <p>U117.3.3 Recording systems are audited for compliance with the gas drainage management plan.</p> <p>U117.3.4 Gas drainage extension and recovery procedures are effective and meet current statutory and management plan requirements.</p> <p>U117.3.5 The gas drainage system maintenance program and procedures are implemented in accordance with management plan and are effective.</p> <p>U117.3.6 The gas drainage management training program is audited for currency, relevance and compliance with the requirements of the gas drainage management plan.</p> <p>U117.3.7 Instances of non-compliance or other discrepancies / deficiencies revealed by audit are responded to promptly and the gas drainage management plan is modified accordingly.</p>

**Definitions:**

For the purposes of this competency, the definitions below apply:

- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360 : 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Gas drainage management plans establish procedures for maintaining a safe environment including:
  - hazard identification and quantification
  - risk assessment
  - authority and responsibility

- controls established to manage identified risks
  - reporting and communication
  - document control
  - audit and review
- Principles of mine design include recovery, reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and access.
  - Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.
  - Audit is the validation process to ensure the system, procedures and processes meet the established objectives and are implemented.
  - Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

- 1 Gas drainage management plan may include procedures for gas drainage drilling program, gas or geological anomaly detection, mine atmosphere monitoring, stimulation techniques, goaf walls, reporting requirements, auditing, ventilation systems and usage, mine plan, action plans, systems of mining, response plans, emergency procedures, individual and group responsibilities, training and education procedures.
- 2 Hazards may include irrespirable atmosphere, noxious atmosphere, flammable or explosive mixtures, outbursts, induced outburst, gas under pressure, location of drainage pipes and static electricity.
- 3 Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.
- 4 Mine gases may include seam gases or gases from introduced sources and may include but not be limited to methane, carbon dioxide and hydrogen sulphide.
- 5 Ventilation systems may include the use of main mine fan, auxiliary fans, brattice, regulators, seals, stoppings, overcasts, ventilation doors, surface drainage boreholes and pressure chambers.
- 6 Geological conditions may include faults, dykes, intrusions, strata deformities, induced stresses, depth of overlaying strata, strength of immediate strata, under and over the coal seam and mining lease gas make.
- 7 Coal seam characteristics may include inherent factors such as rank, petrology, moisture, particle size, seam gas make, pyrites or depositional factors such as seam thickness, multi seams, seam dip, depth of cover, cleats, friability, interaction of other coal seams and gas makes, clay bands within the coal seam and molorite zones.
- 8 Gas make characteristics may include gas content, gas pressure, adsorption, desorption, hydrostatic pressure, strata moisture content, permeability and porosity, tectonic stress.
- 9 Gas drainage monitoring may include continuous monitoring, leakage monitoring (laser beam technology), portable (hand held) monitoring, collection of bag samples, pipeflow and pressure measurements, gas chromatography and ventilation measurements from relevant areas.
- 10 Gas drainage infrastructure may include vacuum pumps, pipes, stand pipes, gas separators and casing, surface installations, gas drainage plant including building, valves, hoses, water pumps, flame and lightning arresters, power supply to bore holes, cleaning equipment, air compressors, electricity and water services, pressure gauges and hydration plants.



- 11 Gas management training applies to mine workers, tradespeople, permanent employees, contractors, mine officials and other special requirements.
- 12 Alarm systems and action plans may include those for gas concentration / make, combustion indicators, condition monitoring for fans (vibration / temperature / current failures), ventilation devices, monitoring hardware and temperature alarms.
- 13 Procedures required to support the gas drainage management plan may include those for construction, action response, permit to work, condition monitoring, auditing, maintenance, document control, atmosphere monitoring, ventilation system control, communication systems, survey procedures, standard operating procedures, changes, training and recording / reporting.
- 14 Maintenance of the gas drainage system may include inspection, servicing and repair.

## Evidence Guide

### 1. Context of Assessment

The ultimate competency outcome is for the candidate to be able to implement a gas drainage management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Gas drainage circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical implementation of a gas drainage management plan may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following mandatory requirements:

- A. Theory and knowledge underpinning the competency
- B. Application of theory to a generic practical situation / simulation
- C. Practical implementation of a gas drainage management plan.

### 2. Inter-dependant Assessment of Units

Whilst there are some common features between the units at this level, commonality is generally limited to the underpinning science and engineering knowledge. This unit requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.

### 3. Critical Aspects of Evidence. The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on gas drainage management operations
- c. conducting a risk assessment to identify gas drainage hazards and risks
- d. implementing and communicating gas drainage management procedures and responsibilities
- e. implementing the mine monitoring, recording and reporting

- f. implementing and monitoring trigger level response procedures
- g. implementing gas drainage management systems
- h. implementing audits of gas drainage management systems performance
- i. defining roles and responsibilities for gas drainage management
- j. identifying gas drainage training needs
- k. contributing to the documentation of the gas drainage management plan
- l. reviewing and auditing the effectiveness of the management plan.

**4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Gas Drainage Management Plans and their implementation are to meet Legislative and Industry standards.

**5. Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to perform the routine operational management required to implement an established gas drainage management plan.**

- legislative and statutory requirements may include those for gas drainage drilling, gas drainage installation, ventilation requirements, return airways gas levels, intake airway gas accumulated levels, gas control and distribution, environmental management, local government requirements, inspections and reporting.
- the methods of gas drainage and their applications / limitations against the mine design, mine and panel ventilation systems, systems of mining and current and future mine development.
- the impact of gas drainage on mining techniques, mine and panel design and production output.
- the impact of the strata geology and coal seam characteristics on the gas drainage management plan including coal seam gradient, moisture content, friability, the porous features of the coal seam, stresses and intrusions.
- outburst mining monitoring procedures.
- drilling options and related equipment and techniques.
- hazard management processes and techniques
- the effects of the type and quantity of gas in the coal seam.
- the impacts of accumulation of coal dust after gas drainage has been completed.
- pressure changes; causes, the impacts on the ventilation system, and the effects on gas drainage.
- heat / humidity; the sources and factors which may impact on gas drainage and personnel.
- mine fans; fan laws, fan types, performance characteristics, configurations, applications and limitations in association with the gas drainage management plan.
- ventilation control devices; the types, purposes, design criteria and specifications, distribution / placement criteria and limitations in association with the gas drainage management plan.
- ventilation control devices; the types, purposes, design criteria and specifications, distribution / placement criteria and limitations.
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders.
- fixed gas drainage monitoring systems types, characteristics, uses and limitations.
- portable monitoring equipment for gas drainage purposes, types, characteristics, uses and limitations
- functions, capabilities, advantages, limitations and uses of gas drainage computer modelling and simulation techniques
- computer-based systems for mine environment analysis.
- gas drainage management plan development requirements and processes.
- gas drainage surveys; the types, frequency and method for conducting including pressure / quantity / temperature and gas.
- processes and techniques for determining alarms and trigger points / levels.

- audit and review processes and techniques.
- emergency response and disaster planning processes and techniques.
- general uses and applications of ventilation theory, including:
  - Atkinson's equation
  - methods of determining frictional resistance
  - gas laws including Charles and Boyle
  - natural ventilation pressures
  - gas make
  - leakage
  - determination of mine resistance curves
  - regulator and equivalent orifice calculation
  - determination of fan operating / duty points.
  - Kirchoff's laws

**5. Underpinning Knowledge (Continued).** A knowledge of:

- mine operational procedures
- strata control systems and their effects on gas drainage
- mine and goaf ventilation systems
- underground water management principles and systems
- impacts of intersecting holes and hole design
- site environmental monitoring requirements
- statutory and mine reporting procedures

**6. Underpinning Skills.** The ability to:

- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - geological information
  - records and reports
  - briefings and handover details
- apply the principles of mine design
- perform gas drainage planning mathematical calculations
- access, evaluate and apply design criteria for gas drainage systems and devices
- interpret computer spreadsheets and modelling/simulations
- collect, collate and evaluate gas drainage data
- establish technical procedures relating to gas drainage
- conduct enquiries/investigations and prepare reports
- assess the risks and consequences of gas drainage
- develop procedures appropriate to mine operations for management of gas drainage
- plan and coordinate work
- identify training needs related to gas drainage
- operate hand held monitoring equipment

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	3
Communicating ideas and information.	2
Planning and organising activities.	3
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2

**MNC.U118.A APPLY AND MONITOR THE GAS DRAINAGE MANAGEMENT PLAN**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor: This unit covers the application and monitoring of controls and systems established in the gas drainage management plan.**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U118.1 Plan and Prepare for the Application of the Gas Management Plan</p>	<p>U118.1.1 The legislative, statutory and site requirements related to gas drainage management systems are identified and interpreted.</p> <p>U118.1.2 The gas drainage management plan is accessed, interpreted and clarified.</p> <p>U118.1.3 Roles and responsibilities, as specified in the gas drainage management plan, are identified and clarified.</p> <p>U118.1.4 Work group and individual responsibilities and tasks are communicated and clarified in an effective and timely manner.</p> <p>U118.1.5 Resources required for the application of the gas drainage management plan are identified, obtained and allocated.</p> <p>U118.1.6 Individual training needs are identified and satisfied through accessing the established gas drainage management training program and systems.</p> <p>U118.1.7 Suggestions and recommendations for changes to gas drainage management procedures are encouraged, received, reviewed and, where appropriate, implemented.</p>

<p>U118.2 Apply the Gas Drainage Management Procedures.</p>	<p>U118.2.1 The impact of changes of gas make, composition, concentration of gas on the mine atmosphere is identified and interpreted.</p> <p>U118.2.2 Hazard control procedures associated with gas drainage are identified and applied.</p> <p>U118.2.3 Gas monitoring system installation, operation and maintenance procedures are applied.</p> <p>U118.2.4 Gas drainage service extension and recovery procedures are applied.</p> <p>U118.2.5 Gas drainage system maintenance requirement procedures are applied.</p> <p>U118.2.6 Procedures incorporating methods and practices to minimise potential damage to the gas drainage system is applied.</p> <p>U118.2.7 Action levels established to minimise the hazards of gas drainage are applied and monitored.</p>
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**MNC.U118.A APPLY AND MONITOR THE GAS DRAINAGE MANAGEMENT PLAN**

<u>Elements</u>	<u>Performance Criteria</u>
U118.2 Apply the Gas Drainage Management Procedures (continued)	U118.2.8 Gas drainage system information recording and reporting procedures are applied.
	U118.2.9 Systems audit and review requirements are contributed to in accordance with the gas drainage management plan.
U118.3 Apply Gas Drainage Management System Maintenance Procedures	U118.3.1 Inspections, repair and maintenance activities are carried out in accordance with the gas drainage management plan.
	U118.3.2 Maintenance activities are recorded, reported and reviewed in accordance with the gas drainage management plan.

**Definitions:**

For the purposes of this competency, the definitions below apply:

- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360 : 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Mine gas management plans establish procedures for maintaining a safe environment including:
  - hazard identification and quantification
  - risk assessment
  - authority and responsibility
  - controls established to manage identified risks
  - reporting and communication
  - document control
  - audit and review
- Principles of mine design include recovery, reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and access.
- Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.

- Audit is the validation process to ensure the system, procedures, processes meet the established objectives and are implemented.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

## MNC.U118.A APPLY AND MONITOR THE GAS DRAINAGE MANAGEMENT PLAN

### Range of Variables:

- 1 Gas drainage management plan may include procedures for gas drainage drilling program, gas or geological anomaly detection, mine atmosphere monitoring, stimulation techniques, goaf walls, reporting requirements, auditing, ventilation systems and usage, mine plan, action plans, systems of mining, response plans, emergency procedures, individual and group responsibilities, training and education procedures.
- 2 Hazards may include irrespirable atmosphere, noxious atmosphere, flammable or explosive mixtures, outbursts, induced outburst, gas under pressure, location of drainage pipes and static electricity.
- 3 Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.
- 4 Mine gases may include seam gases or gases from introduced sources and may include but not be limited to methane, carbon dioxide and hydrogen sulphide.
- 5 Ventilation systems may include the use of main mine fan, auxiliary fans, brattice, regulators, seals, stoppings, overcasts, ventilation doors, surface drainage boreholes and pressure chambers.
- 6 Geological conditions may include faults, dykes, intrusions, strata deformities, induced stresses, depth of overlaying strata, strength of immediate strata, under and over the coal seam and mining lease gas make.
- 7 Coal seam characteristics may include inherent factors such as rank, petrology, moisture, particle size, seam gas make, pyrites or depositional factors such as seam thickness, multi seams, seam dip, depth of cover, cleats, friability, interaction of other coal seams and gas makes, clay bands within the coal seam and molorite zones.
- 8 Gas make characteristics may include gas content, gas pressure, adsorption, desorption, hydrostatic pressure, strata moisture content, permeability and porosity, tectonic stress.
- 9 Gas drainage monitoring may include continuous monitoring, leakage monitoring (laser beam technology), portable (hand held) monitoring, collection of bag samples, pipeflow and pressure measurements, gas chromatography and ventilation measurements from relevant areas.
- 10 Gas drainage infrastructure may include vacuum pumps, pipes, stand pipes, gas separators and casing, surface installations, gas drainage plant including building, valves, hoses, water pumps, flame and lightning arresters, power supply to bore holes, cleaning equipment, air compressors, electricity and water services, pressure gauges and hydration plants.

- 11 Gas management training applies to mine workers, tradespeople, permanent employees, contractors, mine officials and other special requirements.
- 12 Alarm systems and action plans may include those for gas concentration / make, combustion indicators, condition monitoring for fans (vibration / temperature / current failures), ventilation devices, monitoring hardware and temperature alarms.
- 13 Procedures required to support the gas drainage management plan may include those for construction, action response, permit to work, condition monitoring, auditing, maintenance, document control, atmosphere monitoring, ventilation system control, communication systems, survey procedures, standard operating procedures, changes, training and recording / reporting.
- 14 Maintenance of the gas drainage system may include inspection, servicing and repair.

## **MNC.U118.A     APPLY AND MONITOR THE GAS DRAINAGE MANAGEMENT PLAN**

### **Evidence Guide**

#### **1. Context of Assessment**

The ultimate competency outcome is for the candidate to be able to apply and monitor a gas drainage management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Gas drainage circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical application of a gas drainage management plan may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following requirements:

- A.        Theory and knowledge underpinning the competency
- B.        Application of theory to a generic practical situation / simulation
- C.        Practical application and monitoring of a gas drainage management plan.

#### **2. Inter-dependant Assessment of Units**

Whilst there are some common features between the units at this level, commonality is limited to the basic underpinning science and engineering knowledge. This unit requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.

#### **3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on the gas drainage management plan
- c. communicating gas drainage management procedures and responsibilities
- d. applying the mine atmosphere monitoring system and measures
- e. applying and monitoring trigger level response procedures
- f. applying gas drainage management control measures

- g. applying and reviewing contingency plans covering periods of production delay
- h. contributing to the development and maintenance of the gas drainage management plan
- i. identifying workplace competency requirements

**4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Gas Drainage Management Plans and their application are to meet Legislative and Industry standards.

## MNC.U118.A APPLY AND MONITOR THE GAS DRAINAGE MANAGEMENT PLAN

### 5. Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to apply and monitor controls and systems in a gas drainage management plan.

- legislative and statutory requirements may include those for gas drainage drilling, gas drainage installation, ventilation requirements, return airways gas levels, intake airway gas accumulated levels, gas control and distribution, environmental management, local government requirements, inspections and reporting.
- the methods of gas drainage and their applications / limitations against the mine design, mine and panel ventilation systems, systems of mining and current and future mine development.
- the impact of gas drainage on mining techniques, mine and panel design and production output.
- the impact of the strata geology and coal seam characteristics on the gas drainage management plan including coal seam gradient, moisture content, friability, the porous features of the coal seam, stresses and intrusions.
- outburst mining monitoring procedures.
- drilling options and related equipment and techniques.
- hazard management processes and techniques
- the effects of the type and quantity of gas in the coal seam.
- the impacts of accumulation of coal dust after gas drainage has been completed.
- pressure changes; causes, the impacts on the ventilation system, and the effects on gas drainage.
- heat / humidity; the sources and factors which may impact on gas drainage and personnel.
- mine fans; fan laws, fan types, performance characteristics, configurations, applications and limitations in association with the gas drainage management plan.
- ventilation control devices; the types, purposes, design criteria and specifications, distribution / placement criteria and limitations in association with the gas drainage management plan.
- ventilation control devices; the types, purposes, design criteria and specifications, distribution / placement criteria and limitations.
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders.
- fixed gas drainage monitoring systems types, characteristics, uses and limitations.
- portable monitoring equipment for gas drainage purposes, types, characteristics, uses and limitations
- functions, capabilities, advantages, limitations and uses of gas drainage computer modelling and simulation techniques
- computer-based systems for mine environment analysis.
- gas drainage management plan development requirements and processes.
- gas drainage surveys; the types, frequency and method for conducting including pressure / quantity / temperature and gas.
- processes and techniques for determining alarms and trigger points / levels.
- audit and review processes and techniques.

- emergency response and disaster planning processes and techniques.
- general uses and applications of ventilation theory, including:
  - gas laws including Charles and Boyle
  - natural ventilation pressures
  - gas make
  - leakage
  - Kirchoff's laws
- mine operational procedures
- strata control systems and their affects on gas drainage
- mine and goaf ventilation systems
- underground water management principles and systems
- impacts of intersecting holes and hole design
- site environmental monitoring requirements
- statutory and mine reporting procedures



## MNC.U118.A APPLY AND MONITOR THE GAS DRAINAGE MANAGEMENT PLAN

### 6. Underpinning Skills. The ability to:

- access, interpret and apply:
  - technical information related to gas drainage
  - site/legislative requirements
  - geological reports
  - briefings and handover details
- access, interpret and apply relevant gas drainage data
- assess the risks and consequences of gas drainage
- apply procedures appropriate to mine operations for management of gas drainage
- plan and coordinate work
- operate hand held monitoring equipment
- identify training needs related to gas drainage

### 7. Key Competencies

#### Level

Collecting, analysing and organising ideas and information.	3
	2
Communicating ideas and information.	3
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the strategic management functions required to develop and establish an outburst management plan.

<u>Elements</u>	<u>Performance Criteria</u>
U121.1 Identify, Analyse and Evaluate Hazards Associated with Outburst Mining	U121.1.1 The causes and effects of outburst are identified. U121.1.2 Hazards and risks relating to outburst are identified, analysed and evaluated. U121.1.3 Coal seam characteristics and conditions which could lead to outburst are identified, analysed and evaluated. U121.1.4 Geological and geotechnical conditions which may contribute to outburst mining conditions are identified, analysed and evaluated. U121.1.5 The effects of outburst on mine atmosphere are identified, analysed and evaluated. U121.1.6 The requirements for ventilation in relation to outburst are identified. U121.1.7 The impacts of water accumulation on outburst are identified, analysed and evaluated.

