

COAL ASSETS AUSTRALIA

GLENCORE

FATAL HAZARD PROTOCOLS

OPERATIONS AND PROJECTS

Effective: April 2017

Version: 1.0

Owner: GCAA Chief Operating Officer

Doc ID: GCAA-625378177-13287


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COAL


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
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INTRODUCTION

Commitment to SafeCoal

We are absolutely committed to making SafeCoal a reality and this can only be achieved with the combined commitment of every member of our team and other relevant stakeholders.

SafeCoal can only be as effective as the commitment we make to implementing these protocols whilst continuing to be vigilant regarding the health and safety of ourselves and others.

0 BACKGROUND

Background

A review of our recent fatalities, high potential risk incidents (HPRIs) and serious incidents identified the need for an intervention program to eliminate fatalities and improve our health and safety performance. This program is called SafeCoal and one of its main initiatives is to focus on fatal hazards.

As a result of these reviews, a number of fatal hazard protocols (Protocols) have been developed that establish minimum requirements for the management of these hazards consistently across our business. These Protocols also provide a number of additional expectations (Further Considerations) that Operations are to consider as part of their continual improvement and good practice initiatives.

These Protocols have not been developed to replace or override local health and safety legislation, or associated legislation and other external requirements. The content and intent of these Protocols is to provide minimum requirements.

The development team reviewed the catastrophic, significant, and major hazards that were identified in the various Operations' Broad Brush Risk Assessment (BBRAs), the HPRIs, Industry Safety Alerts, and the health and safety legislation that currently exists across the relevant jurisdictions, as well as other relevant information, including good industry practice.

Context

It should be acknowledged that these Protocols may not represent all of the fatal hazards that may exist or be faced by our operations, but the outcomes do focus attention on the hazards that have resulted in recent fatalities and high potential risk incidents.

The other hazards and associated risks are being, or will be, addressed through existing risk management processes, in accordance with GCAA Standard *FIN - Risk Management*.

Scope

These Protocols apply to Glencore Coal Assets Australia (GCAA) managed activities, Operations, sites and facilities, including new acquisitions and exploration, through all phases of projects, construction, demolition, operation to closure, and where applicable, post closure activities.

These Protocols apply to employees, contractors and visitors who may be involved in controlled activities.

Structure of the Protocols

The structure of the Fatal Hazard Protocols includes:

- 1 General Mandatory Requirements (Section 0). These requirements are to be applied to each of the Protocols.
- 2 Individual Fatal Hazard Protocols:
 - a) Intent – provides the intent of the protocol.
 - b) Mandatory Requirements – are to be applied by each Operation, unless it can be clearly demonstrated and agreed that a particular risk does not exist.
 - c) Further Considerations – are to be considered, and if not applied then a justification is to be provided.

Assurance

Assurance activities are to be conducted as detailed in GCAA Standard *HSEC – Assurance*.

Operations should be undertaking their own assurance and verification processes from time to time to satisfy themselves that the protocols are being implemented and maintained, and the requirements are being met.

A self-assessment tool is available for Operations to use to internally track and monitor compliance against these Protocols.

Variation to the Protocols

Deviation from any of the mandatory requirements will require formal approval from the General Manager – Health, Safety and Training, and the relevant Operational Director.

Δ0 BACKGROUND *Continued*

General Mandatory Requirements

All employees and contractors are to be fully aware of the specific fatal hazards in their direct workplaces and be trained and competent to manage the risks associated with these hazards. To achieve this:

- ▶ Operating and project teams at each Operation (eg longwall, development, pre-strip, drill and blast, CHPP, maintenance and projects) are to identify their respective fatal hazards.
- ▶ A risk management approach is to be undertaken so that robust control mechanisms (hard barriers, systems and procedures) are in place;
- ▶ All employees and contractors are to be trained in understanding fatal hazards and their controls.
- ▶ All employees and contractors are to understand their role in controlling the fatal hazards to protect themselves and their fellow workers.
- ▶ Managers and supervisors are to have the control of fatal hazards as part of their job description.
- ▶ The Field Visible Safety Leadership Program is to be implemented at each site. Refer to GCAA Standard *HSEC - Leadership, Culture and Accountability*.

In achieving this, Operations and projects are required to implement and maintain the requirements of these Protocols into their operational HSEC management systems.

This should follow the Plan, Do, Check, Act Process:

Plan – Identify and develop processes and controls to meet the requirements of these Protocols, considering relevant legal and other external requirements. This includes:

- ▶ Conducting appropriate documented risk assessments for each of the Protocols.
- ▶ Documenting the outcomes of the risk assessments.
- ▶ Developing a management plan, procedure, system (e.g. permit system) and/or other formal risk control process, as appropriate, that identifies the individual controls and their effectiveness that are adopted to eliminate or manage the risks.

- ▶ Developing a risk prioritised treatment plan.
- ▶ Identifying training needs for relevant employees, contractors, and visitors regarding each of the Protocols.

Do – Develop, implement, and maintain processes, controls, and communication strategies, as appropriate, to meet the requirements of these Protocols. This includes:

- ▶ Implementing and maintaining the management plans, procedures or permit systems.
- ▶ Providing training and refresher training to relevant employees and contractors, as identified in the training needs analysis, refer to GCAA Standard *HSEC - Training*.
- ▶ Assessing the training learning outcomes to verify competence.

Check – Develop, implement, and maintain a monitoring program to measure and review compliance with the Protocols and effectiveness of the controls. This includes:

- ▶ Conducting internal audits, reviews, and/or self assessments to monitor compliance with the Protocols requirements against a predetermined monitoring program.

Act – Analyse outcomes of monitoring programs, including audit outcomes, and identify areas for continual improvement and maintenance of management plans, procedures and permit systems. This includes:

- ▶ Recording outcomes and feedback into the Operation's risk management process, plans, procedures and permit systems.
- ▶ Using the change management process for significant planned and unplanned changes, as detailed in GCAA Standard *HSEC - Change*.
- ▶ Implementing and maintaining documentation in accordance with document control processes, refer to GCAA Standard *HSEC – Documents and Records*.

The importance of effective risk and change management processes, particularly the risk assessment, is fundamental to achieving the desired outcome of the Protocols.

Operations are to consult relevant local legislation, standards, codes and additional external requirements, as appropriate, when implementing the requirements of the Protocol.

Δ1 STRATA FAILURE

Intent

The intent of this Protocol is to eliminate or minimise potential fatalities, injuries and incidents arising from risks related to a strata failure event in an underground and or surface environment.

Mandatory Requirements

1.1 General

- 1.1.1 Geotechnical/geological surveys and analysis of the conditions likely to be encountered including the presence of any faults, dykes and other geological features is to be conducted.
- 1.1.2 The risk assessment is to, as a minimum, give consideration to the following matters:
- a) Mine design, layout and plans;
 - b) Strata failure modes;
 - c) Existing and proposed support systems and design criteria;
 - d) Exposure of personnel to strata failures; and
 - e) Potential windblast conditions/events.
- 1.1.3 A strata failure risk assessment is to be conducted and documented to identify and assess strata-related risks. A Strata Failure Management Plan is to be developed, implemented and maintained to eliminate, or control the risks.
- 1.1.4 The Strata Failure Management Plan is to include the following minimum requirements:
- a) Appropriate factors of safety in the mine and pillar design.
 - b) Inspection, monitoring and surveys including the type and frequency requirements.
 - c) Assessment and mapping of changing geotechnical and/or geological conditions.
 - d) Support rules or surface slope stability rules.
 - e) Trigger Action Response Plans (TARP) that define risk based response to manage or react to changes.
 - f) Rules and/or controls to prohibit personnel from working under unsupported roof and rules to control access when required to work in close proximity to a highwall or other slope stability hazard.