<p>U121.2 Identify, Analyse and Evaluate Outburst Potential and Control Options and Measures</p>	<p>U121.2.1 Outburst sampling and analytical process options are identified, analysed and evaluated.</p> <p>U121.2.2 Geological and physical conditions of the seam and surrounding strata are identified, analysed and evaluated.</p> <p>U121.2.3 The types and advantages / disadvantages of outburst control methods are identified, analysed and evaluated.</p> <p>U121.2.4 The methods, purposes and capabilities of mine monitoring systems with regards to outburst are identified, analysed and evaluated.</p> <p>U121.2.5 Control options to address geological and geotechnical hazards are identified, analysed and evaluated.</p> <p>U121.2.6 The scope and impact of seam gas management on outburst mining is identified and clarified.</p> <p>U121.2.7 Methods to maximise the effectiveness of an outburst program are identified.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
U121.3 Design and Develop Outburst Management Systems	<p>U121.3.1 The legislative, statutory, relevant published guidelines and site requirements related to outburst management systems are accessed, interpreted and clarified.</p> <p>U121.3.2 Drilling systems, including equipment, processes and techniques are incorporated into the development of the outburst mining system.</p>

<p>U121.4 Establish the Outburst Management Plan</p>	<p>U121.3.3 Core sampling and related analysis systems, processes and techniques are incorporated into the development of the outburst mining system.</p> <p>U121.3.4 Measures for addressing geological and geotechnical hazards are identified, selected and incorporated into the development of the outburst management plan.</p> <p>U121.3.5 Personnel safety measures and techniques for operators in an outburst environment are incorporated into the development of the outburst mining system.</p> <p>U121.3.6 Equipment and machinery borne outburst protection systems are incorporated into the development of the outburst mining system.</p> <p>U121.3.7 Ventilation systems and controls to minimise the risk of outbursts are incorporated into the development of the outburst mining system.</p> <p>U121.3.8 Mine monitoring systems, including those for real-time requirements are developed to minimise the potential hazards of outburst.</p> <p>U121.3.9 Contingency plans to mitigate the risks and hazards of outburst are incorporated into the development of the outburst mining system.</p> <p>U121.4.1 Outburst mining objectives, systems, descriptions and responsibilities are established and incorporated in to the outburst management plan.</p> <p>U121.4.2 Outburst drilling and sample collection operational procedures are established and incorporated into the outburst mining management plan.</p> <p>U121.4.3 Core sample analysis and reporting procedures are established and incorporated into the outburst mining management plan.</p> <p>U121.4.4 Geological and geotechnical hazard identification and response procedures are established and incorporated into the Outburst Management Plan.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
U121.4 Establish the Outburst Management Plan (continued)	U121.4.5 Actions and procedures required in response to gas threshold levels are established and incorporated into the outburst management plan.
	U121.4.6 Permit to mine procedures are developed in accordance with legislative requirements, published guidelines, practices and local site conditions and incorporated into the outburst management plan.
	U121.4.7 Methods and practices to minimise potential damage caused by outburst are incorporated into outburst mining procedures.
	U121.4.8 Outburst information recording and reporting procedures are established and incorporated into the outburst management plan.
	U121.4.9 Emergency and evacuation plans and procedures are established, tested and incorporated into the outburst management plan.
	U121.4.10 Procedures for the recovery of services following outburst are established and incorporated into the outburst management plan.
	U121.4.11 A program, including systems and procedures, to satisfy identified outburst management training requirements is established.
	U121.4.12 Audit, review and updating procedures for the outburst mining system are incorporated into the outburst mining management plan.

<p>U121.5 Audit and Review the Effectiveness of the Outburst Management Plan</p>	<p>U121.5.1 Outburst drilling and analytical operational procedures are audited for compliance with statutory and outburst management plan requirements.</p> <p>U121.5.2 Monitoring systems operations are audited for compliance with the outburst management plan.</p> <p>U121.5.3 Geological and geotechnical identification, monitoring and response procedures are audited for compliance with the Outburst Management Plan.</p> <p>U121.5.4 Recording systems are audited for compliance with the outburst management plan.</p> <p>U121.5.5 Procedures developed for the recovery of services following outburst are audited for compliance with current statutory and outburst management plan requirements.</p> <p>U121.5.6 Emergency and evacuation plans and procedures are trialed and audited for compliance with the management plan.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
U121.5 Audit and Review the Effectiveness of the Gas Outburst Management Plan (continued)	U121.5.7 Outburst training program is audited for currency, relevance and compliance with the requirements of the outburst management plan.  U121.5.8 Procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit are established.  U121.5.9 Future outburst management requirements are identified, evaluated and incorporated into the outburst management planning procedures as stipulated by the outburst management plan.

**Definitions:**

For the purposes of this competency, the definitions below apply:

- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Outburst mining management plans establish procedures for maintaining a safe environment including:
  - hazard identification and quantification
  - risk assessment
  - authority and responsibility
  - controls established to manage identified risks
  - reporting and communication
  - document control
  - audit and review
- Principles of mine design include recovery, reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and access.
- Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.
- Audit is the validation process to ensure the system, procedures, processes meet the established objectives and are implemented.



- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

1. Outburst mining management plan may include procedures for mine atmosphere monitoring, reporting requirements, auditing, ventilation systems and usage, pre-drilling techniques, initiation techniques, mine plan, action plans, response plans, emergency procedures, individual group responsibilities, training and education procedures.
2. Hazards may include irrespirable atmosphere, noxious atmospheres, flammable or explosive mixtures and induced outburst.
3. Geological and hydrogeological information includes that related to, but not limited to: subsidence, roof and floor technical data, gas content and composition, over and underlying strata, waterbearing strata, permeability of seam and strata, physical properties, caving characteristics, outburst and stress waves, faults, intrusions and deformities.
4. Geological and physical conditions of the seam and surrounding strata which may contribute to outburst potential may include cutters, changing cleat, coal colour, free gas into atmosphere and mylonite.
5. Mine site historical information may include sedimentology aspects of the minesite relating to subsidence, outburst, gas content and composition, roof and floor technical data, over and underlying strata, water bearing strata, permeability of seam and strata, hydrology, physical property testing results, caving characteristics and ground stress behaviour.
6. Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.
7. Mine gases may include CO<sub>2</sub> or methane in addition to normal atmosphere gases.
8. Ventilation structures may include stoppings, overcasts, regulators, preparation seals, fire doors, bulk heads, goaf seals, final seals and pressure chambers.
9. Geological conditions may include faults, dykes, intrusions and strata deformities, as well as existing or induced stress or strain.
10. Coal seam characteristics may include inherent factors such as rank, petrology, moisture, particle size, seam gas, pyrites or depositional factors such as seam thickness, multi seams, seam dip, depth of cover, cleat, friability and intrusions.
11. Mine atmosphere monitoring may include continuous monitoring, portable (hand held) monitoring, collection of bag samples, gas chromatography, ventilation measurements from all areas of the mine including sealed areas and waste workings.
12. Defects to mine structures may include deterioration of materials, quality of construction, effects of surrounding strata, physical damage and water damage.

13. Infrastructure includes pipes, valves, hoses, pumps, drainage plant , flame arresters, power supply to bore holes, cleaning equipment and all other plant and equipment.

## Evidence Guide

### 1. Context of Assessment

The ultimate competency outcome is for the candidate to be able to establish an outburst management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Outburst management circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical establishment of an outburst management plan may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following:

- A. Theory and knowledge underpinning the competency which is a mandatory requirement
- B. Application of theory to a generic practical situation / simulation which is a mandatory requirement
- C. Practical establishment of an outburst management plan or equivalent activity.

There are special considerations in respect of Assessment C. Within the Black Coal Sector technical management competencies at this level there is a requirement for a candidate to establish a range of safety / hazard management plans (e.g. ventilation, gas management, strata etc.). It is unlikely that all candidates will be able, in terms of access, reasonable economic constraints and reasonable time frames, to physically establish all these plans.

In most cases it would be reasonable to infer competency if a candidate has completed assessments A and B in respect of each required competency and has satisfied assessment C in respect of one of the required plans. This inference is based on the fact that a candidate, who has competently established one plan, would be capable of establishing other plans if they have satisfied the theory and generic applications which form part of the required competencies.

Naturally, if this competency unit is being undertaken as a stand alone unit rather than as one within a qualification cluster, Assessment C is to be treated as a mandatory requirement.

### 2. Inter-dependant Assessment of Units

Whilst there are some common features between the units at this level, commonality is generally limited to science and engineering theory and the planning process. This unit requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on outburst mining
- c. analysing outburst mining risks and hazards and selecting achievable safety responses
- d. identifying and effectively managing risks associated with outburst mining
- e. establishing the contents of an outburst management plan in accordance with statutory requirements
- f. establishing, documenting and communicating outburst mining safety procedures
- g. establish statutory and mine outburst recording and reporting systems
- h. establish the outburst system maintenance program
- i. establishing outburst management training program
- j. auditing and reviewing the outburst management plan
- k. responding to outburst situations and allied emergencies

**4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Outburst Management Plans and their establishment are to meet Legislative and Industry standards.

**5. Underpinning Knowledge.** A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to design, develop (or cause to be designed and developed) and establish the outburst management plan.

- legislative and statutory requirements for mining structures including mine plans, ventilation, gas monitoring, strata support and safety management plans
- mine planning and design
- the systems of mining including tunnels, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage.
- stress analysis including mining induced stress and topography.
- sedimentology including subsidence, water bearing strata, permeability of seam and strata, hydrology, physical property testing, caving characteristics, outburst, gas content and over and underlying strata.
- systems of work including bord and pillar, place changing, longwall, highwall, auger mining, pillar extraction, partial extraction and punch mining.
- initiation techniques
- mining structure failure modes.
- mining and general engineering principles relevant to the behaviour of excavations in rock and coal.
- audit methodologies
- mine mapping of outburst zones, related geology and features.

- the impact of differing geological features and conditions on outburst zones including faults, dykes, intrusions and strata deformities.
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection.
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders.
- fixed monitoring systems types, uses / limitations, design criteria, specifications and design processes.
- portable monitoring equipment, types, uses / limitations.
- the use of simulation techniques and applications relevant to outburst.
- computer-based systems for real time gas monitoring.

**5. Underpinning Knowledge (continued):** A knowledge of:

- mine outburst management plan development requirements and processes.
- processes and techniques for determining alarms and trigger points / levels.
- audit and review processes and techniques.
- emergency response and disaster planning processes and techniques.
- the effects of coal seam characteristics on outburst
- methods of control of outburst
- outburst indicators and ratios including: temperature changes, mylonite, coal colour changes, strata sound, crushed coal bands, stretch marks, difficulty of constructing ribs, seam gas pressure, changed cutting conditions.
- risk management procedures
- applicable mine rescue procedures
- roles and responsibilities in accordance with outburst management plan

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- access and analyse archival and historical outburst information related to the mine
- interpret and apply mathematical and scientific theorems / laws related to outburst
- perform outburst planning mathematical calculations
- assess the risks and consequences of outburst
- develop procedures appropriate to mine operations for management of outburst
- access and apply design criteria for outburst management systems
- interpret computer spreadsheets and outburst modelling / simulations
- interpret outburst data
- conduct enquiries / investigations and prepare reports
- communicate effectively in the workplace
- access data from monitoring systems and equipment
- operate hand held monitoring equipment
- establish outburst training requirement

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	3
Communicating ideas and information.	2
Planning and organising activities.	3
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2





## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the routine operational management functions required to implement the outburst mining management plan.

<u>Elements</u>	<u>Performance Criteria</u>
U122.1 Plan and Prepare the Implementation of the Outburst Mining Management Plan	<p>U122.1.1 The legislative, statutory and site requirements related to outburst mining management systems are accessed, interpreted and clarified.</p> <p>U122.1.2 The outburst mining management plan is accessed, interpreted and clarified.</p> <p>U122.1.3 Roles and responsibilities, as specified in the outburst mining management plan, are identified, clarified and communicated to all involved persons.</p> <p>U122.1.4 Resources required for the implementation of the outburst mining management plan are identified, forecast, obtained and allocated / scheduled.</p> <p>U122.1.5 The program to satisfy identified outburst mining management training requirements is implemented.</p> <p>U122.1.6 Suggestions and recommendations for changes to outburst mining management procedures are encouraged, received, reviewed and, where appropriate, implemented.</p>

<p>U122.2 Implement the Outburst Mining Management Plan</p>	<p>U122.2.1 Outburst drilling and sample collection operational procedures are implemented.</p> <p>U122.2.2 Core sample analysis and reporting procedures are implemented.</p> <p>U122.2.3 Geological and geotechnical hazard identification and response procedures are implemented.</p> <p>U122.2.4 Actions and procedures required in response to gas threshold levels are implemented.</p> <p>U122.2.5 Permit to mine procedures are implemented in accordance with the outburst management plan.</p> <p>U122.2.6 Procedures to minimise potential damage caused by outburst are implemented.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
U122.2 Implement the Outburst Mining Management Plan (continued)	<p>U122.2.7 Outburst information recording and reporting procedures are implemented.</p> <p>U122.2.8 Emergency and evacuation plans and procedures are implemented.</p> <p>U122.2.9 Procedures for the recovery of services following outburst are implemented.</p>
U122.3 Audit and Review the Effectiveness of the Outburst Mining Management Systems.	<p>U122.3.1 Outburst drilling and analytical operational procedures are audited for compliance with statutory and outburst management plan requirements.</p> <p>U122.3.2 Monitoring systems operations are audited for compliance with the outburst management plan.</p> <p>U122.3.3 Geological and geotechnical identification, monitoring and response procedures are audited for compliance with the Outburst Management Plan.</p> <p>U122.3.4 Recording systems are audited for compliance with the outburst management plan.</p> <p>U122.3.5 Procedures developed for the recovery of services following outburst are audited for compliance with current statutory and outburst management plan requirements.</p> <p>U122.3.6 Emergency and evacuation plans and procedures are trialed and audited for compliance with the management plan.</p>

	<p>U122.3.7 Outburst training program is audited for currency, relevance and compliance with the requirements of the outburst management plan.</p> <p>U122.3.8 Instances of non-compliance and other discrepancies / deficiencies revealed by audit are responded to promptly and the management plan modified as necessary.</p> <p>U122.3.9 Future outburst management requirements are identified, evaluated and incorporated into the outburst management planning procedures as stipulated by the outburst management plan.</p>
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**Definitions:**

For the purposes of this competency, the definitions below apply:

- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Outburst mining management plans establish procedures for maintaining a safe environment including:
  - hazard identification and quantification
  - risk assessment
  - authority and responsibility
  - controls established to manage identified risks
  - reporting and communication
  - document control
  - audit and review
- Principles of mine design include recovery, reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and access.
- Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.
- Audit is the validation process to ensure the system, procedures, processes meet the established objectives and are implemented.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

1. Outburst mining management plan may include procedures for mine atmosphere monitoring, reporting requirements, auditing, ventilation systems and usage, pre-drilling

techniques, initiation techniques, mine plan, action plans, response plans, emergency procedures, individual group responsibilities, training and education procedures.

2. Hazards may include irrespirable atmosphere, noxious atmospheres, flammable or explosive mixtures and induced outburst.
3. Geological and hydrogeological information includes that related to, but not limited to: subsidence, roof and floor technical data, gas content and composition, over and underlying strata, waterbearing strata, permeability of seam and strata, physical properties, caving characteristics, outburst and stress waves, faults, intrusions and deformities.
4. Geological and physical conditions of the seam and surrounding strata which may contribute to outburst potential may include cutters, changing cleat, coal colour, free gas into atmosphere and mylonite.

**Range of Variables: (contd)**

5. Mine site historical information may include sedimentology aspects of the minesite relating to subsidence, outburst, gas content and composition, roof and floor technical data, over and underlying strata, water bearing strata, permeability of seam and strata, hydrology, physical property testing results, caving characteristics and ground stress behaviour.
6. Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.
7. Mine gases may include CO<sub>2</sub> or methane in addition to normal atmosphere gases.
8. Ventilation structures may include stoppings, overcasts, regulators, preparation seals, fire doors, bulk heads, goaf seals, final seals and pressure chambers.
9. Geological conditions may include faults, dykes, intrusions and strata deformities, as well as existing or induced stress or strain.
10. Coal seam characteristics may include inherent factors such as rank, petrology, moisture, particle size, seam gas, pyrites or depositional factors such as seam thickness, multi seams, seam dip, depth of cover, cleat, friability and intrusions.
11. Mine atmosphere monitoring may include continuous monitoring, portable (hand held) monitoring, collection of bag samples, gas chromatography, ventilation measurements from all areas of the mine including sealed areas and waste workings.
12. Defects to mine structures may include deterioration of materials, quality of construction, effects of surrounding strata, physical damage and water damage.
13. Infrastructure includes pipes, valves, hoses, pumps, drainage plant, flame arresters, power supply to bore holes, cleaning equipment and all other plant and equipment.

**Evidence Guide****1. Context of Assessment**

The ultimate competency outcome is for the candidate to be able to implement an outburst mining management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Outburst mining circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical implementation



of an outburst mining management plan may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following mandatory requirements:

- A. Theory and knowledge underpinning the competency
- B. Application of theory to a generic practical situation / simulation
- C. Practical implementation of an outburst mining management plan.

## 2. Inter-dependant Assessment of Units

Whilst there are some common features between the units at this level, commonality is generally limited to the underpinning science and engineering knowledge. This unit requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on the outburst management
  - c. implementing and communicating outburst mining management procedures and responsibilities
  - d. implementing outburst mining management control measures
  - e. implement the statutory and site outburst monitoring, recording and reporting procedures
  - f. implementing and monitoring trigger level response procedures
  - g. implementing the outburst management training program
  - h. implementing audits of outburst mining management system performance
  - i. implementing outburst emergency response procedures
- 4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Outburst Mining Management Plans and their implementation are to meet Legislative and Industry standards.
- 5. Underpinning Knowledge.** A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to perform the routine operational management required to implement an established outburst management plan.
- legislative and statutory requirements for mining structures including mine plans, ventilation, gas monitoring, strata support and safety management plans
  - mine planning and design
  - the systems of mining including tunnels, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage.
  - stress analysis including mining induced stress and topography.

- sedimentology including subsidence, water bearing strata, permeability of seam and strata, hydrology, physical property testing, caving characteristics, windblast, outburst, gas content and over and underlying strata.
- systems of work including bord and pillar, place changing, longwall, highwall, auger mining, pillar extension, partial extension and punch mining.
- mining structure failure modes.
- exploration techniques.
- geology, lithology and strata gas characteristics.
- mining and general engineering principles relevant to the behaviour of excavations in rock.
- ground support systems
- audit methodologies
- geotechnical engineering
- excavation engineering
- tunnel engineering and shaft sinking
- rock mechanics

**MNC.U122.A**

## **IMPLEMENT THE OUTBURST MANAGEMENT PLAN**

### **5. Underpinning Knowledge: (contd)**

- mine surveying
- mining of coal deposits
- thermodynamics
- the impact of differing geological features and conditions on outburst including faults, dykes, intrusions and strata deformities.
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection.
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders.
- fixed monitoring systems types, uses / limitations, design criteria, specifications and design processes.
- portable monitoring equipment, types, uses / limitations.
- the use of simulation techniques and applications relevant to outburst.
- computer-based systems for outburst analysis.
- mine outburst management plan development requirements and processes.
- processes and techniques for determining alarms and trigger points / levels.
- audit and review processes and techniques.
- emergency response and disaster planning processes and techniques.
- the effects of coal seam characteristics on outburst
- methods of control of outburst
- outburst indicators and ratios
- risk management procedures
- applicable mine rescue procedures
- roles and responsibilities in accordance with outburst management plan

### **6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- access and interpret archival and historical outburst information related to the mine
- interpret and apply mathematical and scientific theorems / laws related to outburst
- perform outburst planning mathematical calculations
- access and interpret design criteria for outburst management systems and devices
- interpret computer spreadsheets and outburst modelling / simulations
- conduct enquiries / investigations and prepare reports
- communicate effectively in the workplace
- access and interpret data from monitoring systems and equipment
- operate hand held monitoring equipment
- interpret outburst training requirement

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	3
Communicating ideas and information.	2
Planning and organising activities.	3
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2

NATIONAL MINING ITAB

BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

Descriptor: This unit covers the application and monitoring of controls and systems established in an outburst mining management plan.

<u>Elements</u>	<u>Performance Criteria</u>
U123.1 Plan and Prepare for the Application of the Outburst Mining Management Plan	U123.1.1 The legislative, statutory and site requirements related to outburst mining management systems are identified and interpreted. U123.1.2 The outburst mining management plan is accessed, interpreted and clarified. U123.1.3 Roles and responsibilities, as specified in the outburst mining management plan, are identified and clarified. U123.1.4 Work group and individual responsibilities and tasks are communicated and clarified in an effective and timely manner. U123.1.5 Resources required for the application of the outburst mining management plan are identified, obtained and allocated. U123.1.6 Individual training needs are identified and satisfied through accessing the established outburst mining management training program and systems. U123.1.7 Suggestions and recommendations for changes to outburst mining management procedures are encouraged, received, reviewed and, where appropriate, implemented.

<p>U123.2 Apply and Monitor the Outburst Mining Activities</p>	<p>U123 2.1 Procedures covering the relocation, operation and maintenance of the drilling rig are interpreted and applied.</p> <p>U123.2.2 Core sampling techniques, procedures and processes are interpreted, applied and monitored.</p> <p>U123.2.3 Environment monitoring, recording and reporting procedures are interpreted and applied.</p> <p>U123.2.4 Ventilation control measures which impact on outburst mining are interpreted, applied and monitored.</p> <p>U123.2.5 Actions and procedures in response to gas threshold levels are interpreted, applied and monitored.</p> <p>U123.2.6 Permit to mine procedures are confirmed, applied, communicated and posted.</p>
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<u>Elements</u>	<u>Performance Criteria</u>
<p>U123.2 Apply and Monitor the Outburst Mining Activities (continued)</p>	<p>U123.2.7 Procedures covering outburst mining personnel safety measures and techniques are interpreted, applied and monitored.</p> <p>U123.2.8 Equipment protection / defensive requirements and measures are inspected to ensure compliance with standards.</p> <p>U123.2.9 Systems audit and review requirements are contributed to in accordance with the outburst mining management plan.</p>
<p>U123.3 Apply Outburst Mining Management System Maintenance Procedures</p>	<p>U123.3.1 Inspections, repair and maintenance activities are carried out in accordance with the outburst mining management plan.</p> <p>U123.3.2 Maintenance activities are recorded, reported and reviewed in accordance with the outburst mining management plan.</p>

**Definitions:**

For the purposes of this competency, the definitions below apply:

- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Outburst mining management plans establish procedures for maintaining a safe environment including:
  - hazard identification and quantification
  - risk assessment
  - authority and responsibility
  - controls established to manage identified risks
  - reporting and communication
  - document control
  - audit and review

- Principles of mine design include recovery, reserve optimisation, mining direction, geological structures, ventilation, strata control, mining method, productivity, environmental considerations and access.
- Action (alarm or trigger) level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.
- Audit is the validation process to ensure the system, procedures, processes meet the established objectives and are implemented.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.



**Range of Variables:**

1. Outburst mining management plan may include procedures for mine atmosphere monitoring, reporting requirements, auditing, ventilation systems and usage, pre-drilling techniques, initiation techniques, mine plan, action plans, response plans, emergency procedures, individual group responsibilities, training and education procedures.
2. Hazards may include irrespirable atmosphere, noxious atmospheres, flammable or explosive mixtures and induced outburst.
3. Geological and hydrogeological information includes that related to, but not limited to: subsidence, roof and floor technical data, gas content and composition, over and underlying strata, waterbearing strata, permeability of seam and strata, physical properties, caving characteristics, outburst and stress waves, faults, intrusions and deformities.
4. Geological and physical conditions of the seam and surrounding strata which may contribute to outburst potential may include cutters, changing cleat, coal colour, free gas into atmosphere and mylonite.
5. Mine site historical information may include sedimentology aspects of the minesite relating to subsidence, outburst, gas content and composition, roof and floor technical data, over and underlying strata, water bearing strata, permeability of seam and strata, hydrology, physical property testing results, caving characteristics and ground stress behaviour.
6. Mine atmosphere refers to all areas in the general mine ventilation district and beyond into waste working and goafs in the mine.
7. Mine gases may include CO<sub>2</sub> or methane in addition to normal atmosphere gases.
8. Ventilation structures may include stoppings, overcasts, regulators, preparation seals, fire doors, bulk heads, goaf seals, final seals and pressure chambers.
9. Geological conditions may include faults, dykes, intrusions and strata deformities, as well as existing or induced stress or strain.
10. Coal seam characteristics may include inherent factors such as rank, petrology, moisture, particle size, seam gas, pyrites or depositional factors such as seam thickness, multi seams, seam dip, depth of cover, cleat, friability and intrusions.
11. Mine atmosphere monitoring may include continuous monitoring, portable (hand held) monitoring, collection of bag samples, gas chromatography, ventilation measurements from all areas of the mine including sealed areas and waste workings.

12. Defects to mine structures may include deterioration of materials, quality of construction, effects of surrounding strata, physical damage and water damage.
13. Infrastructure includes pipes, valves, hoses, pumps, drainage plant , flame arresters, power supply to bore holes, cleaning equipment and all other plant and equipment.

## Evidence Guide

### 1. Context of Assessment

The ultimate competency outcome is for the candidate to be able to apply and monitor an outburst management plan and, in so doing, to satisfy the performance criteria and underpinning knowledge requirements agreed by the industry in this Competency Unit.

Outburst management circumstances and requirements will differ markedly between mine sites. Therefore, there are limitations on the extent to which the practical application of an outburst management plan may be assessed in the workplace. To bridge this potential gap and to ensure the candidate is able to apply the extensive theory to a working situation, assessment is to include formal simulation exercises.

The assessment system for this competency is to cover the following requirements:

- A. Theory and knowledge underpinning the competency
- B. Application of theory to a generic practical situation / simulation
- C. Practical application and monitoring of an outburst management plan.

### 2. Inter-dependant Assessment of Units

Whilst there are some common features between the units at this level, commonality is limited to the basic underpinning science and engineering knowledge. This unit requires the specialised application of knowledge. Generalised assessment is unlikely to satisfy the requirements of this unit or of the other allied units.

Unless inter-dependant assessment can be clearly demonstrated to satisfy the specialised requirements of each subject unit, and do so in a transparent and timely manner, the assessment should be on a unit by unit basis.

### 3. Critical Aspects of Evidence. The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on the outburst management
- c. applying and communicating outburst mining management procedures and responsibilities
- d. applying outburst mining management control measures

- e. applying the statutory and site outburst monitoring, recording and reporting procedures
- f. applying and monitoring trigger level response procedures
- g. applying the outburst management training program
- h. applying audits of outburst mining management system performance
- i. applying outburst emergency response procedures

**4. Consistency of Performance.** Consistency of performance in this unit is aided by the standards of performance which are contained within State Legislation and by professional standards and practices established and observed by the Coal Industry. Outburst Management Plans and their application are to meet Legislative and Industry standards.

**5. Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to apply and monitor controls and systems in an outburst management plan.**

- legislative and statutory requirements for mining structures including mine plans, ventilation, gas monitoring, strata support and safety management plans
- mine planning and design
- the systems of mining including tunnels, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage.
- stress analysis including mining induced stress and topography.
- sedimentology including subsidence, water bearing strata, permeability of seam and strata, hydrology, physical property testing, caving characteristics, windblast, outburst, gas content and over and underlying strata.
- systems of work including bord and pillar, place changing, longwall, highwall, auger mining, pillar extension, partial extension and punch mining.
- mining structure failure modes.
- exploration techniques.
- geology, lithology and strata gas characteristics.
- mining and general engineering principles relevant to the behaviour of excavations in rock.
- ground support systems
- audit methodologies
- geotechnical engineering
- excavation engineering
- tunnel engineering and shaft sinking
- rock mechanics
- mine surveying
- mining of coal deposits
- thermodynamics
- the impact of differing geological features and conditions on outburst including faults, dykes, intrusions and strata deformities.
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection.
- de-gassing; methods of control - including brattice, auxiliary fans, compressed air venturis, sails, hurdles and bleeders.
- fixed monitoring systems types, uses / limitations, design criteria, specifications and design processes.
- portable monitoring equipment, types, uses / limitations.
- computer-based systems for outburst analysis.
- mine outburst management plan development requirements and processes.
- processes and techniques for determining alarms and trigger points / levels.
- audit and review processes and techniques.
- emergency response and disaster planning processes and techniques.
- the effects of coal seam characteristics on outburst

- methods of control of outburst
- outburst indicators and ratios
- risk management procedures
- applicable mine rescue procedures
- roles and responsibilities in accordance with outburst management plan

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- access and interpret archival and historical outburst information related to the mine
- access and interpret design criteria for outburst management systems and devices
- interpret computer spreadsheets and outburst modelling / simulations
- conduct enquiries / investigations and prepare reports
- communicate effectively in the workplace
- access and interpret data from monitoring systems and equipment
- operate hand held monitoring equipment
- interpret outburst training requirement

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	3
	2
Communicating ideas and information.	3
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

**MNC.U131.A ESTABLISH THE MINING METHOD AND STRATA MANAGEMENT SYSTEMS**

**NATIONAL MINING ITAB**

**BLACK COAL : GENERAL COMPETENCY STANDARDS**

**Descriptor:** This unit covers the application of the principles of mine design to the establishment and ongoing development of stable mining structures

<u>Elements</u>	<u>Performance Criteria</u>
U131.1 Identify and Evaluate the Criteria to Create and Maintain a Stable Mining Structure	<p>U131.1.1 The legislative, statutory and site requirements related to stable mining structures are accessed, identified and interpreted.</p> <p>U131.1.2 Mine survey data is identified, collected, accessed and interpreted in accordance with statutory and site requirements..</p> <p>U131.1.3 The necessary resources required to create and maintain a stable mining structure are identified and recorded.</p> <p>U131.1.4 Historical information relating to the mine site is identified, evaluated and recorded.</p> <p>U131.1.5 All possible mining structure failure modes relevant to the mine site are identified, assessed and recorded.</p> <p>U131.1.6 The criteria for establishing the quantitative stability of mining structures are established.</p> <p>U131.1.7 The risks associated with unstable mining structures are analysed.</p> <p>U131.1.8 The limitations and controls applying to design of stable mining structures are identified and assessed.</p>



<p>U131.2 Identify and evaluate geological and geotechnical information to establish a stable mining structure</p>	<p>U131.2.1 Exploration techniques are identified and evaluated.</p> <p>U131.2.2 Geological structures are identified and evaluated.</p> <p>U131.2.3 Hydrogeological features are identified and evaluated.</p> <p>U131.2.4 Strata gas characteristics are identified and evaluated.</p> <p>U131.2.5 Roof, seam and floor lithological features and physical properties are identified and evaluated.</p> <p>U131.2.6 Stress regimes are identified and evaluated.</p>
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**MNC.U131.A ESTABLISH THE MINING METHOD AND STRATA MANAGEMENT SYSTEMS**

<u>Elements</u>	<u>Performance Criteria</u>
U131.3 Identify and Evaluate Mining Engineering Principles and Practices	<p>U131.3.1 Mining system types and methods are identified and evaluated.</p> <p>U131.3.2 Potential layouts for stable mining structures are identified from engineering analysis.</p> <p>U131.3.3 Mining constraints impacting on the development of a stable mining structure are identified and evaluated.</p> <p>U131.3.4 Equipment requirements, appropriate for the development and maintenance of a stable mining structure are identified and evaluated.</p>
U131.4 Identify and Evaluate Strata Control Options	<p>U131.4.1 Ground support systems are identified and evaluated.</p> <p>U131.4.2 Ground support installation, monitoring and assessment systems are identified and evaluated.</p> <p>U131.4.3 Causes and impacts of strata failure mechanisms are identified and evaluated.</p> <p>U131.4.4 Natural and induced stress control methods are identified and evaluated.</p>

<p>U131.5 Establish the Strata Management Plan</p>	<p>U131.5.1 Exploration programs identifying geological features and coal characteristics impacting on mining operations are designed and established.</p> <p>U131.5.2 Methods of entry to the coal seam are designed and established.</p> <p>U131.5.3 Systems of mining are designed and established.</p> <p>U131.5.4 Sequences for mining operations are designed and established.</p> <p>U131.5.5 Strata management plans are designed and established.</p> <p>U131.5.6 A program, including systems and procedures to satisfy identified training requirements, is established.</p> <p>U131.5.7 Emergency response and evacuation plans and procedures are established in accordance with site requirements.</p> <p>U131.5.8 Safe operating procedures are established and incorporated into site documentation.</p>
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**MNC.U131.A ESTABLISH THE MINING METHOD AND STRATA MANAGEMENT SYSTEMS**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U131.6 Audit and Review the Effectiveness of Strata Management Plan</p>	<p>U131.6.1 Stable structure standards are audited for compliance with statutory and site requirements.</p> <p>U131.6.2 Mine survey data is audited for compliance with statutory and site requirements.</p> <p>U131.6.3 Monitoring systems are audited for compliance with statutory and site standards.</p> <p>U131.6.4 Recording systems are audited for compliance with site requirements.</p> <p>U131.6.5 System maintenance program and procedures are audited for compliance with statutory and site requirements.</p> <p>U131.6.6 Emergency plans are audited for compliance with statutory and stable mining structure requirements.</p> <p>U131.6.7 The stable mining structure training program is audited for currency, relevance and compliance with the site requirements.</p> <p>U131.6.8 Emergency response and evacuation plans and procedures are audited for compliance with site requirements.</p> <p>U131.6.9 Future site mining requirements and standards are identified, assessed and incorporated into the planning procedures as stipulated by the stable mining structure system.</p> <p>U131.6.10 Procedures for response to instances of non-compliance or other discrepancies/deficiencies revealed by audit are established.</p>

**Definitions:**

1. Audit is the validation process to ensure the system, procedures and processes meet the established objectives and are implemented.
2. Mine design is the process of engineering analysis applied to the systems and sequences involved in mining.
3. Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
4. Hazard is a source of potential harm or a situation with a potential to cause loss.
5. Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

## MNC.U131.A ESTABLISH THE MINING METHOD AND STRATA MANAGEMENT SYSTEMS

### Range of Variables:

- 1 Resources may include but are not limited to skilled personnel, roof and rib supports, face equipment, power water/gas drainage systems and budgetary requirements.
- 2 Mining systems and methods may include, but are not limited to, bord and pillar, longwall, highwall, place changing, auger mining, pillar extraction and extraction, partial extraction, punch mining, systems of entry.
- 3 Stress includes, but is not limited to, horizontal and vertical tectonic induced stress and mining induced stress.
- 4 Geological and hydrogeological information includes that related to, but not limited to: subsidence, roof and floor technical data, gas content, over and underlying strata, waterbearing strata, permeability of seam and strata, physical properties, caving characteristics, outburst and windblast, faults, intrusions and deformities.
5. Mine site historical information may include, but not limited to, existence of previous workings within the work seam or other seam, sedimentology aspects of the minesite relating to subsidence, outburst, gas content, roof and floor technical data, over and underlying strata, water bearing strata, permeability of seam and strata, hydrology, physical property testing results, caving characteristics and windblast.
6. Mine design may include in whole or in part requirements relating to mine plant, mining induced stress, ventilation, tunnels, sequencing, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining, modelling, seam grades, windblast, outburst, geology, gas drainage, fault management, multi-seams, fault drivage, spontaneous combustion, roof and floor technical data, over and underlying strata, subsidence and legislative and statutory requirements.
7. Mine gases may include seam gases or gases from other introduced sources and may include methane, carbon dioxide, carbon monoxide, oxides of nitrogen, hydrogen, sulphur dioxide, hydrogen sulphide, hydrocarbons and combinations.
8. Coal seam characteristics may include, but are not limited to: rank, petrology, moisture, cleat, coal hardness, seam gas, friability, pyrites and depositional factors such as seam thickness, multiple and rider seams, seam dip and depth of cover.
9. Stable structure controls include, but are not limited to, roadway size, pillar sizes, depth of cover, strength of coal and underlying/overlying strata, stress regimes, strata characteristics, longwall chocks, water ingression, systems of mining, breaker line supports and direction of mining.

## **Evidence Guide**

- 1. Context of Assessment.** Competency should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.
- 2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

## **MNC.U131.A ESTABLISH THE MINING METHOD AND STRATA MANAGEMENT SYSTEMS**

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on mine survey data
  - c. interpreting and communicating information on stable mining structures
  - d. evaluating mine site and failure mode historical information relating to the creation of stable mining structures
  - e. identifying and recording resource requirements
  - f. analysing and defining hazards and risks
  - g. identifying and evaluating exploration techniques
  - h. identifying and evaluating geological and hydrogeological features
  - i. evaluating strata gas characteristics, lithological features and stress regimes
  - j. evaluating and establishing mining system types and methods
  - k. developing potential layouts
  - l. evaluating mining constraints and defining equipment requirements
  - m. establishing ground support systems
  - n. evaluating and selecting appropriate stable mining structure
  - o. establishing the strata management plan
  - p. auditing and reviewing mining structure stability
  - q. forecasting and planning for future mining structure requirements
  - r. establishing statutory and site monitoring, reporting and recording system
  - s. establishing training component of strata management plan
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
- 5. Underpinning Knowledge.** A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to establish (or cause to be established) criteria and systems for the development of stable mining structures.
- legislative and statutory requirements for mining structures including mine plans, ventilation, gas monitoring, strata support and safety management plans
  - mine planning and design
  - the systems of mining including tunnels, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining and fault drivage.
  - stress analysis 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, windblast, outburst, gas content and over and underlying strata.



- systems of work including bord and pillar, place changing, longwall, highwall, auger mining, pillar extraction, partial extraction and punch mining.
- mining structure failure modes.
- exploration techniques.
- geology, lithology and strata gas characteristics.
- mining and general engineering principles relevant to the behaviour of excavations in rock.
- ground support systems
- audit methodologies
- pillar design criteria:
  - pillar stress/strain/strength/ratios
  - width/height ratios
- roof support design criteria

## **MNC.U131.A ESTABLISH THE MINING METHOD AND STRATA MANAGEMENT SYSTEMS**

### **5. Underpinning Knowledge: (contd)**

- Mohr's Circle
- Young's Modules
- Poisson's Ratio
- stress distribution diagrams
- factors of safety
- mine surveying
- mining of coal deposits

### **6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- access, interpret and apply mine survey information
- access and analyse archival and historical failure information related to the mine
- interpret and apply mathematical and scientific theorems / laws related to stable mining structures
- perform mathematical calculations
- interpret and apply design criteria for stable mining structures systems and devices
- interpret computer spreadsheets and stable mining structures modelling / simulations
- collect, collate and interpret stable mining structures data
- prepare technical procedures relating to stable mining structures
- conduct enquiries / investigations and prepare reports
- communicate effectively in the workplace
- access data from monitoring systems and equipment
- operate hand held monitoring equipment
- analyse and report on stable mining structures training needs
- apply risk management processes and techniques

## 7. Key Competencies

## Level

Collecting, analysing and organising ideas and information.	3
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2

NATIONAL MINING ITAB

BLACK COAL : UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the implementation and review of the operational development and maintenance required to sustain stable mining structures.

Elements	Performance Criteria
<p>U132.1. Plan and Prepare for the Implementation of the Strata Management Plan</p>	<p>U132.1.1 The legislative, statutory and site requirements related to the strata management plan are accessed, identified and interpreted.</p>
	<p>U132.1.2 The strata management plan is accessed, interpreted and clarified.</p>
	<p>U132.1.3 The roles and responsibilities, as specified in the strata management plan, are identified, clarified and communicated.</p>
	<p>U132.1.4 Work group, individual responsibilities and tasks are communicated and clarified.</p>
	<p>U132.1.5 Resources required for the implementation of the strata management plan are identified, forecast, and recorded.</p>
	<p>U132.1.6 The program to satisfy identified strata management plan training requirements is implemented.</p>
	<p>U132.1.7 The risks associated with unstable mining structures are identified and interpreted.</p>
	<p>U132.1.8 Safe operating procedures are accessed and interpreted.</p>

<p>U132.2 Implement the Strata Management Plan</p>	<p>U132.2.1            The system of mining is implemented in accordance with the strata management plan.</p> <p>U132.2.2            Primary, secondary and other support systems are communicated in accordance with the strata management plan.</p> <p>U132.2.3            Mining sequences are implemented and communicated in accordance with the strata management plan.</p> <p>U132.2.4            Resources are obtained and allocated in accordance with the strata management plan.</p> <p>U132.2.5            The strata management plan training requirements is implemented.</p>
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<b>Elements</b>	<b>Performance Criteria</b>
<p>U132.2 Implement the Strata Management Plan (continued)</p>	<p>U132.2.6 A maintenance program is implemented in accordance with the strata management system.</p> <p>U132.2.7 A monitoring system is implemented in accordance with the strata management plan.</p> <p>U132.2.8 Reporting and recording systems are implemented in accordance with the strata management plan and statutory requirement.</p> <p>U132.2.9 Implementation procedures are monitored to ensure compliance with the approved plan.</p> <p>U132.2.10 Emergency and evacuation plan and procedures are implemented.</p>
<p>U132.3 Audit and Review the Effective-ness of the Strata Management Plan</p>	<p>U132.3.1 Stable structure controls are audited for compliance with statutory and strata management plan specifications.</p> <p>U132.3.2 Stable structure standards are audited for compliance with statutory and site requirements.</p> <p>U132.3.3 Monitoring systems are audited for compliance with statutory and strata management plan standards.</p> <p>U132.3.4 Recording and reporting systems are audited for compliance with statutory and site requirements.</p> <p>U132.3.5 System maintenance program and procedures are audited for compliance with statutory and site requirements.</p>

U132.3.6 The strata management training program is audited for currency, relevance and compliance with the strata management plan.