Δ1 STRATA FAILURE

Continued

- g) Identification of training needs of relevant employees and contractors in relation to strata management and failure, and the provision of adequate training and assessment to verify competency.
- 1.1.5 Records are to be maintained of data and calculations used in the development of mine designs and Strata Failure Management Plans.
- 1.1.6 The Strata Failure Management Plan is to be reviewed annually by a third party expert and/or following the reporting and investigation of any significant strata failure event.

1.2 Underground

- 1.2.1 The Underground Strata Failure Management Plan is to include the following requirements:
 - a) Development of controls following the assessment of the stability of roadways and work areas.
 - b) Development of support measures that provide stability including maximum roadway width and minimum dimensions of coal pillars.
 - c) Maximum distance roadways can be advanced before support is installed.
 - d) Additional support required when carrying out work in areas above normal operating height dimensions.
 - e) Adequate controls to manage surface subsidence impacts relating to health and safety of employees, contractors and/or the general public.
 - f) Installation of strata monitoring devices based on risk.
 - g) Frequency and method of testing rock bolts, cables and other support elements for effectiveness.
 - h) Inspections of strata conditions and strata support in:
 - ▶ Active and accessible workplaces.
 - ▶ Shafts, declines, access ramps, airways, escape ways, etc.
 - ▶ Other sections, e.g. workshops, fuelling areas, storage locations, crib rooms, and similar.

1.3 Surface

- 1.3.1 The Surface Strata Failure Management Plan is to include the following requirements:
 - a) Controls to manage the stability of highwalls, low walls, overburden dumps and benches.
 - b) Controls to be established following the assessment of the stability of the ground and materials that are to be stored in stockpiles.
 - c) Provision controls (e.g. berms) so that any falling material will not expose personnel or equipment to undue risk.
 - d) Provision of adequate controls (e.g. berms) to prevent personnel and equipment being exposed to edge failure.
 - e) Controls to manage the impacts of subsidence from augering and underground mining activities.
 - f) Controls to manage the stability of the walls or sides of an excavation or trench.
 - g) Management of railway cuttings which are the responsibility of the operation, including design, maintenance and inspection.

1.4 Further Considerations

- 1.4.1 Where applicable to the Operation, or a risk is identified, consider the use of the following equipment or processes:
 - a) Using real time strata movement detection systems for both underground and open cut mines e.g. radar for monitoring and trending highwall and low wall movements; longwall face pressures for detection of roof weighting events.
 - b) Using benches for surface operations.

Notes:

Application of this Protocol is to be read with the General Mandatory Requirements outlined in Section 0 (Background) of this Fatal Hazard Protocol.

2

FIRE AND EXPLOSION

Intent

The intent of this Protocol is to eliminate or minimise potential fatalities, injuries and incidents arising from risks related to unplanned or uncontrolled fire or explosion.

Mandatory Requirements

2.1 General

- 2.1.1 A fire and explosion related risk assessment is to be conducted and documented to identify the potential hazards and risks. A Fire and Explosion Management Plan is to be developed, implemented and maintained.
- 2.1.2 As a minimum, the risk assessment is to give consideration to:
- Sources of ignition.
 - The presence of combustible material.
 - The presence of explosive gases and atmospheres.
 - The storage of incompatible substances.
- 2.1.3 The Fire and Explosion Management Plan is to, as a minimum, include the following requirements:
- Fire and explosion prevention.
 - Fire and explosion control.
 - Fire fighting equipment, including the availability of an adequate water supply.
 - The Fire and Explosion Management Plan is to reference other applicable related management plans e.g. spontaneous combustion and dust suppression.
- 2.1.4 Installation of fire and explosion detection/monitoring systems commensurate to the fire and explosion related risk in appropriate locations and/or on relevant items of plant and equipment, e.g. heat or smoke detectors, gas detection systems, gas, foam or water deluge systems, explosion suppression systems, hydrants and hoses, portable fire extinguishers, etc.
- 2.1.5 Installation of continuous monitoring systems capable of monitoring the status of the fire and explosion risk.
- 2.1.6 Inspection, testing, calibration and maintenance of fire and explosion detection and monitoring systems in compliance with the manufacturers specifications and the Glenore Coal Guideline *CA HSEC GDL 0018 - Mining Equipment Fire System Guideline*.
- 2.1.7 Permit system or process for use whenever a fire or explosion detection, monitoring or suppression system is off line.
- 2.1.8 Display up-to-date copies of the Fire Fighting Control Plans (i.e. showing the location of fire equipment, hydrants, etc.) in prominent locations, e.g. control rooms, muster areas, crib rooms, supervisor stations, office areas, etc.
- 2.1.9 Register of fire monitoring, detection, suppression, fire fighting and emergency response/rescue equipment.
- 2.1.10 Procedures that clearly define the actions to be taken on discovering a fire or an explosion risk e.g. elevated gas levels.
- 2.1.11
- A hot work permit system whenever personnel are required to conduct hot work outside of a designated hot work area; (refer to GCAA Permit *HSEC – Hot Work (surface)*).
 - A hot work permit is not required in a designated hot work area, except where an area is deemed hazardous (within 15 metres of flammable liquids, vapours, gases, combustible liquids, dusts or fibres, or other flammable or explosive substances are present including equipment with fuel in the tank or exposed hydraulic areas).
- 2.1.12 Where hot work is carried out in a hazardous area (including mobile or fixed plant and structures which meet the definition) it is mandatory that a fire watcher be stationed in the area of the hot work to continuously monitor the job during the hot work for a minimum of 2 hours (and up to 4 hours, dependent upon the risk after task completion). The role of the fire watcher is to continuously monitor for a fire outbreak and is not to be given other duties or leave the location unless replaced. The fire watcher time may be reduced to 30 minutes where a thermographic camera is used to detect presence of heat and that no ignition source remains. Cameras are to be proper-

△2 FIRE AND EXPLOSION *Continued*

ly calibrated, maintained and operated by a competent person.

- 2.1.13 Where an explosion risk is present, the Operational Engineering Management Plan is to contain standards for the purchase, installation, commissioning, use and maintenance of equipment (e.g. flameproof/intrinsically safe electrical equipment and diesel engines).
- 2.1.14 Where there is a risk of spontaneous combustion, frictional ignition or high levels of methane being present, issue specific processes are to be developed, implemented and maintained for each of the hazards.
- 2.1.15 Identification of training needs of relevant employees and contractors in relation to fire and explosion, and the provision of adequate training and assessment to verify competency.
- 2.1.16 Inspection, testing, calibration and maintenance of fire and explosion and detection and monitoring systems in compliance with manufacturer's specifications.
- 2.1.17 Specific competency is to be assessed before working on explosion protected equipment.

2.2 Underground

- 2.2.1 Ignition of gases and coal dust in underground coal mines can be initiated by electrical arcing, lightning, frictional ignition, spontaneous combustion or fire. A documented technical assessment (including sampling and laboratory testing) is to be made for the seam gas content, frictional ignition potential, and spontaneous combustion potential.
- 2.2.2 Where a flammable gas risk exists, the controls are to include:
 - a) A real time gas monitoring system that monitors concentrations of gases in return airways and ventilation splits.
 - b) A tube bundle system for monitoring gas concentrations in sealed or abandoned areas of the mine.
 - c) Setting of threshold levels for the monitoring of gases.
 - d) Appointment of competent persons to monitor and take action when an alarm is triggered.
 - e) Maintenance of a record of alarm events.
 - f) An inspection regime for monitoring gas levels in intake and return airways, sealed areas and work areas.
 - g) Installation of methane monitors on coal cutting machinery and either installed or carried on diesel vehicles operating in hazardous zones.
 - h) Installation of ventilation structures, e.g. stoppings and seals, that are designed and constructed to a standard that is commensurate to the risk potential.
 - i) A Ventilation Management Plan and appropriate procedures to demonstrate that adequate ventilation is provided to remove, dilute and control explosive levels of mine gases.



Δ2 FIRE AND EXPLOSION Continued

- j) Electrical equipment that is designed, approved, installed, used, inspected and maintained to operate safely within a hazardous zone.
- k) The prohibition of smoking, smoking related products, or any non-approved tool or other device capable of creating a spark or flame, which is able to ignite flammable gas.
- 2.2.3 Where a coal dust risk exists, the controls are to include:
- The minimisation of coal dust generated from the cutting, transport and transfer of coal through the use of water suppression and/or scrubber systems and the design of equipment.
 - The removal of accumulations of coal dust.
 - Procedures and methods for the application of stone dust, or another explosion inhibitor, in quantities that will prevent the propagation of an explosion initiated at any location in the mine.
 - The means by which the stone dust, or other explosion inhibitor, is to be applied to surfaces in the return roadways, in close proximity to the working faces, and intake and return roadways.
 - Procedures and methods for the examination, sampling and testing of roadway dust. The methods for sampling are to incorporate a combination of spot and strip samples taken over set frequencies of time depending on location.
- 2.2.4 Where a frictional ignition risk exists, the controls are to include:
- The verification that the drums and picks used on cutting machines are designed to eliminate or minimise the potential of a frictional ignition event.
 - The use of adequate water sprays for suppressing any sparking associated with cutting.
 - An inspection and maintenance program that demonstrates the effectiveness of the water sprays and that the picks and drums are maintained to an appropriate standard.
- d) Ventilation to the cutting area to remove or dilute the accumulation of methane.
- e) Appropriate gas fire extinguishing equipment maintained in close proximity of the face.
- f) Face cutting procedures that minimise the risk of frictional ignition, particularly around the intersection of methane drainage holes.
- g) Roof/rib bolting procedures that minimise the risk of frictional ignition, particularly over-spinning or heat generation in or near the roof/rib.
- 2.2.5 Where a spontaneous combustion risk exists, the controls are to include:
- A real time gas monitoring system that monitors concentrations of gases in return airways and ventilation splits.
 - A tube bundle system for monitoring gas concentrations in sealed or abandoned areas of the mine.
 - The analysis of bag samples using gas chromatograph.
 - Trigger Action Response Plans (TARPs) for indicators of spontaneous combustion.
 - A procedure for managing stowage around a mine.
 - A procedure to manage spontaneous combustion in the relevant areas of the mine, including sealing and inertisation.
- 2.2.6 Where a risk from lightning initiated gas ignition exists, the controls are to include:
- Completion of a lightning risk assessment with the involvement of a subject matter expert.
 - The risk assessment is to consider the following:
 - ▶ The electrical resistivity of the strata at the operation.
 - ▶ Conductive boreholes that enter the workings are to be assessed for location and application.

Δ2 FIRE AND EXPLOSION *Continued*

- c) A Lightning Management Plan is required. As a minimum it is to:
- ▶ Document all possible connection points.
 - ▶ Undertake lightning mitigation studies on mine infrastructure such as conveyors, pipelines, communications cables, power cables that enter the mine via standard portals.
 - ▶ Prohibit shot firing during times of high lightning activity.
 - ▶ Require removal of conductive elements from sealed areas that are longer than 20m.

2.3 Further Considerations

2.3.1 Where applicable to the Operation, or a risk is identified, consider the use of the following equipment or processes:

- a) Installing both fire detection and fire suppression systems (deluge, water, chemical, gas etc.) on major mobile equipment, Motor Control Centres (MCC), electrical sub stations,

transformer compounds, conveyor systems, hazardous goods storage areas, fuel depots, offices and other buildings.

- b) Providing fire and explosion information (e.g. copy of the fire plan, dangerous goods information) at the entrance to the site.
- c) Identifying machine or installation components that could cause a fire or explosion, e.g. turbo chargers, lack of segregation of ignition sources from fuel sources, cables, fuel lines and hydraulic hoses clamped to reduce chaffing and other damage, etc.; and if appropriate modify the equipment to minimise the risk.

Notes:

In the context of fire and explosion, the term 'Fixed Plant' includes buildings, structures and fixed installations, and the term 'Mobile Plant Equipment' includes items of medium and heavy mobile machinery, but excludes dragline buckets, jewellery or dragline boom work.

Application of this Protocol is to be read with the General Mandatory Requirements outlined in Section 0 (Background) of this Fatal Hazards Protocols Document.



3

MOBILE EQUIPMENT

Intent

The intent of this Protocol is to eliminate or minimise potential fatalities, injuries and incidents arising from risks related to mobile plant and equipment.

Mandatory Requirements

3.1 General

- 3.1.1 A risk assessment is to be conducted and documented to identify the risks associated with the interaction of heavy and light vehicles and pedestrians.
- 3.1.2 A Transport/Traffic Management Plan is to be developed, implemented and maintained. As a minimum, it is to include:
- a) Conditions (operational and environmental) under which the mobile plant and equipment may be used.
 - b) That mobile plant and equipment is only to be used within its approved design parameters.
 - c) The design and maintenance of roadways, including minimum dimensions and conditions.
 - d) The maximum loads that may be carried or towed by the mobile plant and equipment, whether by reference to weight, dimensions or other criteria.
 - e) The maximum speeds at which the mobile plant and equipment may operate.
 - f) Steps to be taken by the operators of the mobile plant and equipment to demonstrate that the mobile plant and equipment is safe for use, including brake testing, pre-shift inspection and defect reporting.
 - g) Measures to be taken when people are transported in the mobile plant or equipment, including the segregation of people from loads, the provision of seating, the wearing of seat belts, and the use of other operator restraint devices. Where seat belts or other restraint devices are installed they are to be used.
 - h) The operation of the mobile plant and equipment on roadways where the condition of the roadways may adversely affect safety, e.g. wet roads, steep grades.
 - i) The loading and unloading of the mobile plant and equipment, including the security and stability of the load and the precautions to be taken in the tipping of coal or stone.
 - j) The interaction of heavy and light mobile plant and equipment. An analysis is to be undertaken to determine where light vehicles and heavy mobile plant and equipment can be separated and implement appropriate controls, particularly around workshops and stockpiles.
 - k) Control measures to eliminate and manage the interaction of people from mobile plant and equipment whilst moving including mine work areas, travel roads, workshops and stockpile areas.
 - l) Where mobile plant and equipment is to be left unattended, it is to be left in a fundamentally stable condition e.g. through the use of chocking, ditches, trenches or with wheels turned towards the wall. This is also to be applied to vehicles that are broken down or undergoing maintenance.
 - m) The safe refuelling of the mobile plant and equipment.
 - n) Interaction of mobile plant and equipment with fixed structures, including overhead power lines, buildings, elevated structures, or bins.
 - o) Specific operational procedures involving certain items of mobile plant and equipment, e.g. haul trucks queuing at a loader, continuous miners and shuttle cars, etc.
 - p) Road demarcation and signage.
 - q) The establishment of designated parking areas, to enable light vehicles to be parked in a location, and/or, position that is separated from, and is clearly visible