U132.3.7 Emergency and evacuation plan and procedures are audited for compliance with site requirements.

**Definitions:**

1. Audit is the validation process to ensure the system, procedures and processes meet the established objectives and are implemented.
2. Mine design is the process of engineering analysis applied to the systems and sequences involved in mining.
3. Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
4. Hazard is a source of potential harm or a situation with a potential to cause loss.
5. Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

- 1 Resources may include but are not limited to skilled personnel, roof and rib supports, face equipment, power water/gas drainage systems and budgetary requirements.
- 2 Mining systems and methods may include, but are not limited to, bord and pillar, longwall, highwall, place changing, auger mining, pillar extraction and extraction, partial extraction, punch mining, systems of entry.
- 3 Stress includes, but is not limited to, horizontal and vertical tectonic induced stress and mining induced stress.
- 4 Geological and hydrogeological information includes that related to, but not limited to: subsidence, roof and floor technical data, gas content, over and underlying strata, waterbearing strata, permeability of seam and strata, physical properties, caving characteristics, outburst and windblast, faults, intrusions and deformities.
5. Mine site historical information may include, but not limited to, existence of previous workings within the work seam or other seam, sedimentology aspects of the minesite relating to subsidence, outburst, gas content, roof and floor technical data, over and underlying strata, water bearing strata, permeability of seam and strata, hydrology, physical property testing results, caving characteristics and windblast.
6. Mine design may include in whole or in part requirements relating to mine plant, mining induced stress, ventilation, tunnels, sequencing, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining, modelling, seam grades, windblast, outburst, geology, gas drainage, fault management, multi-seams, fault drivage, spontaneous combustion, roof and floor technical data, over and underlying strata, subsidence and legislative and statutory requirements.
7. Mine gases may include seam gases or gases from other introduced sources and may include methane, carbon dioxide, carbon monoxide, oxides of nitrogen, hydrogen, sulphur dioxide, hydrogen sulphide, hydrocarbons and combinations.
8. Coal seam characteristics may include, but are not limited to: rank, petrology, moisture, cleat, coal hardness, seam gas, friability, pyrites and depositional factors such as seam thickness, multiple and rider seams, seam dip and depth of cover.
9. Stable structure controls include, but are not limited to, roadway size, pillar sizes, depth of cover, strength of coal and underlying/overlying strata, stress regimes, strata characteristics, longwall chocks, water ingress, systems of mining, breaker line supports and direction of mining.

### Evidence Guide

- 1. Context of Assessment.** Competency should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.

- 2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - applying personal and operational safety procedures
  - interpreting and communicating information on stable mining structures
  - evaluating mine site and failure mode historical information relating to the implementation of stable mining structures
  - identifying and recording resource requirements
  - analysing and defining hazards and risks
  - identifying and interpreting geological features
  - interpreting and implementing mining system types and methods
  - identifying and implementing equipment requirements
  - interpreting, implementing and assessing ground support systems
  - implementing workplace training/competency requirements
  - identifying and evaluating exploration techniques
  - auditing and reviewing mining structure stability
  - implementing strata management plans
  - implementing the training component of the strata management plan
  - implementing emergency and evacuation plans and procedures
  - implementing statutory reporting requirements.
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
- 5. Underpinning Knowledge.** A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to perform the routine operational management required to sustain stable mining structures.
  - 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, drifts, stone drivage, 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, windblast, outburst, gas content and over and underlying strata.
- systems of work including bord and pillar, place changing, longwall, highwall, auger mining, pillar extraction, partial extraction and punch mining.
- mining structure failure modes.
- exploration techniques.
- geology and strata gas characteristics.
- mining engineering principles.
- lithology
- ground support systems

**5. Underpinning Knowledge (continued):**

- audit methodologies
- mine site historical information
- limitations and controls

**6. Underpinning Skills.** The ability to:

- apply exploration techniques
- apply mining constraints
- access, interpret and apply technical information relating to strata management
- access and analyse archival and historical strata management information related to the mine and failure mode of mine structures
- interpret and apply design criteria for strata management
- communicate effectively in the workplace
- prepare operating procedures relating to strata management
- conduct and report on audits
- identify and evaluate geological and geotechnical information

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	3
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2

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NATIONAL MINING ITAB

BLACK COAL : GENERAL COMPETENCY STANDARDS

**Descriptor:** This unit covers the application and review of the operational development and maintenance required to sustain stable mining structures.

<u>Elements</u>	<u>Performance Criteria</u>
<p>U133.1. Plan and Prepare for the Application of the Strata Management Plan.</p>	<p>U133.1.1 The legislative, statutory and site requirements related to the strata management plan are accessed, identified and interpreted.</p> <p>U133.1.2 Work group and individual responsibilities and tasks are communicated and clarified.</p> <p>U133.1.3 Resources required for the application of the strata management plan are identified, obtained and allocated.</p> <p>U133.1.4 Individual training needs are identified and satisfied through accessing the established strata management plan, program and systems.</p> <p>U133.1.5 Safe operating procedures are accessed and interpreted.</p> <p>U133.1.6 The risks associated with unstable mining structures are identified and interpreted.</p>

U133.2 Apply the Strata Management Plan

U133.2.1 Approved mining system is communicated, applied and monitored in accordance with the strata management plan.

U133.2.2 Primary, secondary and other support systems are communicated and applied in accordance with the strata management plan.

U133.2.3 Mining constraints impacting on the maintenance of a stable mining structure are identified and assessed in accordance with the strata management plan.

U133.2.4 Ground support systems are installed, monitored and assessed.

U133.2.5 Strata failures are identified and assessed.

U133.2.6 Mining sequences are applied and monitored in accordance with the strata management plan.

U133.2.7 Virgin and induced stress control methods are identified and assessed.

<b>Elements</b>	<b>Performance Criteria</b>
<p>U133.2 Apply the Strata Management Plan (continued)</p>	<p>U133.2.8 Individual training needs are identified and satisfied through accessing the established strata management plan, program and systems.</p> <p>U133.2.9 Emergency response and evacuation plans and procedures are applied and monitored throughout the work and reported, where appropriate, in accordance with site requirements.</p> <p>U133.2.10 Safe operating procedures are applied and monitored throughout the work and reported, where appropriate, in accordance with site requirements.</p> <p>U133.2.11 Systems audit and review requirements are contributed to in accordance with the strata management plan.</p>
<p>U133.3 Apply Monitoring and Maintenance Procedures</p>	<p>U133.3.1 Inspection, repair and maintenance activities are scheduled and carried out in accordance with strata management plan.</p> <p>U133.3.2 Maintenance and monitoring requirements and activities are recorded, reported and reviewed in accordance with strata management plan.</p>

**Definitions:**

1. Audit is the validation process to ensure the system, procedures and processes meet the established objectives and are implemented.
2. Mine design is the process of engineering analysis applied to the systems and sequences involved in mining.
3. Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood. (AS/NZ 4360: 1995)
4. Hazard is a source of potential harm or a situation with a potential to cause loss.

5. Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

- 1 Resources may include but are not limited to skilled personnel, roof and rib supports, face equipment, power water/gas drainage systems and budgetary requirements.
- 2 Mining systems and methods may include, but are not limited to, bord and pillar, longwall, highwall, place changing, auger mining, pillar extraction and extraction, partial extraction, punch mining, systems of entry.
- 3 Stress includes, but is not limited to, horizontal and vertical tectonic induced stress and mining induced stress.
- 4 Geological and hydrogeological information includes that related to, but not limited to: subsidence, roof and floor technical data, gas content, over and underlying strata, waterbearing strata, permeability of seam and strata, physical properties, caving characteristics, outburst and windblast, faults, intrusions and deformities.
5. Mine site historical information may include, but not limited to, existence of previous workings within the work seam or other seam, sedimentology aspects of the minesite relating to subsidence, outburst, gas content, roof and floor technical data, over and underlying strata, water bearing strata, permeability of seam and strata, hydrology, physical property testing results, caving characteristics and windblast.
6. Mine design may include in whole or in part requirements relating to mine plant, mining induced stress, ventilation, tunnels, sequencing, drifts, stone drivage, shaft sinking, pillar extraction, partial extraction, punch mining, modelling, seam grades, windblast, outburst, geology, gas drainage, fault management, multi-seams, fault drivage, spontaneous combustion, roof and floor technical data, over and underlying strata, subsidence and legislative and statutory requirements.
7. Mine gases may include seam gases or gases from other introduced sources and may include methane, carbon dioxide, carbon monoxide, oxides of nitrogen, hydrogen, sulphur dioxide, hydrogen sulphide, hydrocarbons and combinations.
8. Coal seam characteristics may include, but are not limited to: rank, petrology, moisture, cleat, coal hardness, seam gas, friability, pyrites and depositional factors such as seam thickness, multiple and rider seams, seam dip and depth of cover.
9. Stable structure controls include, but are not limited to, roadway size, pillar sizes, depth of cover, strength of coal and underlying/overlying strata, stress regimes, strata characteristics, longwall chocks, water ingress, systems of mining, breaker line supports and direction of mining.



## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on stable mining structures
  - c. identifying and effectively managing risks and hazards associated with stable mining structures
  - d. evaluating mine site and failure mode historical information relating to the maintenance of stable mining structures
  - e. applying exploration techniques
  - f. identifying and assessing geological features
  - g. assessing strata gas characteristics, lithological features and stress regimes
  - h. assessing mining system types and methods
  - i. identifying workplace training/competency requirements
  - j. assessing mining constraints / equipment requirements
  - k. assessing, monitoring and accessing ground support systems
  - l. maintaining the section/district plan
  - m. maintain the selected mining structure
  - n. monitoring mining structure stability
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge.** A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to apply and monitor controls and systems in a strata management plan.
  - 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, drifts, stone drivage, 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, windblast, outburst, gas content and over and underlying strata.
- systems of work including board and pillar, place changing, longwall, highwall, auger mining, pillar extraction, partial extension and punch mining.

**5. Underpinning Knowledge: (contd)**

- mining structure failure modes.
- exploration techniques.
- geology and strata gas characteristics.
- mining engineering principles.
- ground support systems
- audit methodologies
- historical information

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information
- access and analyse archival and historical strata management information related to the mine and failure mode of mine structures
- interpret and apply design criteria for strata management
- communicate effectively in the workplace
- apply operational procedures relating to strata management
- conduct and report on audits
- identify and evaluate geological and geotechnical information

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

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**MNC.U136.A ESTABLISH MINE TRANSPORT SYSTEMS AND PRODUCTION EQUIPMENT**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:** This unit covers the strategic management functions required to develop and establish safe production and transport systems and equipment.

<u>Elements</u>	<u>Performance Criteria</u>
<p>U136.1 Develop Production and Transport Systems</p>	<p>U136.1.1 The legislative, statutory and site requirements related to production and transport systems are accessed, interpreted and clarified.</p> <p>U136.1.2 The requirements for and purpose of production and transport systems are identified in accordance with the system of mining.</p> <p>U136.1.3 Systems options are identified from an analysis of all relevant technical, operational and financial information.</p> <p>U136.1.4 A specification for the production and transport system is developed from a comprehensive analysis of mine needs.</p> <p>U136.1.5 The preferred systems options are selected on the basis of performance against criteria.</p>
<p>U136.2 Select Equipment for Production and Transport Systems</p>	<p>U136.2.1 The requirements for and purpose of production and transport equipment are identified against systems requirements.</p> <p>U136.2.2 A detailed scoping of the work requirement is conducted and key selection criteria, including hazard identification and risk analysis, is developed.</p> <p>U136.2.3 A specification for the required production and/or transport equipment is developed</p> <p>U136.2.4 The preferred equipment solutions are selected on the basis of performance against criteria</p>

<p>U136.3 Establish Installation and Commissioning Procedures</p>	<p>U136.3.1 Procedures to identify hazards and analyse and evaluate risks associated with the installation of production and transport systems and equipment are established.</p> <p>U136.3.2 Procedures for integrating new and existing mine production and transport systems and processes are developed and established.</p> <p>U136.3.3 Safe operating procedures and rules are developed from a detailed analysis of legislative and work site requirements.</p>
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**MNC.U136.A ESTABLISH MINE TRANSPORT SYSTEMS AND PRODUCTION EQUIPMENT**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U136.3 Establish Installation and Commissioning Procedures (continued)</p>	<p>U136.3.4 Production and transport systems and equipment installation and commissioning procedures are developed and established.</p> <p>U136.3.5 A program, including systems and procedures, to satisfy identified production and transport systems training requirements is established.</p> <p>U136.3.6 Emergency response and evacuation plans and procedures are established in accordance with site requirements.</p>
<p>U136.4 Establish Systems for the Operation and Maintenance of Production and Transport Systems and Equipment</p>	<p>U136.4.1 Operational procedures for production and transport systems and equipment are developed and incorporated into site documentation.</p> <p>U136.4.2 Maintenance procedures for production and transport systems and equipment are developed from site and legislative requirements and incorporated into site documentation</p> <p>U136.4.3 Procedures for reviewing and modifying work processes are developed and established.</p>

<p>U136.5 Establish Systems for Audit and Review of Production and Transport Systems and Equipment</p>	<p>U136.5.1 Procedures to evaluate and confirm system/equipment compliance with statutory and site requirements are established.</p> <p>U136.5.2 Future production and transport systems and equipment requirements are identified, assessed and incorporated into planning processes.</p> <p>U136.5.3 Procedures to confirm the currency of and compliance with production and transport maintenance and safety standards are established.</p> <p>U136.5.4 The system of recording and reporting production and transport equipment information is established.</p> <p>U136.5.5 Procedures for incorporating feedback into the audit/review system are established.</p> <p>U136.5.6 Procedures to confirm the currency, relevance and compliance with the training program against identified requirements are established.</p> <p>U136.5.7 Procedures for response to instances of non-compliance or other discrepancies / deficiencies revealed by audit are established.</p> <p>U136.5.8 Emergency response and evacuation plans and procedures are audited for compliance with site requirements.</p>
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## **MNC.U136.A ESTABLISH MINE TRANSPORT SYSTEMS AND PRODUCTION EQUIPMENT**

### **Definitions:**

For the purposes of this standard, the definition below applies:

- Audit is the process by which the validation of procedures, processes and systems is assured.
- Risk is the chance of something happening that will have an impact upon objectives. it is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

### **Range of Variables:**

- 1 Transport systems include capacities for personnel, equipment/materials and product and may be wheeled, railed, tracked, skidded or conveyor or product slurry pumped, shaft winding based.
- 2 Wheeled transport may include but not be limited to, rubber tyred man transport, multi purpose vehicles, load haul dump, forklifts, front end loader, skid steer loader and grader.
- 3 Rail transport may include locomotives (electric/diesel) and rail mounted personnel carriers and rolling stock, drift haulage systems.
- 4 Track vehicles may be fixed or mobile and may include shearer carriers, personnel carriers, chock recovery vehicles (mules) and mine dozer
- 5 Shaft winding systems may include product, personnel and material and may comprise head gear, cages and skips, winding apparatus and communications, control system, discharge and loading facilities and counter balances.
- 6 Conveyor system may include conveyor belts, drive heads, tail ends transfer points, surge bins, inter seam bins and fabricated bins.
- 7 Product slurry pumping may include batching stations, dewatering systems and water reticulation pumping stations.
- 8 Production equipment may include shearer, armoured face conveyor, pantech, chocks, stage loader and face drill rigs, shuttle cars, ram cars, ratio feeders, breaker line support, roof bolters (mobile and hand held), rib bolters, road header, continuous miners, in-seam miners, high wall miners, auger miners, loaders, shotfiring and hydraulic mining.

- 9 Safety information and standards may be contained in legislation and regulations, relevant International/Australian standards, management plans, manager's rules, OH&S policy, codes of practice, industry guidelines, approved standards, manufacturers' instructions, standard operational procedures and job instructions (or equivalent).
- 10 Maintenance may be divided into predictive, preventive and breakdown.
- 11 Site documentation and training policy may include but not be limited to statutory and legislative requirements, management plans and procedures.
- 12 Specifications may include, but not be limited to, performance requirements, costs, dimensions, capacity, OH&S requirements, training requirements and key selection criteria.

## **MNC.U136.A ESTABLISH MINE TRANSPORT SYSTEMS AND PRODUCTION EQUIPMENT**

### **Evidence Guide**

- 1. Context of Assessment.** Competency should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.

- 2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- applying personal and operational safety procedures
- interpreting and communicating information on production and transport systems operations
- conducting a risk assessment to identify production and transport systems and equipment hazards and risks
- applying mine design principles to minimise the likelihood of inappropriate production and/or transport systems and equipment being sourced and commissioned
- evaluating and selecting production and transport systems and equipment systems
- defining roles and responsibilities for management of production and transport systems
- establishing and reviewing the training program
- documenting the management plan for production and transport systems and equipment
- reviewing and auditing the effectiveness of the management plan
- establishing and reviewing emergency response procedures
- establishing statutory reporting procedures

- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

- 5. Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to develop (or cause to be developed) and establish production and transport systems.**

- legislative and statutory requirements and instructions including transport rules, maintenance schemes, standard operating procedures, training, statutory testing on diesel vehicles, battery charging, underground fuel depots, conveyor belts.
- mine operation procedures
- geological structures
- mine plans
- mine design relating to production and transport systems and equipment

- production and transport systems and equipment management requirements
- site environmental monitoring requirements
- risk management procedures
- production and transport systems and equipment statutory inspection requirements
- mine reporting procedures
- emergency response and evacuation planning processes and techniques
- maintenance surveys
- audit review processes and techniques
- production and transport equipment and systems; the types, uses, characteristics and limitations appropriate for safe operation at the mine site
- power sources including electrical, hydraulic, pneumatic, diesel
- safety design features of production and transport systems
- standard operating procedures relating to production and transport equipment
- stores system

## **MNC.U136.A ESTABLISH MINE TRANSPORT SYSTEMS AND PRODUCTION EQUIPMENT**

### **5. Underpinning Knowledge (continued).** A knowledge of:

- specification design criteria including noise, dust, lighting, ergonomics, remote control, physical clearance, confined space, visibility, seating vibration and machine equipment and personal protection
- training programs
- computer based systems
- fire fighting systems and precaution rules

### **6. Underpinning Skills.** The ability to:

- access, interpret and apply:
  - technical information
  - briefings and handover details
- apply the principles of mine design
- assess the risks and consequences attached to production and transport systems and equipment
- develop procedures appropriate to mine operations for management of production and transport systems and equipment
- plan and coordinate work
- identify training needs related to production and transport systems
- interpret and apply manufacturers' instructions
- conduct maintenance surveys.

## **MNC.U136.A ESTABLISH MINE TRANSPORT SYSTEMS AND PRODUCTION EQUIPMENT**

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	3 2
Communicating ideas and information.	3
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

**MNC.U137.A IMPLEMENT MINE TRANSPORT SYSTEMS AND PRODUCTION EQUIPMENT**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:** This unit covers the routine operational management functions required to implement production and transport systems and equipment.