Δ3**MOBILE EQUIPMENT***Continued*

to, the operators of the heavy mobile plant and equipment.

- r) The wearing of high visibility clothing by persons in operational areas.
- s) The installation of Roll Over Protection System (ROPS) and Falling Object Protection System (FOPS) on vehicles where the requirement has been identified by risk assessment.
- t) A stability survey to identify and assess the stability related hazards and risks, e.g. as it relates to LHD equipment using quick detach systems, (QDS) forklifts, scissor lifts and similar items of mobile plant and equipment. This is to be supported by training, signage, and other control initiatives or strategies to control identified risks and to, highlight the limitations of the mobile plant and equipment.
- u) A procedure to stop the mobile plant or equipment whenever a person boards or dismounts.
- v) The development, implementation and maintenance of an inspection and maintenance program for mobile plant and equipment.
- w) The identification of training needs of relevant employees and contractors in relation to mobile equipment. The competency is to be based on relevant competency standards taking into account road licensing, Original Equipment Manufacturer (OEM) requirements, other recognised standards and include site rules and procedures.
- x) Provision of adequate training and assessment to verify competency.
- y) The prohibition of the use of hand-held personal electronic devices (PEDs) when operating a vehicle.

3.2 Surface

- 3.2.1 The Surface Transport/Traffic Management Plan is to include the following requirements:
 - a) The establishment of design criteria for roadways that, as a minimum include: grade, curvature, line of sight, pavement shape, surface material, guideposts, safety berms or windrows, signs and barriers.
 - b) The width of primary haul roads that carry two way traffic are to be at least three times the width of the widest vehicle regularly using the road.
 - c) The provision in roadway design criteria for appropriate controls that prevent vehicles from falling or driving over edges.
 - d) The construction and maintenance of safety berms or windrows alongside the edges of roadways where there is a sudden change in terrain, e.g. drop off, water body, or other hazard, and the safety berms or windrows are to be constructed using suitable (solid) materials, and be of a height, density and profile so that they are capable of acting as an effective barrier.
 - e) The establishment of robust edge protection along the top of highwalls or any other areas where there is a risk that a vehicle could drive over an unprotected edge.
 - f) A documented process for vehicles entering any area below a reject or coal bin that will enable safe access, loading and egress. The system is to prevent the cabin of the vehicle from entering the area under the bin, unless a Falling Object Protection System (FOPS) is installed over the cabin of the vehicles that can withstand and exceed potential consequences (i.e. maximum weight impact).
 - g) That mobile plant and equipment is to be clearly and uniquely identified in order to allow positive communication between operators.

Δ3 MOBILE EQUIPMENT *Continued*

- h) The provision of two way radios in mobile plant and equipment in operational areas, and when personnel are working on the ground at least one member of the work party is to be in possession of a two way radio.
- i) Positive communication is to be established (caller and receiver are to identify the vehicles and clearly respond before any vehicle or person enters an active work area, e.g. dragline or shovel/loader, or intends to overtake another vehicle, to verify that it is safe to do so.
- j) Rules for:
 - ▶ Safe operation of vehicles including the verification of competencies and operator authorisation.
 - ▶ Safe travelling and parking distances.
 - ▶ In pit refuelling.
 - ▶ Vehicle visibility, i.e. the provision of flashing lights, flags, reflective material.
 - ▶ The safe movement of vehicles, i.e. reversing alarms, use of horns to indicate vehicle operation, i.e. once prior to starting the vehicle, twice before forward movement, three times before reversing.
- k) The fitting of tilt switches and installation of laminated glass, whilst making provision for a means of egress/escape in the event of an emergency, and installation of oxygen generating self rescuers in dozers that operate on stockpiles where there is a risk of falling into a void.
- l) Procedures for operating mobile plant near sources of electricity and during electrical storms.

3.3 Further Considerations - Surface

- 3.3.1 Where applicable to the Operation, or a risk is identified, consider the use of the following equipment or processes:
- a) Implementing one way traffic in high traffic areas, or installing centre safety berms to eliminate, or at least minimise, the potential for unwanted vehicle interaction.
 - b) Designing park up areas for one way traffic flow and segregated parking areas for heavy plant and equipment, light vehicles and pedestrians. Park up areas should consider the use of spoon drains, humps (between front and rear axles) or some other method to prevent uncontrolled movement of heavy vehicles.
 - c) Spacing guideposts at distances relative to the distance required to be maintained between mobile vehicles. Colour reflectors should be used on each side of the guidepost.
 - d) Using collision avoidance and proximity detection technology.
 - e) Conducting a risk assessment to identify blind spots on vehicles, LHDs etc. and where a risk exists implement controls i.e. PAT, PDT and CAT.
 - f) Providing advanced training such as virtual reality (simulators) in safety aspects pertaining to the use and interaction with mobile equipment.

3.4 Underground

- 3.4.1 The Underground Transport/Traffic Management Plan is to include the following requirements:
- a) When pedestrians cannot move to a position of safety in a roadway the vehicle is to stop, the operator is to acknowledge the pedestrians presence and allow the pedestrian to walk past the vehicle before continuing.
 - b) Establishment of no-go zones.
 - c) Development, implementation and maintenance of access, egress and communication procedures for mobile plant and equipment.

△3 MOBILE EQUIPMENT *Continued*

- d) Procedures that prevent vehicles from entering or operating in methane rich atmospheres.
- e) Requirement that personnel are not to be transported in work baskets, buckets, or other machinery not designed for the transport of personnel.
- c) Conducting a risk assessment of blind spots on vehicles, and where the risk exists implement controls i.e. PAT, PDT, and CAT.
- d) Providing advanced training such as virtual reality (simulators) in safety aspects pertaining to the use and interaction with mobile equipment.

3.5 Further Considerations - Underground

3.5.1 Where applicable to the Operation, or a risk is identified, consider the use of the following equipment or processes:

- a) Installing one way block lights for intersections and drifts.
- b) Using collision avoidance and proximity detection technology.

Notes:

Application of this Protocol is to be read with the General Mandatory Requirements outlined in Section 0 (Background) of this Fatal Hazards Protocols Document.



Δ4

INAPPROPRIATE EMERGENCY RESPONSE

Intent

The intent of this Protocol is to eliminate or minimise potential fatalities, injuries and incidents arising from risks related with inappropriate response to an emergency situation.

Mandatory Requirements

4.1 General

- 4.1.1 A risk assessment is to be conducted and documented to identify potential emergency situations.
- 4.1.2 An Emergency Response Management Plan is to be developed, implemented and maintained. As a minimum, it is to include:
- Response(s) to, and containment of, identified emergency situations.
 - Processes to minimise further injury, damage, or loss to rescuers or others.
 - Emergency response procedures, including first aid, medical treatment, fire fighting, and rescue.
 - Provision of adequate emergency equipment, including escape and rescue apparatus (readily accessible and clearly signposted), and appropriate transport and response vehicles.
- Effective and robust communication devices and procedures for initial notification of personnel of an emergency situation, and for ongoing two-way communication during emergency situations.
 - Safe evacuation from all workplaces or other occupied spaces.
 - Control of site access and restricting re-entry to the affected areas.
 - Clearly defined procedures for the reporting of emergencies, and/or for initiating an emergency response.
 - Duty cards that clearly identify each of the responsible person's duties, functions, and reporting relationships, refer to GCAA *HSEC – Incident Management Manual - Part 2 – Duty Cards and Task Cards*.
 - Communication with and involvement of external emergency agencies.
 - Preparation for safe resumption of normal operations.
 - Notification of internal and external stakeholders.



△4 INAPPROPRIATE EMERGENCY RESPONSE

Continued

- m) Provision and maintenance of a suitably equipped emergency control centre where communication facilities, and other relevant information is available (including duty cards, emergency contact lists, mine plans, including the location of emergency equipment and services, etc.).
- n) Identify, assess, and manage potential risks associated with vehicles being struck by lightning, coming in contact with high voltage electricity, and/or tyre fires. The risk management process, as a minimum, is to give consideration to safe disembarkation from the vehicle without being electrocuted or impacted by tyre explosion, the establishment of an exclusion zone, time restraints related to personnel entering the zone, and fire fighting.
- o) For underground mines, the identification of emergency escape routes (delineation and sign posting), including the second means of egress.
- p) Processes to record the location and number of persons in the mine or at the facility.
- q) Identification, maintenance and sign posting of emergency muster points and processes to verify that all personnel have been accounted for.
- r) Requirements for the conduct of annual simulated exercises to test the effectiveness of the Operation's emergency response and evacuation capabilities.
- s) Provision for sealing underground mines, or part of the mine, whilst allowing for re-entry as appropriate.
- t) Identification of training needs and competency requirements of relevant employees and contractors in relation to emergency response, and the provision of adequate training and assessment to verify competency.
- u) Provision of an adequate number of competent persons to provide an appropriate emergency response at all times.

4.2 Further Considerations - General

- 4.2.1 Where applicable to the Operation, or a risk is identified, consider the use of the following equipment or processes:
 - a) Medical evaluation, including a 12 line ECG and blood test, following any electric shock.
 - b) Immediate medical evaluation following any injuries involving high pressure hydraulic fluids.
 - c) Operating mines to have steel cutting rescue equipment (such as jaws of life, air lifting bags, etc.).

4.3 Further Considerations - Underground

- 4.3.1 Where applicable to the Operation, or a risk is identified, consider the use of the following equipment or processes:
 - a) Providing refuge chambers.
 - b) Using oxygen generating self rescuers as a minimum for self rescue.
 - c) Using Compressed Air Breathing Apparatus (CABA) for escape.
 - d) Implementing electronic tagging and monitoring systems to determine the number and location of individuals in the mine, and to communicate directly in the case of an emergency.

Notes:

Application of this Protocol is to be read with the General Mandatory Requirements outlined in Section 0 (Background) of this Fatal Hazards Protocols Document.

Develop the Emergency Response Management Plan to align with GCAA Manuals HSEC – Incident Management Manual - Part 1 - Incident Management and HSEC – Incident Management Manual - Part 2 – Duty Cards and Task Cards.

Δ5

INRUSH AND OUTBURST

Intent

The intent of this Protocol is to eliminate or minimise potential fatalities, injuries and incidents arising from risks associated with an inrush of water, gases or materials which flow when wet either in a surface or underground mine and/or risk associated with an outburst event of gas and coal in an underground mine.

Mandatory Requirements

5.1 Inrush

- 5.1.1 An inrush risk assessment is to be conducted and documented to identify potential inrush sources. Specific issues (e.g. flow slide) based risk assessments are also to be conducted for each of the potential inrush sources that give regard to the accuracy of the plans of the mine, future mining operations and geological conditions and changes.
- 5.1.2 An Inrush Management Plan is to be developed, implemented, and maintained. As a minimum it is to include:
- a) Original and updated plans, files or other records (including those held by statutory authorities) are to be reviewed and verified for accuracy to identify any potential inrush sources that may exist either adjacent to, or in the near vicinity of the underground and surface mine workings, e.g. current, proposed or disused mine workings, surface waters, stockpiles, reclaim tunnels or aquifers, etc.
 - b) Where appropriate, a technical assessment by a competent professional is to be conducted and documented to determine the nature and magnitude of potential inrush sources, and a record of assumptions made is to be contained within the Inrush Management Plan.
 - c) Inrush control zones (i.e. stand-off distances or solid barriers) are to be established between any mine workings and each of the potential inrush sources, and be clearly identified on a plan.
 - d) Maintenance of a barrier (inrush control zone) with a minimum separation distance of 50 metres in all directions when the potential inrush source cannot be eliminated.
 - e) Requirement to use a Permit to Mine for any mining within the inrush control zone (within the 50 metres solid barrier), which outlines the sequence of operation and any other controls to be applied.
 - f) Permit to Mine approval process is to include a requirement for pre-drilling in advance of the mining direction for an inrush control zone, so that mining can advance safely.
 - g) Permit to Mine approval process is to include a requirement for regular surveys and inspections.
 - h) When working within the inrush control zones, affected personnel are to be informed of the hazards, risks and controls and copies of relevant plans and permits are to be provided.
 - i) Mine Plan, and/or, Inrush Control Zone Plans are to identify the nature and thickness of the strata, as well as the presence of any faults, dykes, or boreholes in the separating strata.
 - j) Man-made barriers, (e.g. seals, stoppings, dam walls) that are installed to contain an inrush source or event, are designed, constructed, and maintained to an approved/recognised engineering standard.
 - k) Processes for the monitoring of potential inrush sources including water pressure and gas content.