<u>Elements</u>	<u>Performance Criteria</u>
<p>U137.1 Plan and Prepare for the Implementation of Production and Transport Systems and Equipment</p>	<p>U137.1.1 The legislative, statutory and site requirements related to production and transport systems are identified and interpreted.</p> <p>U137.1.2 The purpose of production and transport systems and equipment are identified in accordance with the system of mining.</p> <p>U137.1.3 Site requirements for the implementation of production and/or transport systems and equipment are identified and recorded.</p> <p>U137.1.4 The specifications for the required production and/or transport systems and equipment are accessed and interpreted.</p> <p>U137.1.5 Roles and responsibilities are identified, clarified and communicated.</p> <p>U137.1.6 The program to satisfy identified production and transport training requirements is implemented.</p> <p>U137.1.7 Standard operating procedures are accessed and interpreted.</p>

<p>U137.2 Implement Systems for Installation and Commissioning of Production and Transport Systems and Equipment</p>	<p>U137.2.1 Hazards associated with the installation and operation of production and transport equipment and systems are identified, and risks are evaluated and responded to in accordance with established procedures.</p> <p>U137.2.2 Emergency response and evacuation plans and procedures are implemented in accordance with site requirements.</p> <p>U137.2.3 New and existing work systems and processes are integrated to achieve optimum performance.</p> <p>U137.2.4 Standard operating procedures are implemented.</p> <p>U137.2.5 Mine production and transport installation and commissioning procedures are implemented.</p>
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**MNC.U137.A IMPLEMENT MINE TRANSPORT SYSTEMS AND PRODUCTION EQUIPMENT**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U137.2 Implement Systems for Installation and Commissioning of Production and Transport Systems and Equipment (continued)</p>	<p>U137.2.6 Equipment and systems are commissioned in accordance with manufacturers' specifications and site procedures.</p> <p>U137.2.7 Equipment and systems are modified to satisfy required changes arising from the commissioning process.</p>
<p>U137.3 Implement Systems for the Operation and Maintenance of Production and Transport Systems and Equipment</p>	<p>U137.3.1 Program and procedures for operations are implemented in accordance with legislative, manufacturers' and site requirements.</p> <p>U137.3.2 Reporting and recording systems are implemented in accordance with statutory and site requirements.</p> <p>U137.3.3 Maintenance program and procedures are implemented in accordance with manufacturers' and site maintenance requirements.</p> <p>U137.3.4 Procedures for reviewing and modifying work processes are implemented and applied.</p>

<p>U137.4 Implement Systems for Audit, Review of Production and Transport Systems and Equipment</p>	<p>U137.4.1 Production and transport systems standards are audited for compliance with statutory and site requirements.</p> <p>U137.4.2 Production and transport maintenance standards are audited for currency and compliance with statutory and site requirements.</p> <p>U137.4.3 Systems and equipment are audited for compliance with statutory and site requirements.</p> <p>U137.4.4 Emergency response and evacuation plans and procedures are audited for compliance with site requirements.</p> <p>U137.4.5 Reporting and recording systems for production and transport equipment are audited for compliance with statutory and site requirements.</p> <p>U137.4.6 The training program is audited for currency, relevance and compliance with site requirements.</p>
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## **MNC.U137.A IMPLEMENT MINE TRANSPORT SYSTEMS AND PRODUCTION EQUIPMENT**

### **Definitions:**

For the purposes of this standard, the definition below applies:

- Audit is the process by which the validation of procedures, processes and systems is assured.
- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

### **Range of Variables:**

- 1 Transport systems include capacities for personnel, equipment/materials and product and may be wheeled, railed, tracked, skidded or conveyor or product slurry pumped, shaft winding based.
- 2 Wheeled transport may include but not be limited to, rubber tyred man transport, multi purpose vehicles, load haul dump, forklifts, front end loader, skid steer loader and grader.
- 3 Rail transport may include locomotives (electric/diesel) and rail mounted personnel carriers and rolling stock, drift haulage systems.
- 4 Track vehicles may be fixed or mobile and may include shearer carriers, personnel carriers, chock recovery vehicles (mules) and mine dozer.
- 5 Shaft winding systems may include product, personnel and material and may comprise head gear, cages and skips, winding apparatus and communications, control system discharge and loading facilities, counter balances.
- 6 Conveyor system may include conveyor belts, drive heads, tail ends transfer points, surge bins, inter seam bins and fabricated bins.
- 7 Product slurry pumping may include batching stations, dewatering systems and water reticulation pumping stations.
- 8 Production equipment may include shearer, armoured face conveyor, pantech, chocks, stage loader and face drill rigs, shuttle cars, ram cars, ratio feeders, breaker line support, roof bolters (mobile and hand held), rib bolters, road header, continuous miners, in-seam miners, high wall miners, auger miners, loaders, shotfiring and hydraulic mining.

- 9 Safety information and standards may be contained in legislation and regulations, relevant International/Australian standards, management plans, manager's rules, OH&S policy, codes of practice, industry guidelines, approved standards, manufacturers' instructions, standard operational procedures and job instructions (or equivalent).
- 10 Maintenance may be divided into predictive, preventive and breakdown.
- 11 Site documentation and training policy may include but not be limited to statutory and legislative requirements, management plans and procedures.
- 12 Specifications may include, but not be limited to, performance requirements, costs, dimensions, capacity, OH&S requirements, training requirements and key selection criteria.

## **MNC.U137.A IMPLEMENT MINE TRANSPORT SYSTEMS AND PRODUCTION EQUIPMENT**

### **Evidence Guide**

- 1. Context of Assessment.** Competency should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.
- 2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.
- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on production and transport systems operations
  - c. conducting a risk assessment to identify production and transport systems and equipment hazards and risks
  - d. contribute to evaluating and selecting production and transport systems and equipment systems
  - e. implement the training program
  - f. reviewing and auditing the effectiveness of the management plan
  - g. implementing the statutory reporting system
  - h. implementing emergency response procedures
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain

and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to perform the routine operational management required to implement and maintain production and transport systems.**

- legislative and statutory requirements and instructions including transport rules, maintenance schemes, SOP's, training, statutory testing on diesel vehicles, battery charging, underground fuel depots, conveyor belts.
- mine operation procedures
- geological structures
- mine plans
- mine design relating to production and transport systems and equipment
- production and transport systems and equipment management requirements
- site environmental monitoring requirements
- risk management procedures
- production and transport systems and equipment statutory inspection requirements
- mine reporting procedures
- emergency response and evacuation planning processes and techniques
- maintenance surveys
- audit review processes and techniques
- production and transport equipment and systems; the types, uses, characteristics and limitations appropriate for safe operation at the mine site
- power sources including electrical, hydraulic, pneumatic, diesel
- safety design features of production and transport systems
- safe operating procedures relating to production and transport equipment
- stores system

## MNC.U137.A IMPLEMENT MINE TRANSPORT SYSTEMS AND PRODUCTION EQUIPMENT

- specification design criteria including noise, dust, lighting, ergonomics, remote control, physical clearance, confined space, visibility, seating vibration and machine equipment and personal protection
- training programs
- specification design criteria including noise, dust, lighting, ergonomics, remote control, physical clearance, confined space, visibility, seating vibration and machine equipment and personal protection
- training programs
- standard operating procedures relating to production and transport equipment
- safety design features for maintenance of production and transport equipment
- computer based systems
- fire fighting systems and precaution rules

### 6. Underpinning Skills. The ability to:

- access, interpret and apply:
  - technical information
  - briefings and handover details
- assess the risks and consequences attached to production and transport systems and equipment
- implement procedures appropriate to mine operations for management of production and transport systems and equipment
- plan and coordinate work
- identify training needs related to production and transport systems
- interpret and apply manufacturers' instructions
- conduct maintenance surveys.

### 7. Key Competencies

#### Level

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2

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**MNC.U138.A  
AND**

**APPLY AND MONITOR MINE TRANSPORT SYSTEMS  
PRODUCTION EQUIPMENT**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:**

**This unit covers the application and monitoring of  
mine production and transport systems.**

<u>Elements</u>	<u>Performance Criteria</u>
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<p>U138.1 Plan and Prepare for the Operation and Maintenance of Production and Transport Systems and Equipment</p>	<p>U138.1.1 The legislative, statutory and site requirements related to production and transport systems and equipment are identified and interpreted.</p> <p>U138.1.2 The purpose of production and transport systems and equipment is identified and confirmed.</p> <p>U138.1.3 Hazards associated with the installation and operation of production and transport systems and equipment are identified, risks evaluated and controls applied.</p> <p>U138.1.4 Standard operating procedures are accessed and interpreted.</p> <p>U138.1.5 Individual training needs are identified through accessing the established transport and production equipment, management training program and systems.</p>
<p>U138.2 Apply Systems for the Operation and Maintenance of Production and Transport Systems and Equipment</p>	<p>U138.2.1 Equipment and systems are installed at the work site in accordance with site and manufacturers' requirements.</p> <p>U138.2.2 Commissioning procedures for production and transport systems and equipment are applied and outcomes reported.</p> <p>U138.2.3 The impacts of equipment and systems on work processes are assessed and processes reviewed, recorded and reported to meet equipment and site requirements.</p> <p>U138.2.4 Operational and maintenance programs and procedures are applied in accordance with site requirements.</p> <p>U138.2.5 Individual training needs are satisfied through accessing the established transport and production equipment, management training program and systems.</p> <p>U138.2.6 Procedures for reviewing and modifying work processes are applied and monitored.</p> <p>U138.2.7 Emergency response and evacuation plans and procedures are applied and monitored in accordance with site requirements.</p> <p>U138.2.8 Safe operating procedures are applied and monitored throughout the work and reported, where appropriate, in accordance with site requirements.</p>

<u>Elements</u>	<u>Performance Criteria</u>
U138.3 Apply Monitoring and Maintenance Procedures	<p>U138.3.1 Inspection, repair and maintenance activities are scheduled and carried out in accordance with statutory and site requirements.</p> <p>U138.3.2 Maintenance and monitoring requirements and activities are recorded, reported and reviewed in accordance with statutory and site requirements.</p>

**Definitions:**

For the purposes of this standard, the definition below applies:

- Audit is the process by which validation of procedures, processes and systems is assured.
- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with potential to cause loss.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

- 1 Transport systems include capacities for personnel, equipment/materials and product and may be wheeled, railed, tracked, skidded or conveyor or product slurry pumped, shaft winding based.
- 2 Wheeled transport may include but not be limited to, rubber tyred man transport, multi purpose vehicles, load haul dump, forklifts, front end loader, skid steer loader and grader.
- 3 Rail transport may include locomotives (electric/diesel) and rail mounted personnel carriers and rolling stock, drift haulage systems.
- 4 Track vehicles may be fixed or mobile and may include shearer carriers, personnel carriers, chock recovery vehicles (mules) and mine dozer.

- 5 Shaft winding systems may include product, personnel and material and may comprise head gear, cages and skips, winding apparatus and communications, control system discharge and loading facilities, counter balances.
- 6 Conveyor system may include conveyor belts, drive heads, tail ends transfer points, surge bins, inter seam bins and fabricated bins.
- 7 Product slurry pumping may include batching stations, dewatering systems and water reticulation pumping stations.
- 8 Production equipment may include shearer, armoured face conveyor, pantech, chocks, stage loader and face drill rigs, shuttle cars, ram cars, ratio feeders, breaker line support, roof bolters (mobile and hand held), rib bolters, road header, continuous miners, in-seam miners, high wall miners, auger miners, loaders, shotfiring and hydraulic mining.

**MNC.U138.A**

**APPLY AND MONITOR MINE TRANSPORT SYSTEMS AND PRODUCTION EQUIPMENT**

**Range of Variables (continued):**

- 9 Safety information and standards may be contained in legislation and regulations, relevant International/Australian standards, management plans, manager's rules, OH&S policy, codes of practice, industry guidelines, approved standards, manufacturers' instructions, standard operational procedures and job instructions (or equivalent).
- 10 Maintenance may be divided into predictive, preventive and breakdown.
- 11 Site documentation and training policy may include but not be limited to statutory and legislative requirements, management plans and procedures.
- 12 Specifications may include, but not be limited to, performance requirements, costs, dimensions, capacity, OH&S requirements, training requirements and key selection criteria.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.
2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on production and transport systems operations
  - c. contribute to a risk assessment to identify production and transport systems and equipment hazards and risks
  - d. monitoring and reporting on production and transport systems and equipment
  - e. conducting and reporting on statutory inspections
  - f. applying roles and responsibilities for management of production and transport systems
  - g. identifying training needs for production and transport personnel
  - h. reviewing and auditing the effectiveness of the production and transport systems.
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to apply and monitor production and transport systems.**

- legislative and statutory requirements and instructions including transport rules, maintenance schemes, SOP's, training, statutory testing on diesel vehicles, battery charging, underground fuel depots, conveyor belts.
- mine operation procedures
- geological structures
- mine plans
- mine design relating to production and transport systems and equipment
- production and transport systems and equipment management requirements
- site environmental monitoring requirements
- risk management procedures
- production and transport systems and equipment statutory inspection requirements
- mine reporting procedures
- emergency response and evacuation planning processes and techniques
- maintenance surveys
- audit review processes and techniques
- production and transport equipment and systems; the types, uses, characteristics and limitations appropriate for safe operation at the mine site
- power sources including electrical, hydraulic, pneumatic, diesel
- safety design features of production and transport systems
- standard operating procedures relating to production and transport equipment
- stores system
- specification design criteria including noise, dust, lighting, ergonomics, remote control, physical clearance, confined space, visibility, seating, vibration and machine equipment and personal protection
- training systems and programs
- computer based systems
- fire fighting systems and precaution rules

**6. Underpinning Skills. The ability to:**

- access, interpret and apply:
  - technical information
  - briefings and handover details
- assess the risks and consequences attached to production and transport systems and equipment
- apply procedures appropriate to mine operations for management of production and transport systems and equipment
- plan and coordinate work
- identify training needs related to production and transport systems
- interpret and apply manufacturers' instructions

- conduct maintenance surveys.

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2

## NATIONAL MINING ITAB

## BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This unit covers the strategic management functions required to develop and establish safe mine services systems.

<u>Elements</u>	<u>Performance Criteria</u>
U141.1 Design Mine Services Systems	U141.1.1 The legislative, statutory and site requirements related to mine services management systems are accessed, interpreted and clarified.  U141.1.2 The requirements for and purpose of mine services systems are identified in accordance with legislative requirements and the system of mining.  U141.1.3 A specification for the mine services system is developed from a comprehensive analysis of site requirements.  U141.1.4 System options are identified from an analysis of all relevant technical, operational and financial information.  U141.1.5 The preferred service systems options, including reticulation are selected on the basis of performance against specification requirements.
U141.2 Select Equipment for Mine Services Systems	U141.2.1 The requirements for and purpose of mine services equipment are identified against systems requirements.  U141.2.2 A detailed scoping of the work requirement is conducted and key selection criteria, including hazard identification and risk analysis, is developed.  U141.2.3 A specification for the required mine services equipment is developed.  U141.2.4 The preferred equipment solutions are selected on the basis of performance against specification requirements.

<p>U141.3 Establish Installation and Commissioning Procedures</p>	<p>U141.3.1 A procedure to identify hazards and analyse and evaluate risks associated with the installation of mine services systems and equipment is established.</p> <p>U141.3.2 Integration of new and existing systems and processes is planned and prepared for to achieve optimum performance.</p> <p>U141.3.3 Safe operating procedures and rules are developed from a detailed analysis of site requirements.</p>
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**MNC.U141.A**

**ESTABLISH MINE SERVICES SYSTEMS**

<u>Elements</u>	<u>Performance Criteria</u>
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<p>U141.3 Establish Installation and Commissioning Procedures (continued)</p>	<p>U141.3.4 Procedures for installing and commissioning a mine services systems and equipment are developed and established.</p>
	<p>U141.3.5 A program, including systems and procedures, to satisfy identified mine services training requirements is established.</p>
<p>U141.4 Establish Systems for the Operation and Maintenance of Mine Services Systems and Equipment</p>	<p>U141.3.6 Emergency response and evacuation systems, plans and procedures are established in accordance with site requirements.</p>
	<p>U141.4.1 Operational procedures for mine services systems and equipment, are developed from site and legislative requirements and incorporated into site documentation.</p>
	<p>U141.4.2 Maintenance procedures for mine services systems and equipment are developed from site and legislative requirements and incorporated into site documentation</p>
<p>U141.5 Establish Systems for Audit and Review of Mine Services Systems and Equipment</p>	<p>U141.4.3 Procedures for reviewing and modifying work processes are developed and established.</p>
	<p>U141.5.1 Procedures to evaluate and confirm system/equipment compliance with statutory and site requirements are established.</p>
	<p>U141.5.2 Future mine services systems and equipment requirements are identified, assessed and incorporated into planning processes.</p>
	<p>U141.5.3 Procedures to confirm the currency and compliance of mine services maintenance and safety standards are established.</p>
	<p>U141.5.4 The system for recording and reporting of mine services and equipment information is established.</p>
	<p>U141.5.5 The mine services training program is audited for currency and relevance.</p>
	<p>U141.5.6 Procedures for incorporating feedback into the audit/review system is established.</p>
	<p>U141.5.7 Emergency response and evacuation systems, plans and procedures are audited for compliance with site requirements.</p>
<p>1326</p>	<p>U141.5.8 Procedures for response to instances of non-compliance or other discrepancies / deficiencies revealed by audit are established..</p>



**Definitions:**

For the purposes of this standard, the definition below applies:

- Audit is the process by which the validation of procedures, processes and systems are assured.
- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

1. Mine services may include, but not be limited to, water, wastewater, compressed air, fire fighting, gas drainage, fuel, electrical and waste disposal, condition monitoring.
2. A service system includes the functions of design, development, establishment, installation, operations, protection, maintenance, monitoring and recording and reporting process.
3. Ancillary support systems may include, but not be limited to, mine plans, signage, stores system, roadway maintenance and drilling (raise boring and bore hole) and emergency response systems).
4. Emergency response systems: refuge chambers, designated escape ways, alarm systems, guidance systems, emergency communication systems, self aided escape apparatus, mines rescue capability.
5. Protection systems may include, but not be limited to, explosion barriers, electrical protection, compressed air protection, hydraulic protection, environment protection (stone dusting and dust suppression) mechanical protection and frictional ignition protection.
6. Reticulation may include water management, pumping of solids, fluid reticulation and storage, material reticulation and storage (hydraulic, electric, water and compressed air). Reticulation system may be electrical or mechanical.
7. Communication system may include, but not be limited to, oral, phones, radios and telemetry.
8. Reporting and recording systems include site requirements and consist of phones, radios, computer systems, verbal and written.

9. Safety services may include, but not be limited to, risk assessment process, fire fighting, first aid and mines rescue.
10. Safety information and standards may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturers' instructions and standard working or job procedures (or equivalent), industry guidelines.
11. Site documentation and training policy may include, but not be limited to, statutory and legislative requirements, management plans and procedures.
12. Specifications may include, but not be limited to, performance requirements, costs, dimensions, capacity, occupational health and safety requirements, training requirements, and key selection criteria.

**Evidence Guide**

1. **Context of Assessment.** Competency should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.
2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on mine services systems operations
  - c. conducting a risk assessment to identify mine services systems and equipment hazards and risks
  - d. applying mine design principles to minimise the likelihood of inappropriate mine services systems and equipment being sourced and commissioned
  - e. evaluating and selecting mine services systems and equipment
  - f. defining roles and responsibilities for management of mine services systems
  - g. establishing the operational and maintenance documentation for mine services systems and equipment
  - h. establishing and reviewing statutory reporting procedures
  - i. establishing and reviewing the training program
  - j. reviewing and auditing the effectiveness of the mine services
  - k. establishing and reviewing emergency response procedures
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge.** **A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to design, develop (or cause to be designed and developed) and establish the mine services system.**
  - legislative and site specific requirements for mine services including, but not limited to, mine plans, electrical rules, gas drainage, compressed air, electrical / mechanical equipment, inspection requirement, environmental management, explosion barriers, communication, emergency procedures, risk management, recording and reporting, mines rescue, OH&S, manufacturers' instructions, standard work procedures, training and fire fighting.
  - emergency response and disaster planning processes and techniques

- audit review process and techniques
- mine operating procedures including those applying to transport systems, conveyor systems, systems of mining, ventilation system, gas management and mine water management
- mine design relating to mine services systems
- power sources including electrical, hydraulic, compressed air, diesel
- safety design features of mine services systems

**5. Underpinning Knowledge (continued):** A knowledge of:

- computer based systems
- training programs
- fire fighting systems and precaution rules
- safety design features for maintenance of mine services systems
- maintenance surveys
- stores systems.