△5 INRUSH AND OUTBURST

Continued

- l) Evaluation of the impact of an inrush event on seals, stoppings, and/or regulators.
- m) Trigger Action Response Plans (TARPs) that define risk based responses to manage or react to changes of inrush indicators.
- n) Surface to seam boreholes are to be fully sealed and locations recorded on a plan.
- o) Process of whereby open cut operations near underground workings have assessed the potential risk of inrush and have implemented appropriate control.
- p) In-seam drilling is to be recorded on the plan.
- q) Annual review of the Inrush Management Plan and the associated Inrush Control Zone Location Plans, with additional review prior to the mine being extended into any new area.
- r) Identification of training needs and competency requirements, of relevant employees and contractors, in relation to inrush, and the provision of adequate training and assessment to verify competency.
- c) Provision of gas drainage to minimise the potential for an outburst related event.
- d) Development of TARPs that define risk based response to manage or react to changes of outburst indicators.
- e) Requirement that no mining can occur in an outburst prone area without approval under a Permit to Mine process.
- f) Requirement that gas concentration levels are to be at a pre-determined acceptable level before a Permit to Mine can be issued.
- g) Appropriate rescue and evacuation equipment is to be identified and readily available.
- h) Procedures that detail mining sequences, personnel levels and other health and safety precautions that are to be followed.
- i) Identification of training needs and competency requirements of relevant employees and contractors in relation to outburst, and the provision of adequate training and assessment to verify competency.

5.2 Outburst

- 5.2.1 An outburst risk assessment is to be conducted and documented to identify potential outburst sources and issue-specific risk assessments conducted and documented for each of the potential outburst sources that give regard to the accuracy of the plans of the mine, future mining operations, and geological conditions and changes.
- 5.2.2 An Outburst Management Plan is to be developed, implemented and maintained and include:
- a) Identification of geological conditions and indicators of potential outburst.
 - b) Pre-drilling to identify the gas type, concentration, pressures and desorption characteristics of the coal.

Notes:

Application of this Protocol is to be read with the General Mandatory Requirements outlined in Section 0 (Background) of this Fatal Hazards Protocols Document.

△6 EXPLOSIVES AND SHOTFIRING

Intent

The intent of this Protocol is to eliminate or minimise potential fatalities, injuries and incidents that arise from risk associated with the use of explosives, detonators and shotfiring equipment.

Mandatory Requirements

6.1 General

- 6.1.1 A risk assessment is to be conducted and documented to identify the hazards and to assess the risks associated with the storage, issuing, transport, handling, loading, and use of explosives, detonators, and related equipment.
- 6.1.2 An Explosives and Shotfiring Management Plan is to be developed, implemented and maintained. As a minimum, it is to include:
- a) Only purchasing explosives and detonators, and provide shotfiring equipment, that is of an approved type, (i.e. permitted by a statutory body for use in a surface or underground mine) and manufactured to a recognised quality standard.
 - b) A Site Security Plan to prevent unauthorised access to, or use of, explosives and detonators that are transported to and stored on site.
 - c) Storage of explosives and detonators in a safe and secure location, and in a licensed or approved magazine, with separate storage for explosives and detonators.
 - d) An inventory system that records the delivery, issue and return of stock movements. Only authorised person(s) are to issue or receive explosives and detonators.
 - e) Provision of vehicles or other methods to transport explosives and detonators safely on site. Only authorised person(s) are permitted to travel in the vehicle with explosives.
 - f) Appointment of a suitably qualified person to design blasts.
 - g) Design of blasts to minimise the risk of fly rock to persons and/or damage to structures and property.
 - h) Quality controls for drilling, loading, stemming, and tie-up.
 - i) Risk controls for drilling, loading, stemming, and tie-up.
 - j) Procedures for barricading and signposting loaded shots to prevent unauthorised entry and/or to prevent inadvertent access by person(s), plant, and equipment.
 - k) Procedures for loading of explosives into hot or reactive ground, e.g. spontaneous combustion areas.
 - l) Establishment of exclusion zones and procedures for pre-blast inspection, clearance, and sentry placement, for the safety of person(s), plant, and equipment during blasting.
 - m) Assignment of responsibility for clearing the shot area to the shotfirer or other responsible person.
 - n) Requirement that no shot may be fired until the clearance is confirmed by the mining supervisor.
 - o) Procedures for managing misfires and for the recovery and disposal of undetonated explosives.
 - p) Establishment of the competency and authorisation requirements for persons involved in explosives handling and shotfiring, including those specified in relevant legislative requirements.
 - q) Identification of training needs and competency requirements of relevant employees and contractors in relation to explosives and shotfiring, and the provision of adequate training and assessment to verify competency.

△6 **EXPLOSIVES AND SHOTFIRING** *Continued*

6.2 Further Considerations

- 6.2.1 Where applicable to the Operation, or a risk is identified, consider the use of the following equipment or processes:
- a) Establishing an electronic database that retains the records associated with the blasts, (e.g. hole location and depth, loading charts, tie-up details, environmental conditions, photographs/ videos, blast vibration, noise and dust measures).
 - b) Replacing pre-packaged explosives with 'mixed in the hole' explosive preparations.

Notes:

Application of this Protocol is to be read with the General Mandatory Requirements outlined in Section 0 (Background) of this Fatal Hazards Protocols Document.



Δ7 INADEQUATE ENERGY ISOLATION

Intent

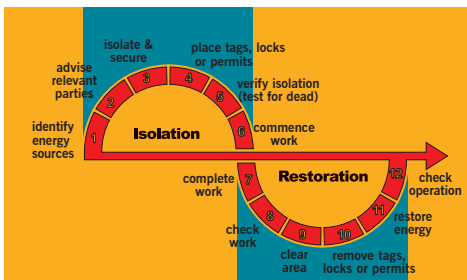
The intent of this Protocol is to eliminate or minimise potential fatalities, injuries and incidents arising from risks associated with inadequate isolation of energy sources.

Mandatory Requirements

7.1 General

- 7.1.1 A risk assessment is to be conducted and documented to identify the hazards and assess the risks associated with interaction with energy sources (electricity, pressure, temperature stored energy (e.g. springs or suspended loads like conveyor takeups) etc.).
- 7.1.2 An Energy Isolation Procedure and Permit System is to be developed, implemented and maintained for relevant energy sources. As a minimum, it is to include:
- The 12-step process for isolations, refer to figure 7-1 below.
 - Particular emphasis is to be placed on:
 - ▶ Identification and dissipation of relevant energy sources.
 - ▶ Isolating and securing.
 - ▶ Verification of the isolation, i.e. test for dead.
- c) Site requirements for:
- ▶ Individual isolations.
 - ▶ Group isolations - involves the use of Permits (refer to GCAA Permit *HSEC – Group Isolation*).
 - ▶ High Voltage isolations - involves the use of Permits, (refer to GCAA Permit *HSEC – High Voltage Access Permit*), except where risk assessment allows otherwise for non-overhead switching e.g. longwall electric dump trucks.
- d) Use of locks in preference to danger and permit tags.
- e) Use of tags where locks cannot be used. Tags are to be limited to the following types:
- ▶ Personal danger tags.
 - ▶ Permit danger tags.
 - ▶ Out of service tags.
 - ▶ Commissioning tags.
 - ▶ Information tags.
- f) Provision of adequate numbers of isolation points on plant and equipment, and in determining locations, give consideration to practicality, accessibility and clear identification.
- g) Isolation devices are to be (wherever possible) lockable and clearly labelled to identify the equipment that has or is to be isolated, and to identify whether the isolation switch or power switch is in the 'on' or 'off' position.
- h) For plant and equipment containing energy sources that cannot currently be locked out, a risk-based and prioritised action plan should be developed to address positive isolation requirements.
- i) Any person working on high voltage equipment (greater than 1200 volts AC or 1500 volts ripple free DC) that cannot be isolated with basic isolation, and cannot verify a break in the electrical conductors, is to have a permit in place that incorporates a second competent electrical isolation verifier; (refer to

Figure 7-1 – 12-step isolation process



Δ7 INADEQUATE ENERGY ISOLATION

Continued

GCAA Permit *HSEC – High Voltage Access Permit*).

- j) Provision of specific training for Authorised Isolators and Permit Holders. The training and assessment will include practical applications, and the competent person is to be appointed.
- k) Procedures that control the risks associated with live testing or approved 'power on' maintenance activities.
- l) Procedure for the removal of isolation devices (locks and/or tags) by persons other than the isolator in the event that the isolator is unavailable to remove the lock and/or tag.
- m) Documented processes for the maintenance of isolation equipment.
- n) Isolations that are complex in nature are to have procedures.
- o) Documented processes for the use of stands, chocks, locking pins, clamps or other methods for securing objects from falling or moving.
- p) Motor control rooms, electrical sub-stations, transformer yards and compounds, and electrical cabinets are to be clearly labelled and signposted and kept locked to prevent unauthorised access.
- q) Identification of training needs and competency requirements of relevant employees and contractors in relation to energy isolation, and the provision of adequate training and assessment to verify competency.
- r) Any person performing an isolation is to be trained, competent and authorised.

7.1.3 Training requirements include:

- a) All relevant personnel are to become familiar with basic isolation and be capable of identifying primary and secondary energy sources. Particular emphasis should be given to 'test for dead' verification.

- b) Personnel involved in energy isolation are to be trained in the relevant isolation and emergency procedures, and in the use of related equipment, devices, personal protective equipment, and other protective devices.
- c) Medium to long-term training needs and competency requirements in relation to energy isolation are identified.
- d) A training and competency plan to be developed, implemented, and maintained.

7.2 Further Considerations

7.2.1 Where applicable to the Operation, or a risk is identified, consider the use of the following equipment or processes:

- a) Using interlocks to prevent access to energy sources that have not been isolated.
- b) Displaying photographs or diagrams at the various isolation point locations to more clearly demonstrate the isolation requirements within each of the procedures.
- c) Providing awareness training for the entire workforce in energy sources such as gravitational, stored, kinetic, pressure, hydraulic, mechanical, electrical etc., to understand correct isolation requirements.

Notes:

Application of this Protocol is to be read with the General Mandatory Requirements outlined in Section 0 (Background) of this Fatal Hazards Protocols Document.

Where applicable, develop the Permit System to include the GCAA Work Authorisation and Permit Management. Refer to GCAA Protocol HSEC - Work Authorisation and Permit System.

8

WORKING AT HEIGHT

Intent

The intent of this Protocol is to eliminate or minimise potential fatalities, injuries and incidents arising from risks associated with working at height.

Mandatory Requirements

8.1 General

- 8.1.1 A risk assessment is to be conducted and documented to identify the hazards and assess the risks associated with working at height.
- 8.1.2 A Working at Height Procedure and Permit System is to be developed, implemented and maintained (refer to GCAA Permit *HSEC – Work at Height*). As a minimum, it is to include:
- a) Identifying activities involving working at height underground and on the surface, and where practicable, implement engineering or other appropriate controls to eliminate or minimise the risks.
 - b) Persons working at height are not to work alone.
 - c) Use of fall restraint or arrest equipment is needed whenever employees or contractors are required to work at a height above two (2) metres whilst outside the protection of an installed (fixed) access platform with hand rails.
 - d) Provision of a safe work environment through the installation of a fixed access platform, and/or, provision of an elevated work platform, work basket, scissor lift or scaffold, where practicable.
 - e) Provision and use of work platforms and scaffolds that have complete floors, guardrails and toe-boards, safe access and egress and have been inspected and tagged by a competent person, prior to accessing the work platform or scaffold.
 - f) A designated person who is trained and competent to control an elevated work platform or scissor lift.
 - g) A designated person in a work basket suspended by a crane is to be trained and competent to do so, and remain in visual or radio contact with the person in control of the crane or the crane operator.
 - h) Persons working in or on elevated work platforms or work baskets above two (2) metres are to wear safety harnesses, with lanyards attached to an approved anchorage point in the platform or basket.
 - i) Processes are to be developed, implemented, and maintained to prevent tools and equipment from falling.
 - j) Barricades are to be erected below the work area to protect persons from falling objects.
 - k) Procedures to demonstrate that the elevated work platforms, work baskets, scissor lifts and scaffolding were designed, constructed and certified to a recognised standard, and they are inspected and maintained to verify compliance with these standards.
 - l) Where persons are required to detach and reattach at height, a dual lanyard system is to be used.
 - m) Safety harnesses, lanyards, fall arrest devices, and accessories are to be appropriate to the type of work being conducted, and meet the relevant recognised design Standard.
 - n) A lanyard assembly is to be as short as practicable and the working slack length is to be less than two (2) metres, and fitted to limit the length of free fall to (0.6) metres.
 - o) Lanyards are to be fitted so that the wearer may not fall to a lower level without the fall being arrested. When estimating the total fall distance it should include the extension length of the shock absorber when fitted.

△8 WORKING AT HEIGHT *Continued*

- p) Lanyards are to include a shock absorber device when being used in a fall arrest system, unless it can be demonstrated that a force of 6kN won't be experienced by the harness attached point during the fall.
- q) Lanyard anchorage points on apparatus should be above the head of the worker, and where practical are to be no lower than shoulder height. Where it is impractical to do so (e.g. on a flat roof), a risk assessment is to be conducted and documented, and alternate anchorage points selected.
- r) Anchorage points and anchorage systems are to be signed, tested, and approved by a competent person to verify that they are capable of withstanding a breaking force of 15kN, (single person anchor) or 21kN (two person anchor).
- s) Fall arrest equipment is to be tested and certified for use, inspected by the user before use, and destroyed following a fall or where inspection has shown evidence of excessive wear or mechanical malfunction.
- t) Consideration of the means of rescue of persons who have fallen and are suspended. The appropriate rescue equipment and competent employees/contractors are to be readily available.
- u) Factoring in the prevailing environmental conditions, e.g. wind and rain, that could have an impact on a person's ability to work at height safely, and re-inspection and recertification of scaffolding following any windy or rainy conditions.
- 8.1.3 Identification of training needs and competency requirements of relevant employees and contractors in relation to working at height.
- 8.1.4 Provision of adequate training and assessment to verify competency.



Δ8 **WORKING AT HEIGHT** *Continued*

8.2 Use of ladders above two (2) metres:

- 8.2.1 A person may ascend or descend a ladder without fall protection, provided they are able to use both hands and legs, maintain three points of contact, they continue to face the ladder, and only take one rung at a time.
- 8.2.2 Extension ladders are to be tied off or footed, with an angle of one (1) in four (4) maintained and at least one metre of the ladder is to extend above the access or work area.
- 8.2.3 If a person is to work from a ladder, fall restraint or arrest devices are to be used, unless three points of contact can be maintained and the task does not involve overreaching.