**6. Underpinning Skills.** The ability to:

- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- apply the principles of mine design
- assess the risks and consequences attached to mine services systems and equipment
- plan and coordinate work
- identify training needs related to mine services systems
- interpret and apply manufacturers' instructions
- conduct maintenance surveys

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	3
Communicating ideas and information.	2
Planning and organising activities.	3
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2



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**MNC.U142.A  
SYSTEMS**

**IMPLEMENT MINE SERVICES**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:                   This unit covers the routine operational management functions  
required to implement mine services systems and equipment.**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U142.1 Plan and Prepare for Implementation of Mine Services Systems and Equipment</p>	<p>U142.1.1 The legislative, statutory and site requirements related to mine services systems are identified and interpreted.</p> <p>U142.1.2 The purpose of mine services systems and equipment are identified in accordance with the system of mining.</p> <p>U142.1.3 Site requirements for the implementation of mine services systems and equipment are identified and recorded.</p> <p>U142.1.4 The specification for the required mine services equipment is accessed, identified and interpreted.</p> <p>U142.1.5 Roles and responsibilities are identified, clarified and communicated.</p> <p>U142.1.6 The program to satisfy identified mine services training requirements is implemented.</p>
<p>U142.2 Implement Installation and Commissioning Procedures</p>	<p>U142.1.7 Standard operating procedures are accessed and interpreted.</p> <p>U142.2.1 Hazards associated with the installation of mine services equipment and systems are identified and risks evaluated and responded to in accordance with established procedures.</p> <p>U142.2.2 New and existing work systems and processes are integrated to achieve optimum performance.</p> <p>U142.2.3 Standard operating procedures are implemented.</p> <p>U142.2.4 Mine services equipment installation and commissioning procedures are implemented.</p> <p>U142.2.5 Equipment is transported and delivered/installed at the work site in accordance with manufacturers' instructions and site procedures.</p> <p>U142.2.6 Equipment and systems are commissioned in accordance with the manufacturers' specifications and site procedures.</p> <p>U142.2.7 Equipment and systems are modified to satisfy required changes arising from the commissioning process.</p> <p>U142.2.8 Emergency response and evacuation plans and procedures are implemented in accordance with site requirements.</p>



<u>Elements</u>	<u>Performance Criteria</u>
<p>U142.3 Implement Systems for the Operation and Maintenance of Mine Services Systems and Equipment.</p>	<p>U142.3.1 Operational procedures for mine services systems and equipment are implemented according to site requirements.</p> <p>U142.3.2 Maintenance procedures for mine services systems and equipment are implemented according to manufacturers' and site requirements.</p> <p>U142.3.3 Procedures for reviewing and modifying work processes are implemented and applied.</p>
<p>U142.4 Implement Systems for Audit, Review of Mine Services Systems and Equipment</p>	<p>U142.4.1 Mine service systems standards are audited for compliance with statutory and site requirements.</p> <p>U142.4.2 Mine services and equipment maintenance standards are audited for currency and compliance with statutory and site requirements.</p> <p>U142.4.3 Mine services and equipment are audited for compliance with statutory and site requirements.</p> <p>U142.4.4 Reporting and recording systems are audited for compliance with statutory and site requirements.</p> <p>U142.4.5 Emergency response and evacuation plans and procedures are audited for compliance with site requirements.</p> <p>U142.4.6 The training program is audited for currency, relevance and compliance with site requirements.</p>

**Definitions:**

For the purposes of this standard, the definition below applies:

- Audit is the process by which the validation of procedures, processes and systems are assured.
- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).

- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

1. Mine services may include, but not be limited to, water, wastewater, compressed air, fire fighting, gas drainage, fuel, electrical and waste disposal, condition monitoring.
2. A service system includes the functions of design, development, establishment, installation, operations, protection, maintenance, monitoring and recording and reporting process.
3. Ancillary support systems may include, but not be limited to, mine plans, signage, stores system, roadway maintenance and drilling (raise boring and bore hole) and emergency response systems).
4. Emergency response systems: refuge chambers, designated escape ways, alarm systems, guidance systems, emergency communication systems, self aided escape apparatus, mines rescue capability.
5. Protection systems may include, but not be limited to, explosion barriers, electrical protection, compressed air protection, hydraulic protection, environment protection (stone dusting and dust suppression) mechanical protection and frictional ignition protection.
6. Reticulation may include water management, pumping of solids, fluid reticulation and storage, material reticulation and storage (hydraulic, electric, water and compressed air). Reticulation system may be electrical or mechanical.
7. Communication system may include, but not be limited to, oral, phones, radios and telemetry.
8. Reporting and recording systems include site requirements and consist of phones, radios, computer systems, verbal and written.
9. Safety services may include, but not be limited to, risk assessment process, fire fighting, first aid and mines rescue.
10. Safety information and standards may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturers' instructions and standard working or job procedures (or equivalent), industry guidelines.
11. Site documentation and training policy may include, but not be limited to, statutory and legislative requirements, management plans and procedures.
12. Specifications may include, but not be limited to, performance requirements, costs, dimensions, capacity, occupational health and safety requirements, training requirements, and key selection criteria.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.
2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.



- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on mine services systems operations
  - c. conducting a risk assessment to identify mine services systems and equipment hazards and risks
  - d. contributing to the evaluation and selection of mine services systems and equipment
  - e. defining roles and responsibilities for the implementation of mine services systems
  - f. implementing statutory reporting procedures
  - g. developing / modifying work systems and procedures
  - h. implementing the training system
  - i. reviewing and auditing the effectiveness of the mine services operations
  - j. implementing emergency response and evacuation plans and procedures
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
- 5. Underpinning Knowledge.** **A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to perform the routine operational management required to implement an established mine services system.**
- legislative and site specific requirements for mine services including, but not limited to, mine plans, electrical rules, gas drainage, compressed air, electrical / mechanical equipment, inspection requirement, environmental management, explosion barriers, communication, emergency procedures, risk management, recording and reporting, mines rescue, OH&S, manufacturers' instructions, standard work procedures, training and fire fighting.
  - emergency response and disaster planning processes and techniques
  - audit review process and techniques
  - mine operating procedures including those applying to transport systems, conveyor systems, systems of mining, ventilation system, gas management and mine water management
  - mine design relating to mine services systems
  - power sources including electrical, hydraulic, compressed air, diesel
  - safety design features of mine services systems
  - computer based systems
  - training programs
  - fire fighting systems and precaution rules
  - safety design features for maintenance of mine services systems

- maintenance surveys
- stores systems.

**6. Underpinning Skills.** The ability to:

- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- assess the risks and consequences attached to mine services systems and equipment
- plan and coordinate work
- identify training needs related to mine services systems
- interpret and apply manufacturers' instructions
- conduct maintenance surveys.

**MNC.U142.A  
SYSTEMS**

**IMPLEMENT MINE SERVICES**

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

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**MNC.U143.A  
SYSTEMS**

**APPLY AND MONITOR SERVICES**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the application and monitoring of mine services systems and equipment.**

<u>Elements</u>	<u>Performance Criteria</u>
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<p>U143.1 Plan and Prepare for the Operation and Maintenance of Mine Services Systems and Equipment</p>	<p>U143.1.1 The legislative, statutory and site requirements related mine services systems are identified and interpreted.</p> <p>U143.1.2 The purpose of, mine services systems and equipment are identified and confirmed.</p> <p>U143.1.3 Hazards associated with the installation and operation of mine services equipment are identified, risks evaluated and controls applied.</p> <p>U143.1.4 Standard operating procedures are accessed and interpreted.</p> <p>U143.1.5 Individual training needs are identified and satisfied through accessing the established program and systems.</p>
<p>U143.2 Apply and Monitor Systems for the Operation and Maintenance of Mine Services Systems and Equipment</p>	<p>U143.2.1 The impacts of equipment and systems on work processes are assessed and processes reviewed, recorded and reported to meet equipment and mine requirements.</p> <p>U143.2.2 Operational and maintenance programs and procedures are applied and monitored in accordance with site requirements.</p> <p>U143.2.3 Procedures for reviewing and modifying work processes are applied and monitored.</p> <p>U143.2.4 Standard operating procedures are applied and monitored throughout the work and reported, where appropriate, in accordance with site requirements.</p> <p>M2.2.5 Systems audit and review requirements are contributed to in accordance with site and legislative requirements.</p> <p>U143.2.6 Emergency response and evacuation plans and procedures are applied and monitored in accordance with site requirements.</p>
<p>U143.3 Apply Systems Maintenance Procedures</p>	<p>U143.3.1 Inspections, repair and maintenance activities are scheduled and carried out in accordance with site requirements.</p> <p>U143.3.2 Maintenance requirements and activities are recorded, reported and monitored in accordance with site requirements.</p>

**Definitions:**

For the purposes of this standard, the definition below applies:

- Audit is the process by which the validation of procedures, processes and systems are assured.
- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

1. Mine services may include, but not be limited to, water, wastewater, compressed air, fire fighting, gas drainage, fuel, electrical and waste disposal, condition monitoring.
2. A service system includes the functions of design, development, establishment, installation, operations, protection, maintenance, monitoring and recording and reporting process.
3. Ancillary support systems may include, but not be limited to, mine plans, signage, stores system, roadway maintenance and drilling (raise boring and bore hole) and emergency response systems).
4. Emergency response systems: refuge chambers, designated escape ways, alarm systems, guidance systems, emergency communication systems, self aided escape apparatus, mines rescue capability.
5. Protection systems may include, but not be limited to, explosion barriers, electrical protection, compressed air protection, hydraulic protection, environment protection (stone dusting and dust suppression) mechanical protection and frictional ignition protection.
6. Reticulation may include water management, pumping of solids, fluid reticulation and storage, material reticulation and storage (hydraulic, electric, water and compressed air). Reticulation system may be electrical or mechanical.
7. Communication system may include, but not be limited to, oral, phones, radios and telemetry.

8. Reporting and recording systems include site requirements and consist of phones, radios, computer systems, verbal and written.
9. Safety services may include, but not be limited to, risk assessment process, fire fighting, first aid and mines rescue.
10. Safety information and standards may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturers' instructions and standard working or job procedures (or equivalent), industry guidelines.
11. Site documentation and training policy may include, but not be limited to, statutory and legislative requirements, management plans and procedures.
12. Specifications may include, but not be limited to, performance requirements, costs, dimensions, capacity, occupational health and safety requirements, training requirements, and key selection criteria.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on mine services systems operations
  - c. conducting a risk assessment to identify mine services systems and equipment hazards and risks
  - d. monitoring mine services systems and equipment operations
  - e. conducting and reporting on statutory inspections
  - f. applying roles and responsibilities for management of mine services systems
  - g. identifying training needs for personnel in relation to mine services
  - h. applying and monitoring maintenance programs.
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to apply and monitor controls and systems in a mine services system.**
  - legislative and site specific requirements for mine services including, but not limited to, mine plans, electrical rules, gas drainage, electrical / mechanical equipment, inspection requirement, environmental management, explosion barriers, communication, emergency procedures, risk management, recording and reporting, mines rescue, OH&S, manufacturers' instructions, standard work procedures, training and fire fighting.
  - emergency response and disaster planning processes and techniques
  - audit review process and techniques
  - mine operating procedures including transport systems, conveyor systems, systems of mining, ventilation system, gas management and mine water management
  - mine design relating to mine services systems



- power sources including electrical, hydraulic, pneumatic, diesel
- safety design features of mine services systems
- computer based systems
- training programs
- fire fighting systems and precaution rules
- safety design features for maintenance of mine services systems
- maintenance surveys
- stores systems.

**6. Underpinning Skills.** The ability to:

- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- assess the risks and consequences attached to mine services systems and equipment
- plan and coordinate work
- identify training needs related to mine services systems
- interpret and apply manufacturers' instructions
- conduct maintenance surveys.

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

**MNC.U146.A  
SYSTEMS**

**ESTABLISH MINE FIXED PLANT AND INFRASTRUCTURE**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:**                    **This unit covers the strategic management functions required to develop and establish safe mine fixed plant and infrastructure.**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U146.1 Develop Mine Fixed Plant and Infrastructure Systems</p>	<p>U146.1.1 The legislative, statutory and site requirements related to fixed plant and infrastructure are accessed, identified and interpreted.</p> <p>U146.1.2 The requirements for and purpose of fixed plant and operational infrastructure are identified in accordance with mine design and system of mining.</p> <p>U146.1.3 Fixed plant and infrastructure options are identified from an analysis of all relevant technical, operational and financial information.</p> <p>U146.1.4 A specification for fixed plant and infrastructure is developed from a comprehensive analysis of site requirements.</p> <p>U146.1.5 Preferred fixed plant and infrastructure options are selected on the basis of performance against specification requirements.</p>
<p>U146.2 Select Fixed Plant and Equipment</p>	<p>U146.1.6 Potential sites / routes for fixed plant and infrastructure are assessed by visit, located on mine plan and confirmed.</p> <p>U146.2.1 The requirements for and purpose of items of fixed plant and equipment are identified against mine requirements.</p> <p>U146.2.2 A detailed scoping of work requirement is conducted and key selection criteria, including hazard identification and risk analysis, is developed.</p> <p>U146.2.3 A specification for the required items of fixed plant and equipment is developed</p> <p>U146.2.4 Preferred fixed plant and equipment options are selected on the basis of performance against specification requirements.</p>

<p>U146.3 Establish Installation and Commissioning Procedures for Fixed Plant and Equipment</p>	<p>U146.3.1 Procedures to identify hazards and analyse and evaluate risks associated with the installation of fixed plant and equipment is established.</p> <p>U146.3.2 Integration of new and existing fixed plant and equipment and processes is planned and prepared for to achieve optimum performance.</p> <p>U146.3.3 Safe operating procedures and rules are developed from a detailed analysis of work site and legislative requirements.</p>
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**MNC.U146.A ESTABLISH MINE FIXED PLANT AND INFRASTRUCTURE SYSTEMS**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U146.3 Establish Installation and Commissioning Procedures for Fixed Plant and Equipment (continued)</p>	<p>U146.3.4 Fixed plant and equipment installation and commissioning procedures are developed and established.</p> <p>U146.3.5 A program, including systems and procedures, to satisfy identified fixed plant and infrastructure training requirements, is established.</p> <p>U146.3.6 Emergency response and evacuation plans and procedures are established in accordance with site requirements.</p>
<p>U146.4 Establish Systems for the Operation and Maintenance of Fixed Plant and Infrastructure.</p>	<p>U146.4.1 Operational procedures for fixed plant and infrastructure and equipment are developed from site and legislative requirements and incorporated into site documentation.</p> <p>U146.4.2 Maintenance procedures for fixed plant and infrastructure systems and equipment are developed from site and legislative requirements and incorporated into site documentation.</p> <p>U146.4.3 Procedures for reviewing and modifying work processes are developed and established.</p>

<p>U146.5 Establish Systems for Audit and Review of Fixed Plant and Infrastructure</p>	<p>U146.5.1 Procedures to evaluate and confirm fixed plant and infrastructure compliance with statutory and site requirements are established.</p> <p>U146.5.2 Future fixed plant and infrastructure systems and equipment requirements are identified, assessed and incorporated into planning processes.</p> <p>U146.5.3 Procedures to confirm the currency and compliance of fixed plant and infrastructure maintenance and safety standards are established.</p> <p>U146.5.4 The system for recording and reporting for fixed plant and infrastructure information is established.</p> <p>U146.5.5 Procedures for incorporating feedback into the audit/review system are established.</p> <p>U146.5.6 Procedures to confirm the currency, relevance and compliance of the training program against identified requirements are established.</p> <p>U146.5.7 Procedures for response to instances of non-compliance or other discrepancies / deficiencies revealed by audit are established.</p> <p>U146.5.8 Emergency response and evacuation plans and procedures are audited for compliance with site requirements.</p>
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**Definitions:**

For the purposes of this standard, the definition below applies:

- Audit is the process by which the validation of procedures, processes and systems are assured.
- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

1. Infrastructure may include, but is not limited to, fabrication and construction areas, servicing areas, refuelling points, workshops, dams, explosives magazines, training facility, bathrooms, HV switch rooms, lamp cabin, laboratory, storehouses, equipment storage areas, on site residential housing, site access (road, rail, air), battery rooms, water treatment plant, sewerage treatment plant, offices, emergency facilities (first aid, fire and rescue), coal preparation plant, stockpile and coal load out.
2. Fixed plant and equipment, may include but not be limited to, lathes, presses, gantry cranes, drills, grinders, service bays, testing rooms, process treatment plant, drive heads, pumps and stations, pipelines, ventilation fans, compressors, winders, haulage winches, battery chargers, air conditioning, generators, electrical switching / control / distribution equipment and gas plant.
3. Safety systems may include, but not be limited to, legislation (legal requirements), location, site layout, purpose, environmental control (spontaneous combustion, gas, noise, water, heat, dust), protection systems (guarding, fire protection and suppression, electricity, lightning arresters, ventilation in explosives magazines and earthing).



4. Reporting and recording systems include site requirements and consist of phones, radios, computer systems, verbal and written.
5. Safety information and standards may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturers' instructions, standard working or job procedures (or equivalents), codes of practice and industry guidelines.
6. Site documentation and training policy may include, but not be limited to, statutory and legislative requirements, management plans and procedures.
7. Specifications may include, but not be limited to, performance requirements, costs, dimensions, capacity, OH&S requirements, training requirements and key selection criteria.

## MNC.U146.A ESTABLISH MINE FIXED PLANT AND INFRASTRUCTURE SYSTEMS

### Evidence Guide

**1. Context of Assessment.** Competency should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on fixed plant and infrastructure systems operations
- c. conducting a risk assessment to identify fixed plant and infrastructure systems and equipment hazards and risks
- d. applying mine design principles to minimise the likelihood of inappropriate fixed plant and infrastructure systems and equipment being sourced and commissioned
- e. evaluating and selecting fixed plant and infrastructure systems
- f. establishing and reviewing statutory reporting procedures
- g. defining roles and responsibilities for management of fixed plant and infrastructure
- h. establishing and reviewing the training program
- i. documenting the operational and maintenance plans for fixed plant and infrastructure systems
- j. reviewing and auditing the effectiveness of the management plan
- k. establishing and reviewing the emergency response and disaster plans and procedures

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to develop (or cause to be developed) and establish fixed plant and infrastructures systems.**

- legislative, statutory, Australian standards and site specific requirements for plant and infrastructure including, but not limited to, mine plan, electrical rules, electrical / mechanical equipment, communications, emergency procedures, risk management, recording and reporting, mines rescue, OH&S, manufacturers' instructions, standard

work procedures, training, fire fighting, handling and storage of dangerous goods, local government and power authority requirement.

- mine operation systems and procedures including transport systems, conveyor systems, systems of mining, ventilation systems, gas management systems and mine water management systems
- stores systems
- roadway maintenance and drilling
- protection systems
- reticulation systems
- specifications for fixed plant and infrastructure
- audit processes

**MNC.U146.A ESTABLISH MINE FIXED PLANT AND INFRASTRUCTURE SYSTEMS**

**5. Underpinning Knowledge (continued):** A knowledge of:

- mine design principles and procedures relating to fixed plant and infrastructure systems
- power sources including electrical, hydraulic, compressed air and diesel
- computer based systems
- training programs
- fire fighting systems and precaution rules
- safety design features for maintenance of fixed plant and infrastructure
- maintenance surveys

**6. Underpinning Skills.** The ability to:

- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- apply the principles of mine design
- assess the risks and consequences attached to fixed plant and infrastructure systems and equipment
- develop procedures appropriate to mine operations for management of fixed plant and infrastructure systems and equipment
- plan and coordinate work
- identify training needs related to fixed plant and infrastructure systems
- interpret manufacturers' instructions
- conduct maintenance survey.

**MNC.U146.A ESTABLISH MINE FIXED PLANT AND INFRASTRUCTURE SYSTEMS**

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	3
Communicating ideas and information.	2
Planning and organising activities.	3
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2

**MNC.U147.A IMPLEMENT MINE FIXED PLANT AND INFRASTRUCTURE SYSTEMS**

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor: This unit covers the routine operational management functions required to implement and maintain mine fixed plant and infrastructure.**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U147.1 Plan and Prepare for the Implementation of Mine Fixed Plant and Infrastructure Systems</p>	<p>U147.1.1 The legislative, statutory and site requirements related to fixed plant and infrastructure are identified and interpreted.</p> <p>U147.1.2 The requirements of fixed plant, equipment and infrastructure are identified in accordance with mine design and system of mining.</p> <p>U147.1.3 Site requirements for the implementation of fixed plant and infrastructure are identified and recorded.</p> <p>U147.1.4 The specification for the required fixed plant and equipment is identified and interpreted.</p> <p>U147.1.5 Roles and responsibilities are identified, clarified and communicated.</p> <p>U147.1.6 The program to satisfy identified fixed plant and infrastructure training requirements is implemented.</p> <p>U147.1.7 Safe operating procedures are assessed and interpreted.</p>

<p>U147.2 Implement Installation and Commissioning Procedures for Fixed Plant and Infrastructure</p>	<p>U147.2.1 Hazards associated with the installation of fixed plant and infrastructure are identified and risks evaluated and responded to in accordance with established procedures.</p> <p>U147.2.2 New and existing fixed plant and infrastructure and processes are integrated to achieve optimum performance.</p> <p>U147.2.3 Safe operating procedures are implemented.</p> <p>U147.2.4 Fixed plant and infrastructure installation and commissioning procedures are implemented.</p> <p>U147.2.5 Fixed plant and infrastructure are transported and delivered/installed at the work site in accordance with manufacturers' instructions and site procedures.</p>
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**MNC.U147.A      IMPLEMENT MINE FIXED PLANT AND INFRASTRUCTURE SYSTEMS**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U147.2 Implement Installation and Commissioning Procedures for Fixed Plant and Infrastructure (continued)</p>	<p>U147.2.6 Fixed plant and infrastructure systems are commissioned in accordance with manufacturers' instructions and site procedures.</p> <p>U147.2.7 Systems are modified to satisfy required changes arising from the commissioning process.</p> <p>U147.2.8 Emergency response and evacuation plans and procedures are implemented in accordance with site requirements.</p>
<p>U147.3 Implement Systems for the Operation and Maintenance of Fixed Plant and Infrastructure</p>	<p>U147.3.1 Operational procedures for fixed plant and infrastructure are implemented according to site requirements.</p> <p>U147.3.2 Maintenance procedures for fixed plant and infrastructure are implemented according to manufacturers' and site requirements.</p> <p>U147.3.3 Procedures for reviewing and modifying work processes are implemented and applied.</p>
<p>U147.4 Implement Systems for Audit and Review of Fixed Plant and Infrastructure</p>	<p>U147.4.1 Fixed plant and infrastructure standards are audited for compliance with statutory and site requirements.</p> <p>U147.4.2 Fixed plant and infrastructure maintenance standards are audited for currency and compliance with statutory and site requirements.</p> <p>U147.4.3 Fixed plant and infrastructure are audited for compliance with site standards.</p> <p>U147.4.4 Reporting and recording systems for fixed plant and equipment and infrastructure are audited for compliance with statutory and site requirements.</p> <p>U147.4.5 The training program is audited for currency, relevance and compliance with site requirements.</p> <p>U147.4.6 Emergency response and evacuation plans and procedures are audited for compliance with site requirements.</p>



## MNC.U147.A IMPLEMENT MINE FIXED PLANT AND INFRASTRUCTURE SYSTEMS

### **Definitions:**

For the purposes of this standard, the definition below applies:

- Audit is the process by which the validation of procedures, processes and systems are assured.
- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

### **Range of Variables:**

1. Infrastructure may include, but is not limited to, fabrication and construction areas, servicing areas, refuelling points, workshops, dams, explosives magazines, training facility, bathrooms, HV switch rooms, lamp cabin, laboratory, storehouses, equipment storage areas, on site residential housing, site access (road, rail, air), battery rooms, water treatment plant, sewerage treatment plant, offices, emergency facilities (first aid, fire and rescue), coal preparation plant, stockpile and coal load out.
2. Fixed plant and equipment, may include but not be limited to, lathes, presses, gantry cranes, drills, grinders, service bays, testing rooms, process treatment plant, drive heads, pumps and stations, pipelines, ventilation fans, compressors, winders, haulage winches, battery chargers, air conditioning, generators, electrical switching / control / distribution equipment and gas plant.
3. Safety systems may include, but not be limited to, legislation (legal requirements), location, site layout, purpose, environmental control (spontaneous combustion, gas, noise, water, heat, dust), protection systems (guarding, fire protection and suppression, electricity, lightning arresters, ventilation in explosives magazines and earthing).
4. Reporting and recording systems include site requirements and consist of phones, radios, computer systems, verbal and written.
5. Safety information and standards may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of practice, manufacturers' instructions, standard working or job procedures (or equivalents), codes of practice and industry guidelines.

6. Site documentation and training policy may include, but not be limited to, statutory and legislative requirements, management plans and procedures.
7. Specifications may include, but not be limited to, performance requirements, costs, dimensions, capacity, OH&S requirements, training requirements and key selection criteria.

## **MNC.U147.A    IMPLEMENT MINE FIXED PLANT AND INFRASTRUCTURE SYSTEMS**

### **Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on fixed plant and equipment and infrastructure.
- c. conducting a risk assessment to identify fixed plant and equipment and infrastructure hazards and risks
- d. contributing to evaluating and selecting fixed plant, equipment and infrastructure systems
- e. defining roles and responsibilities for management of fixed plant and equipment and infrastructure
- f. implementing the training program
- g. reviewing and auditing the effectiveness of the fixed plant and infrastructure systems
- h. implementing statutory inspections and reporting
- i. developing / modifying work systems and procedures
- j. implementing emergency response and evacuation plans and procedures

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge.** **A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to perform the routine operational management required to implement and maintain fixed plant and infrastructure systems.**

- legislative, statutory, Australian standards and site specific requirements for plant and infrastructure including, but not limited to, mine plan, electrical rules, electrical / mechanical equipment, communications, emergency procedures, risk management, recording and reporting, mines rescue, OH&S, manufacturers' instructions, standard work procedures, training, fire fighting, handling and storage of dangerous goods, local government requirement and local power authority

- mine operation systems and procedures including transport systems, conveyor systems, systems of mining, ventilation system(s), gas management systems and mine water management systems
- stores systems
- roadway maintenance and drilling
- protection systems
- reticulation systems
- specifications for fixed plant and infrastructure
- audit processes
- mine design principles and procedures relating to fixed plant and infrastructure systems
- power sources including electrical, hydraulic, pneumatic and diesel
- computer based systems
- training programs
- fire fighting systems and precaution rules
- safety design features for maintenance of fixed plant and infrastructure
- maintenance surveys

## MNC.U147.A IMPLEMENT MINE FIXED PLANT AND INFRASTRUCTURE SYSTEMS

### 6. Underpinning Skills. The ability to:

- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- assess the risks and consequences attached to fixed plant and infrastructure systems and equipment
- develop procedures appropriate to mine operations for management of fixed plant and infrastructure systems and equipment
- plan and coordinate work
- identify training needs related to fixed plant and infrastructure systems
- interpret manufacturers' instructions
- conduct maintenance survey.

### 7. Key Competencies

#### Level

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	2

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MNC.U148.A APPLY AND MONITOR FIXED PLANT AND  
INFRASTRUCTURE

**NATIONAL MINING ITAB**

**BLACK COAL: UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:** This unit covers the routine management functions required to apply and monitor safe mine fixed plant and infrastructure systems.

<u>Elements</u>	<u>Performance Criteria</u>
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<p>U148.1 Plan and Prepare for the Operation and Maintenance of Fixed Plant and Infrastructure Systems</p>	<p>U148.1.1 The legislative, statutory and site requirements fixed plant and infrastructure systems are identified and interpreted.</p> <p>U148.1.2 The purpose of fixed plant and infrastructure systems and equipment are identified and confirmed.</p> <p>U148.1.3 Hazards associated with the installation and operation requirements of fixed plant and infrastructure equipment are identified, risks evaluated and controls applied.</p> <p>U148.1.4 Standard operating procedures are accessed, interpreted and applied.</p> <p>U148.1.5 Individual training needs are identified and satisfied through accessing the established program and systems.</p>
<p>U148.2 Apply and Monitor Systems for the Operation and Maintenance Fixed Plant and Infrastructure Systems</p>	<p>U148.2.1 The impacts of equipment and systems on work processes are assessed and processes reviewed, recorded and reported to meet equipment and mine requirements.</p> <p>U148.2.2 Operational and maintenance programs and procedures are applied according to site maintenance requirements.</p> <p>U148.2.3 Procedures for reviewing and modifying work processes are applied and monitored.</p> <p>U148.2.4 Standard operating procedures are applied and monitored throughout the work and reported, where appropriate, in accordance with site requirements.</p> <p>U148.2.5 Emergency response and evacuation plans and procedures are applied and monitored in accordance with site requirements.</p> <p>U148.2.6 Systems audit and review requirements are contributed to in accordance with site and legislative requirements.</p>



<p>U148.3 Apply Systems Maintenance Procedures</p>	<p>U148.3.1 Inspections, repair and maintenance activities are scheduled and carried out in accordance with site requirements.</p> <p>U148.3.2 Maintenance requirements and activities are recorded, reported and monitored in accordance with site requirements.</p>
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**Definitions:**

For the purposes of this standard, the definition below applies:

- Audit is the process by which the validation of procedures, processes and systems are assured.
- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Standard operating procedures (SOP) are also known as safe working procedures, safe operating procedures and standard working procedures.

**Range of Variables:**

1. Infrastructure may include, but is not limited to, fabrication and construction areas, servicing areas, refuelling points, workshops, dams, explosives magazines, training facility, bathrooms, HV switch rooms, lamp cabin, laboratory, storehouses, equipment storage areas, on site residential housing, site access (road, rail, air), battery rooms, water treatment plant, sewerage treatment plant, offices, emergency facilities (first aid, fire and rescue), coal preparation plant, stockpile and coal load out.
2. Fixed plant and equipment, may include but not be limited to, lathes, presses, gantry cranes, drills, grinders, service bays, testing rooms, process treatment plant, drive heads, pumps and stations, pipelines, ventilation fans, compressors, winders, haulage winches, battery chargers, air conditioning, generators, electrical switching / control / distribution equipment and gas plant.
3. Safety systems may include, but not be limited to, legislation (legal requirements), location, site layout, purpose, environmental control (spontaneous combustion, gas, noise, water, heat, dust), protection systems (guarding, fire protection and suppression, electricity, lightning arresters, ventilation in explosives magazines and earthing).
4. Reporting and recording systems include site requirements and consist of phones, radios, computer systems, verbal and written.
5. Safety information and standards may be contained in legislation and regulations, relevant Australian standards, management plans, manager's rules, OH&S policy, codes of

practice, manufacturers' instructions, standard working or job procedures (or equivalents), codes of practice and industry guidelines.

6. Site documentation and training policy may include, but not be limited to, statutory and legislative requirements, management plans and procedures.
7. Specifications may include, but not be limited to, performance requirements, costs, dimensions, capacity, OH&S requirements, training requirements and key selection criteria.

## Evidence Guide

1. **Context of Assessment.** Competency should be assessed in the work environment over a period of time which permits the effectiveness of application to be evaluated.

2. **Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

3. **Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
  - a. applying personal and operational safety procedures
  - b. interpreting and communicating information on fixed plant and infrastructure systems operations
  - c. contributing to a risk assessment to identify fixed plant and infrastructure hazards and risks
  - d. monitoring and reporting on fixed plant and infrastructure operations
  - e. applying and monitoring maintenance programs
  - f. applying roles and responsibilities for management of fixed plant and infrastructure systems
  - g. identifying training needs for personnel in relation to fixed plant and infrastructure
  - h. conducting and reporting on statutory inspections.
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
5. **Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to apply and monitor fixed plant and infrastructure systems.**
  - statutory, Australian standards and site specific requirements for plant and infrastructure including, but not limited to, mine plan, electrical rules, electrical / mechanical equipment, communications, emergency procedures, risk management, recording and reporting, mines rescue, OH&S, manufacturers' instructions, standard work procedures, training, fire fighting, handling and storage of dangerous goods, local government requirement and local power authority
  - mine operation systems and procedures including transport systems, conveyor systems, systems of mining, ventilation system(s), gas management systems and mine water management systems

- stores systems
- roadway maintenance and drilling
- protection systems
- reticulation systems
- specifications for fixed plant and infrastructure
- audit processes
- mine design principles and procedures relating to fixed plant and infrastructure systems
- power sources including electrical, hydraulic, compressed air and diesel
- computer based systems
- training programs
- fire fighting systems
- safety design features for maintenance of fixed plant and infrastructure
- maintenance surveys

**6. Underpinning Skills.** The ability to:

- access, interpret and apply:
  - technical information
  - site/legislative requirements
  - records and reports
  - briefings and handover details
- assess the risks and consequences attached to fixed plant and infrastructure systems and equipment
- apply procedures appropriate to mine operations for management of fixed plant and infrastructure systems and equipment
- plan and coordinate work
- identify training needs related to fixed plant and infrastructure systems
- interpret and apply manufacturers' instructions
- conduct maintenance survey.

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

# MNC.U151.A ESTABLISH EMERGENCY PREPAREDNESS AND RESPONSE SYSTEMS

## NATIONAL MINING ITAB

### BLACK COAL: UNDERGROUND COMPETENCY STANDARDS

**Descriptor:** This Unit covers the strategic management functions required to develop and establish the mine emergency preparedness and response systems.

<u>Elements</u>	<u>Performance Criteria</u>
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<p>U151.1 Establish mine emergency preparedness and response systems</p>	<p>U151.1.1 The legislative, statutory and site requirements related to mine emergency preparedness and response systems are accessed, interpreted and clarified.</p> <p>U151.1.2 The requirements for and purpose of mine emergency preparedness and response systems are identified in accordance with legislative and site requirements</p> <p>U151.1.3 The emergency preparedness plan is designed and developed from an analysis of all relevant technical and operational information.</p> <p>U151.1.4 An organisational structure for the management of emergency preparedness and response is designed and developed from an analysis of all relevant technical and operational information.</p> <p>U151.1.5 Emergency response procedures for management of classes of incident is developed from an analysis of all relevant technical and operational information.</p> <p>U151.1.6 Emergency response procedures for management of decision making processes and decision monitoring systems are established</p> <p>U151.1.7 The plan is reviewed with relevant stakeholders and specialists.</p> <p>U151.1.8 A program, including systems and procedures, to satisfy identified mine emergency preparedness and response training requirements is established.</p> <p>U151.1.9 Procedures to audit and review mine emergency preparedness and response compliance with statutory and site requirements are established.</p> <p>U151.1.10 Procedures for incorporating feedback into the audit/review system is established.</p>
<p>U151.2 Establish Mine Emergency Facilities, Equipment and Personnel</p>	<p>U151.2.1 Incident information receipt and recording systems are established in accordance with statutory and site requirements.</p> <p>U151.2.2 Emergency response and evacuation plans and procedures are established in accordance with statutory and site requirements.</p>



# MNC.U151.A ESTABLISH EMERGENCY PREPAREDNESS AND RESPONSE SYSTEMS

<u>Elements</u>	<u>Performance Criteria</u>
<p>U151.2 Establish Mine Emergency Facilities, Equipment and Personnel (Continued)</p>	<p>U151.2.3 Operations facilities, including communications to support them, are established in accordance with the emergency plan</p>
	<p>U151.2.4 Action planning processes to manage the situation/incident are developed in accordance with the emergency plan.</p>
	<p>U151.2.5 Required services, personnel, equipment and resources for types of incidents are identified in accordance with the emergency plan</p>
	<p>U151.2.6 Documentation and reporting requirements are determined and established in accordance with statutory and site requirements.</p>
<p>U151.3 Establish Post-Incident Management Procedures</p>	<p>U151.3.1 Plans to manage post-incident actions are established in accordance with statutory and site requirements.</p>
	<p>U151.3.2 Processes to investigate nature and cause of situation/incident are determined and established in accordance with statutory and site requirements.</p>
	<p>U151.3.3 Processes to evaluate the effectiveness of emergency response and action plans to achieve objectives are determined and established in accordance with statutory and site requirements.</p>

<p>U151.4 Audit And Review The Emergency Preparedness And Response Plan</p>	<p>U151.4.1 Emergency preparedness and response monitoring systems are audited for compliance with statutory and management plan standards.</p> <p>U151.4.2 Emergency preparedness and response processes are audited for compliance with statutory and mine site requirements.</p> <p>U151.4.3 Recording systems are audited for compliance with the emergency preparedness and response plan.</p> <p>U151.4.4 Emergency preparedness and response maintenance program and procedures are implemented in accordance with management plan and are effective.</p> <p>U151.4.5 Emergency preparedness and response training program is audited for currency, relevance and compliance with the requirements of the emergency preparedness and response plan.</p> <p>U151.4.6 Instances of non-compliance or other discrepancies / deficiencies revealed by audit are responded to promptly and the emergency preparedness and response plan is modified accordingly.</p>
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# MNC.U151.A ESTABLISH EMERGENCY PREPAREDNESS AND RESPONSE SYSTEMS

<u>Elements</u>	<u>Performance Criteria</u>
U151.5	<p>U151.5.1 The legislative, statutory and site requirements related to emergency preparedness and response management are identified and interpreted.</p> <p>U151.5.2 The emergency preparedness and response plans are accessed, interpreted and clarified.</p> <p>U151.5.3 Roles and responsibilities, as specified in the emergency preparedness and response plans, are identified, clarified and communicated to all persons.</p> <p>U151.5.4 Resources required for the implementation of the emergency preparedness and response plans are identified, forecast, obtained and allocated / scheduled.</p> <p>U151.5.5 The emergency preparedness and response training program is implemented.</p> <p>U151.5.6 Suggestions and recommendations for changes to emergency preparedness and response implementation procedures are encouraged, received, reviewed and, where appropriate, implemented.</p>

## **Definitions:**

For the purposes of this standard, the definition below applies:

- Audit is the process by which the validation of procedures, processes and systems are assured.
- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.

- Standard operating procedures are also known as safe working procedures, safe operating procedures, job safety analysis and standard working procedures.
- Post-incident management is the control of activities arising from an incident and can include: legal advice, environmental aspects, critical incident stress debriefing, interviewing, investigations, witness interview statements, restoration of normal operations, media releases, public relations, employee welfare and family support, security of evidence, liaison with statutory/legal bodies, statutory investigations, review of emergency procedures, documentation of ongoing operations, restoration of emergency preparedness.

# MNC.U151.A ESTABLISH EMERGENCY PREPAREDNESS AND RESPONSE SYSTEMS

## **Range of Variables:**

1. Types of incident can be identified as, but not limited to: minor accident, major accident or fatality, underground explosion or fire, ignition, outburst; spontaneous combustion, surface fire which disrupts operations, environmental incidents, bomb threat, terrorist attack..
2. Incidents can be caused by, but are not limited to: explosion, fire, roof fall, strata, inrush, outburst, irrespirable atmosphere, environmental incident, hazchem; explosives, vehicle accidents, wall collapse.
3. Stakeholders can include, but are not limited to: shareholders, board of directors, employees, unions, families, contractors, insurance companies, suppliers, local community, manufacturers, Inspectorate, Joint Coal Board, police, Mines Rescue Service, fire brigades, ambulance, medical staff, hospitals; critical incident stress debriefing organisations, local emergency management organisations, salvation army, clergy, state, federal and local government.
4. Required services and resources can include, but are not limited to: internal mine services and resources, contractors, insurance companies, suppliers, local community, manufacturers, inspectorate, Joint Coal Board, police, Mines Rescue Service, fire brigades, ambulance, medical staff, hospitals, critical incident stress debriefing organisations, local emergency management organisations, salvation army, clergy, state, federal and local government, media, coroner's representative, security services, solicitors, district check inspector, other mines, experts such as engineers, scientists, inertisation, down-hole camera, drill rigs, forensic.
5. Communications can include radio, telephone, telemetry, verbal, written, computers, runners.
6. Equipment refers to that needed to control the incident and includes but is not restricted to rescue equipment, mining equipment, transport, specialised equipment from external sources, monitoring and analysis equipment.
7. Media can include radio, print media, television.
8. Operations facilities are those which are set up to manage an incident and can include, but are not restricted to operations centre, press room, mortuary, muster areas, meeting rooms, communications centres and networks.
9. Future operations can include, but are not restricted to sealing mine areas, restoration to full production, suspension of operations, full closure of mine.

## **Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work or simulated work environment over a period of time which permits the effectiveness of application to be evaluated.

### **2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. emergency preparedness planning for underground coal mines.
- b. development of emergency response procedures for management of different classes of incident.
- c. the roles of stakeholders and specialists at incidents
- d. the structure and roles of on-site functions and personnel.

# MNC.U151.A ESTABLISH EMERGENCY PREPAREDNESS AND RESPONSE SYSTEMS

3. **Critical Aspects of Evidence. (contd)**
  - e. information gathering, analysis and communication
  - f. action plan development and evaluation.
  - g. establishment of incident operations facilities.
  - h. incident management planning
  - i. post-incident management planning
  - a. auditing and reviewing emergency preparedness and response plans
  - b. establishing the training component of the emergency preparedness and response plan
  
4. **Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
  
5. **Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to establish mine emergency preparedness and response systems**
  - mines rescue guidelines.
  - emergency response and disaster planning processes and techniques
  - audit review process and techniques
  - incident resources and how to access them.
  - legislation applicable to mines.
  - training and assessment principles.
  - industry and legislative stakeholders.
  - mine-type incidents and risks.
  - structure of emergency procedures guidelines.
  - legal requirements of incident management teams.
  - hazard identification.
  - self-escape philosophies, systems and equipment.
  - the techniques and equipment used for collecting and analysing atmospheric conditions.
  - risk management principles and techniques.
  - classification of types of incidents.
  - decision making processes
  - legislative requirements.
  - structure of emergency organisations.
  - structure, roles , capabilities and operational limitations of external resources and agencies used during mines incidents.
  - rescue team structure, procedures and equipment, and standby team requirements.

- effects of heat and humidity.
- effects of visibility.
- escape strategies and technology.
- environmental risks and controls.
- media policies and procedures.
- equipment required for different types of emergency.
- ventilation and its influence on incidents, and decisions to be made.
- deployment of staff underground.
- call-out procedures.
- emotional effects of emergencies on rescuers and mine personnel.
- titles and roles of members of incident management team.
- services and agencies available to assist in an emergency.
- intervention and control techniques for heating, fires, explosions. outburst, extrication or inrushes.
- the requirements and structure for fresh air base.
- support services role and access.
- legislation regarding resumption of normal operations.



# MNC.U151.A ESTABLISH EMERGENCY PREPAREDNESS AND RESPONSE SYSTEMS

## **Underpinning Knowledge. (Continued)**

- legal implications of incidents.
- the role of stakeholders.
- numbers needed to run the mine at planned operational levels.
- equipment handling.
- economic considerations and decisions.
- insurance policies and considerations.
- mine closure procedures and the legislative implications.
- sealing procedures and the legislative implications.

## **6. Underpinning Skills.** The ability to:

- formulate and develop emergency preparedness plans.
- read and interpret mine plans.
- assess hazards and associated risks.
- evaluate systems and equipment.
- write reports
- identify or establish mine-site facilities for incident management.
- access and use mine-site information and recording systems.
- communicate effectively with people personally or through technical devices during incidents.
- organise personnel and resources.
- handle members of the media.
- develop action plans.
- analyse information.
- make effective decisions.
- participate as team member.
- facilitate groups to work together.
- brainstorm to collect maximum information.
- effectively question .
- effectively interview.
- carry out fault-tree analyses.
- delegate responsibility and tasks.

## **7. Key Competencies**

## **Level**

Collecting, analysing and organising ideas and

2

information.	2
Communicating ideas and information.	2
Planning and organising activities.	3
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

**MNC.U152.A IMPLEMENT MINE EMERGENCY PREPAREDNESS AND RESPONSE PLANS**

**NATIONAL MINING ITAB**

**BLACK COAL : UNDERGROUND COMPETENCY STANDARDS**

**Descriptor: This unit covers the operational management required to implement the mine emergency preparedness and response plans.**

<u>Elements</u>	<u>Performance Criteria</u>
U152.1	<p>U152.1.1 The legislative, statutory and site requirements related to emergency preparedness and response management are identified and interpreted.</p> <p>U152.1.2 The emergency preparedness and response plans are accessed, interpreted and clarified.</p> <p>U152.1.3 Roles and responsibilities, as specified in the emergency preparedness and response plans, are identified, clarified and communicated to all persons.</p> <p>U152.1.4 Resources required for the implementation of the emergency preparedness and response plans are identified, forecast, obtained and allocated / scheduled.</p> <p>U152.1.5 The emergency preparedness and response training program is implemented.</p> <p>U152.1.6 Suggestions and recommendations for changes to emergency preparedness and response implementation procedures are encouraged, received, reviewed and, where appropriate, implemented.</p>
U152.2 Implement The Emergency Preparedness And Response Plans	<p>U152.2.1 Incident information is received and communicated in accordance with the emergency preparedness and response plans</p> <p>U152.2.2 The nature and scope of the incident is assessed and communicated in accordance with the emergency preparedness and response</p>

plans

U152.2.3 Relevant emergency plan is identified and implemented in accordance with the emergency preparedness and response plans

U152.2.4 Emergency response and evacuation plans and procedures are implemented in accordance with the plan

U152.2.5 Procedures for monitoring, recording and reporting on emergency incidents are implemented according to statutory requirements and those of the emergency preparedness and response plan.

**MNC.U152.A IMPLEMENT MINE EMERGENCY PREPAREDNESS AND RESPONSE PLANS**

<u>Elements</u>	<u>Performance Criteria</u>
<p>U152.2 Implement The Emergency Preparedness And Response Plans (Continued)</p>	<p>U152.2.6 Procedures for the collection and analysis of emergency preparedness and response data are implemented.</p> <p>U152.2.7 Action plans to manage the situation/incident are developed and contributed to in accordance with the emergency plan.</p> <p>U152.2.8 Action plans are implemented in accordance with the emergency plan.</p> <p>U152.2.9 Required services, personnel, equipment and resources are deployed to meet action plan.</p> <p>U152.2.10 Effectiveness of action plan to achieve required outcomes is assessed and communicated in accordance with the emergency plan.</p> <p>U152.2.11 Incident information is communicated in accordance with the emergency plan.</p>
<p>U152.3 Implement Post-Incident Management Procedures</p>	<p>U152.3.1 Plans to manage post-incident actions are contributed to in accordance with statutory and site requirements.</p> <p>U152.3.2 Post-incident action plans are implemented in accordance with the emergency plan..</p> <p>U152.3.3 Investigations into the nature and cause of the situation/incident are contributed to and relevant reports are submitted in accordance with the emergency plan..</p>
<p>U152.4 Audit the Emergency Preparedness And Response Plans</p>	<p>U152.4.1 Emergency preparedness and response systems and procedures are audited for compliance with statutory and emergency preparedness and response plans requirements</p> <p>U152.4.2 Emergency preparedness and response communication and recording systems are audited for compliance with statutory and emergency preparedness and response plans</p>

requirements

U152.4.3 Emergency preparedness and response training program is audited for currency, relevance and compliance with emergency preparedness and response plans

## **MNC.U152.A IMPLEMENT MINE EMERGENCY PREPAREDNESS AND RESPONSE PLANS**

### **Definitions:**

For the purposes of this standard, the definition below applies:

- Audit is the process by which the validation of procedures, processes and systems are assured.
- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Standard operating procedures are also known as safe working procedures, safe operating procedures, job safety analysis and standard working procedures.
- Post-incident management is the control of activities arising from an incident and can include: legal advice, environmental aspects, CISD, interviewing, investigations, witness interview statements, restoration of normal operations, media releases, public relations, employee welfare and family support, security of evidence, liaison with statutory/legal bodies, statutory investigations, review of emergency procedures, documentation of ongoing operations, restoration of emergency preparedness.
- 

### **Range of Variables:**

1. Types of incident can be identified as, but not limited to: minor accident, major accident or fatality, underground explosion or fire, ignition, outburst; spontaneous combustion, surface fire which disrupts operations, environmental incidents, bomb threat, terrorist attack..
2. Incidents can be caused by, but are not limited to: explosion, fire, roof fall, strata, inrush, outburst, irrespirable atmosphere, environmental incident, hazchem; explosives, vehicle accidents, wall collapse.
3. Stakeholders can include, but are not limited to: shareholders, board of directors, employees, unions, families, contractors, insurance companies, suppliers, local community, manufacturers, Inspectorate, Joint Coal Board, police, Mines Rescue Service, fire brigades, ambulance, medical staff, hospitals; critical incident stress debriefing organisations, local emergency management organisations, salvation army, clergy, state, federal and local government.
4. Required services and resources can include, but are not limited to: internal mine services and resources, contractors, insurance companies, suppliers, local community, manufacturers, inspectorate, Joint Coal Board, police, Mines Rescue Service, fire brigades, ambulance, medical staff, hospitals, critical incident stress debriefing organisations, local emergency management organisations, salvation army, clergy, state, federal and local government, media, coroner's representative, security services, solicitors, district check inspector, other mines,

experts such as engineers, scientists, inertisation, down-hole camera, drill rigs, forensic.

5. Communications can include radio, telephone, telemetry, verbal, written, computers, runners.
6. Equipment refers to that needed to control the incident and includes but is not restricted to rescue equipment, mining equipment, transport, specialised equipment from external sources, monitoring and analysis equipment.
7. Media can include radio, print media, television.
8. Operations facilities are those which are set up to manage an incident and can include, but are not restricted to operations centre, press room, mortuary, muster areas, meeting rooms, communications centres and networks.
9. Future operations can include, but are not restricted to sealing mine areas, restoration to full production, suspension of operations, full closure of mine.



## **MNC.U152.A IMPLEMENT MINE EMERGENCY PREPAREDNESS AND RESPONSE PLANS**

### **Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work or simulated work environment over a period of time which permits the effectiveness of application to be evaluated.

### **2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

**3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:

- a. applying personal and operational safety procedures
- b. interpreting and communicating information on implementing emergency preparedness and response plans.
- c. identifying and responding to risks and hazards
- d. interpreting the contents of mine emergency preparedness and response plans.
- e. implementing and communicating emergency preparedness and response procedures
- f. responding to incidents
- g. interpreting changes to mine emergency preparedness and response systems
- h. implementing changes to mine emergency preparedness and response system
- i. reviewing emergency preparedness and response plans performance
- j. auditing emergency preparedness and response systems performance
- k. implementing and auditing emergency preparedness and response training programs

**4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.

**5. Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to implement mine emergency preparedness and response systems**

- legislative and statutory requirements for emergency preparedness and response systems
- legislation applicable to mines.
- mines rescue guidelines.
- emergency response planning processes and techniques
- audit review process and techniques

- training and assessment principles.
- industry and legislative stakeholders.
- mine incidents and risks
- classification of incidents.
- structure of emergency procedures guidelines.
- legal requirements of incident management teams.
- hazard identification.
- self-escape philosophies, systems and equipment.
- risk management principles and techniques.
- structure of emergency organisations
- structure, roles, capabilities and limitations of external services and agencies relevant to emergency preparedness and response
- rescue team structure, procedures and equipment.

## **MNC.U152.A IMPLEMENT MINE EMERGENCY PREPAREDNESS AND RESPONSE PLANS**

### **Underpinning Knowledge. (Continued)**

- standby team requirements
- intervention and control techniques for heating, fires, explosions, outburst, extrication or inrushes
- the effects of heat and humidity.
- the effects of visibility.
- escape strategies and technology.
- environmental risks and controls.
- equipment requirements for different types of emergency.
- ventilation and its influence on incidents
- deployment of staff underground.
- call-out procedures.
- emotional effects of emergencies on rescuers and mine personnel.
- titles and roles of members of incident management team.
- the requirements and structure for fresh air base.
- legal implications of incidents.
- the role of stakeholders.
- numbers needed to run the mine at planned operational levels.
- equipment handling.
- economic considerations and decisions.
- insurance policies and considerations.
- mine closure procedures and the legislative implications.
- sealing procedures and the legislative implications.

### **6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information relevant to emergency preparedness and response

- access and analyse emergency preparedness and response information related to the mine
- interpret and apply design criteria for emergency preparedness and response systems and plans
- collect, collate and interpret incident/emergency data
- carry out fault-tree analyses.
- conduct enquiries / investigations and prepare reports
- communicate effectively in the workplace
- access, interpret and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- implement the emergency preparedness and response training program
- apply risk management processes and techniques

## **MNC.U152.A IMPLEMENT MINE EMERGENCY PREPAREDNESS AND RESPONSE PLANS**

<b>7. Key Competencies</b>	<b>Level</b>
Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	3
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2
Using technology.	

**NATIONAL MINING ITAB****BLACK COAL : UNDERGROUND COMPETENCY STANDARDS**

**Descriptor:** This unit covers the application and monitoring of the mine emergency preparedness and response plans and systems

<u>Elements</u>	<u>Performance Criteria</u>
U153.1	<p>U153.1.1 The legislative, statutory and site requirements related to emergency preparedness and response plans are identified and interpreted.</p> <p>U153.1.2 The emergency preparedness and response plans are accessed, interpreted and clarified.</p> <p>U153.1.3 Roles and responsibilities, as specified in the emergency preparedness and response plans are identified and clarified.</p> <p>U153.1.4 Work Group and individual responsibilities and tasks are communicated and clarified in an effective and timely manner.</p> <p>U153.1.5 Resources required for the application of the emergency preparedness and response plans are identified, obtained and allocated.</p> <p>U153.1.6 Individual training needs are identified and satisfied through accessing the established emergency preparedness and response training program and systems.</p>
U153.2 Apply The Emergency Preparedness And Response Plans	<p>U153.2.1 Incident information is received and communicated in accordance with the emergency plan.</p> <p>U153.2.2 The nature and scope of the incident is</p>

assessed and communicated in accordance with the emergency plan.

U153.2.3 Emergency response and evacuation plans and procedures are applied and monitored in accordance with the emergency plan

U153.2.4 Procedures for monitoring, recording and reporting on emergency incidents are applied according to the emergency plan.

U153.2.5 Procedures for the collection and analysis of emergency preparedness and response data are applied.

<u>Elements</u>	<u>Performance Criteria</u>
U153.3 Apply Routine Emergency Preparedness And Response Plan Maintenance Procedures	U153.2.6 Action plans to manage the situation/incident are contributed to in accordance with the emergency plan.
	U153.2.7 Action plans are applied and monitored in accordance with the emergency plan.
	U153.2.8 Incident information is communicated in accordance with the emergency plan.
	U153.2.9 Audit and review requirements are contributed to in accordance with the emergency plan.
	U153.3.1 Inspections, repair and maintenance activities are scheduled and carried out in accordance with the emergency preparedness and response plans.
	U153.3.2 Maintenance requirements and activities are recorded, reported and reviewed in accordance with the emergency preparedness and response plans.

**Definitions:**

For the purposes of this standard, the definition below applies:

- Audit is the process by which the validation of procedures, processes and systems are assured.
- Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZ 4360: 1995).
- Hazard is a source of potential harm or a situation with a potential to cause loss.
- Standard operating procedures are also known as safe working procedures, safe operating procedures, job safety analysis and standard working procedures.

- Post-incident management is the control of activities arising from an incident and can include: legal advice, environmental aspects, CISD, interviewing, investigations, witness interview statements, restoration of normal operations, media releases, public relations, employee welfare and family support, security of evidence, liaison with statutory/legal bodies, statutory investigations, review of emergency procedures, documentation of ongoing operations, restoration of emergency preparedness.



**Range of Variables:**

1. Types of incident can be identified as, but not limited to: minor accident, major accident or fatality, underground explosion or fire, ignition, outburst; spontaneous combustion, surface fire which disrupts operations, environmental incidents, bomb threat, terrorist attack..
2. Incidents can be caused by, but are not limited to: explosion, fire, roof fall, strata, inrush, outburst, irrespirable atmosphere, environmental incident, hazchem; explosives, vehicle accidents, wall collapse.
3. Stakeholders can include, but are not limited to: shareholders, board of directors, employees, unions, families, contractors, insurance companies, suppliers, local community, manufacturers, Inspectorate, Joint Coal Board, police, Mines Rescue Service, fire brigades, ambulance, medical staff, hospitals; critical incident stress debriefing organisations, local emergency management organisations, salvation army, clergy, state, federal and local government.
4. Required services and resources can include, but are not limited to: internal mine services and resources, contractors, insurance companies, suppliers, local community, manufacturers, inspectorate, Joint Coal Board, police, Mines Rescue Service, fire brigades, ambulance, medical staff, hospitals, critical incident stress debriefing organisations, local emergency management organisations, salvation army, clergy, state, federal and local government, media, coroner's representative, security services, solicitors, district check inspector, other mines, experts such as engineers, scientists, inertisation, down-hole camera, drill rigs, forensic.
5. Communications can include radio, telephone, telemetry, verbal, written, computers, runners.
6. Equipment refers to that needed to control the incident and includes but is not restricted to rescue equipment, mining equipment, transport, specialised equipment from external sources, monitoring and analysis equipment.
7. Media can include radio, print media, television.
8. Operations facilities are those which are set up to manage an incident and can include, but are not restricted to operations centre, press room, mortuary, muster areas, meeting rooms, communications centres and networks.
9. Future operations can include, but are not restricted to sealing mine areas, restoration to full production, suspension of operations, full closure of mine.

## **Evidence Guide**

**1. Context of Assessment.** Competency should be assessed in the work or simulated work environment over a period of time which permits the effectiveness of application to be evaluated.

**2. Inter-dependent Assessment of Units**

Assessment should include those aspects of the core competencies which are consistent with the work environment of this unit.

- 3. Critical Aspects of Evidence.** The Black Coal Industry has established that, for portability purposes, it is essential that competence in this unit reflects successful assessment in the critical aspects of:
- a. applying personal and operational safety procedures
  - b. interpreting and communicating information on mine emergency preparedness and response plans.
  - c. interpreting risks and hazards
  - d. interpreting the contents of a mine emergency preparedness and response plans.
  - e. applying emergency preparedness and response plans.monitoring, recording and reporting systems
  - f. responding to incidents
  - g. applying the emergency preparedness and response system maintenance program
  - h. interpreting changes to mine emergency preparedness and response plans.
  - i. contributing to the auditing of emergency preparedness and response systems performance
  - j. applying and monitoring the emergency preparedness and response training programs
- 4. Consistency of Performance.** Consistency of performance will, in many cases, be determined in relation to local conditions, to the criticality of the unit in terms of human or fiscal costs / benefits and to other variable factors. Assessment must satisfy the critical aspects expressed in the unit. The dimensions of assessment required to attain and maintain the competency as current, unless established elsewhere by an appropriate authority, should be determined following consideration of the local factors.
- 5. Underpinning Knowledge. A knowledge of the listed topics / disciplines in sufficient scope and depth to enable the candidate to implement mine emergency preparedness and response systems**
- legislative and statutory requirements for emergency preparedness and response systems
  - legislation applicable to mines.
  - mines rescue guidelines.
  - audit review process and techniques
  - training and assessment principles.
  - mine incidents and risks
  - classification of incidents.
  - structure of emergency procedures guidelines.
  - legal requirements of incident management teams.
  - hazard identification.
  - self-escape philosophies, systems and equipment.
  - risk management principles and techniques.
  - structure of emergency organisations

- rescue team structure, procedures and equipment.
- standby team requirements
- intervention and control techniques for heating, fires, explosions. outburst, extrication or inrushes
- effects of heat and humidity.
- effects of visibility.
- escape strategies and technology.
- environmental risks and controls.
- equipment requirements for different types of emergency.
- ventilation and its influence on incidents
- deployment of staff underground.
- call-out procedures.
- emotional effects of emergencies on rescuers and mine personnel.
- titles and roles of members of incident management team.

**MNC.U153.A                      APPLY AND MONITOR MINE EMERGENCY**  
**PREPAREDNESS AND RESPONSE PLANS**

**5 Underpinning Knowledge (contd)**

- the requirements and structure for fresh air base.
- equipment handling.
- mine closure procedures and the legislative implications.
- sealing procedures and the legislative implications.

**6. Underpinning Skills.** The ability to:

- access, interpret and apply technical information relevant to emergency preparedness and response
- access and interpret emergency preparedness and response information related to the mine
- apply design criteria for emergency preparedness and response systems and plans
- collect, collate and interpret incident/emergency data
- perform basic mathematical calculations
- conduct enquiries / investigations and prepare reports
- communicate effectively in the workplace
- access, interpret and apply data from monitoring systems and equipment
- operate hand held monitoring equipment
- apply risk management processes and techniques
- initiate the emergency preparedness and response training

**7. Key Competencies**

**Level**

Collecting, analysing and organising ideas and information.	2
Communicating ideas and information.	2
Planning and organising activities.	2
Working with others and in teams.	2
Solving problems.	2
Using mathematical ideas and techniques.	2

Using technology.

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