8.3 Further Considerations

- 8.3.1 Where applicable to the Operation, or a risk is identified, consider the use of the following equipment or processes:
 - a) Using mobile elevated work platforms for undertaking maintenance activities on large equipment, including workshop and field maintenance activities.
 - b) Installing fixed access platforms on installations and large mobile plant and equipment where routine maintenance activities require personnel to work at height.
 - c) Installing stairways for vehicle access in place of ladders for large mobile plant and equipment.
 - d) Engineering the design of plant and equipment to eliminate the need for working at height during maintenance and construction. For example, lighting towers or fixed lighting that lower the lights to the ground.
 - e) Installing controls or modifying the existing controls on mobile elevated work platforms so that the control functions remain the same regardless of the orientation of the basket.
 - f) Using non-corrosive materials in areas where a corrosive environment exists, for example, wash plants.

Notes:

Application of this Protocol is to be read with the General Mandatory Requirements outlined in Section 0 (Background) of this Fatal Hazards Protocols Document.

Where applicable, develop all permits to align with GCAA Work Authorisation and Permit Management. Refer to GCAA Protocol [HSEC - Work Authorisation and Permit System](#).

△8
WORKING AT HEIGHT
Continued



9

LIFTING AND CRANAGE

Intent

The intent of this Protocol is to eliminate or minimise potential fatalities, injuries and incidents arising from risks associated with lifting and crange activities.

Mandatory Requirements

9.1 General

9.1.1 A risk assessment is to be conducted and documented to identify the hazards and assess the risks associated with lifting and crange.

9.1.2 A lifting and crange procedure is to be developed, implemented and maintained. As a minimum, it is to include:

- a) Use of GCAA Permit *HSEC - Complex Lift* where complex lifts are undertaken e.g. lifts that involve:
 - ▶ Multiple crane usage.
 - ▶ Lifts over facilities, or buildings (unless a basic lift with easily controlled exclusion areas).
 - ▶ Lifts over power lines.

- ▶ Lifts at or more than 90% of the crane's or lifting equipment's rated capacity.
- ▶ Lifts involving a work basket.
- b) Persons are not, under any circumstances, to enter an area under a suspended load.
- c) That the lift area is to be delineated, restricted, and appropriately signposted.
- d) Crane/lifting equipment is to have at least 20 metres clearance from powerlines (clearance is to be measured using the fully extended capabilities of a machine) unless a risk assessment is conducted and documented to identify controls to allow for operations within 20 metres.
- e) That the crane operator is to remain at the crane controls whilst the load is suspended.
- f) Tag lines are to be used where a load requires steadying or guidance and to prevent personnel entering the load zone.
- g) Procedures to verify that the crane and the associated lifting equipment is fit for use and purpose.



△9**LIFTING AND CRANAGE***Continued*

-
- h) Listing lifting equipment in a register and subjecting it to routine inspection and maintenance. Shackles, light weight slings and eye bolts (<1 tonne) are exempt from the register but are to be subjected to inspection before use.
 - i) Labelling or colour coding lifting equipment to indicate its rated capacity and to verify that it is within the inspection period.
 - j) Completing pre-use inspections to verify that rigging equipment, the load weight, hooks and safety devices to be used by operators are checked prior to the lift being undertaken.
 - k) Establishment of competency requirements for lifting activities. The crane operator and rigger and/or dogger are to be assessed as competent and appointed to conduct the work.
 - l) Rated capacity and radius limits for the crane and associated lifting equipment is not to be exceeded. Loads are to be slung by competent persons, and the cranes are not to be operated at speeds that could de-stabilise the load in the event of a sudden stop.
 - m) Equipment used for towing is not to be used for lifting activities.
 - n) Crane hooks are to be fitted with a positive safety catch.
 - o) Overhead cranes are to be fitted with appropriate stops (e.g. over-travel stops).
 - p) Fixed lifting devices/cranes are to conform to an appropriate engineering design standard and be subject to routine structural integrity testing.
 - q) The lifting of personnel with cranes is only to be carried out with approved work baskets and approved crane.
 - r) Requirement for the development, implementation and maintenance of a Lift Plan for complex lifts that contains or references:
 - ▶ A documented risk assessment that is communicated to the work party.
 - ▶ Lift data, e.g. equipment weight, rigging weight, height of lift, equipment surface area and centre of gravity, etc.
 - ▶ Equipment data, e.g. manufacturer, model, size, boom length, jib length, load block, material size, etc.
 - ▶ Rigging data, e.g. sling diameter, length, sling configuration, capacity, hook type, shackle size and capacity, etc.
 - ▶ Lift computation, e.g. boom length, radius of lift, equipment capacity, size of outrigger footplates and wind speed, etc.
 - ▶ Risks associated with power lines, crane travelling route, ground stability and agreed communication methods.
 - ▶ Evidence to verify that the crane drivers and riggers were involved in the development of the Lift Plan, and/or, they were consulted before the Lift Plan was finalised.
 - ▶ The permit, documented risk assessment and Lift Plan are to be approved and signed by the relevant authorised person.
- 9.1.3 A vehicle loading crane is not to be capable of being rotated over the location of the operator at the controls.
 - 9.1.4 Identification of training needs and competency requirements of relevant employees and contractors in relation to all aspects of lifting and crantage.
 - 9.1.5 Provision of adequate training and assessment to verify competency.

Δ9 LIFTING AND CRANAGE *Continued*

9.2 Forklifts

- 9.2.1 Forklifts are only to be operated by a competent and authorised person(s).
- 9.2.2 Forklifts are to be fitted with a load cell or load limiting device.
- 9.2.3 If the forklift is to be used to lift personnel the appropriate attachments are to be available and used.
- 9.2.4 Forklifts are to be fitted with a seatbelt that is to be worn by the operator when in use.
- 9.2.5 Provide clear physical delineation or demarcation of permitted areas of operation, whilst excluding operation in areas of uneven ground, adverse grades, poor road conditions, and/or, in pedestrian exclusion zones and walkways.

9.3 Further Considerations

- 9.3.1 Where applicable to the Operation, or a risk is identified, consider the use of the following equipment or processes:
 - a) Fitting cranes and lifting equipment with a load cell in visual range of the crane operator and/or fit or install a load limiting device.
 - b) Equipping cranes with an anti two-block device or limit switch that includes audible and visual alarm systems.
 - c) The provision of designated lift points on equipment that is lifted on a regular basis.
 - d) A procedure for the inspection, certification and maintenance of the fixed lifting points.
 - e) Identifying, registering and displaying the weight of components that are lifted on a regular basis.

Notes:

Application of this Protocol is to be read with the General Mandatory Requirements outlined in Section 0 (Background) of this Fatal Hazards Protocols Document.

*Where applicable, develop all permits to align with GCAA Work Authorisation and Permit Management. Refer to GCAA Protocol **HSEC - Work Authorisation and Permit System**.*

△9
LIFTING AND CRANAGE
Continued



△10 CONFINED SPACE AND IRRESPIRABLE NOXIOUS ATMOSPHERES

Intent

The intent of this Protocol is to eliminate or minimise potential fatalities, injuries and incidents arising from risks associated with personnel entering or working in a confined space or a workplace where irrespirable or noxious atmosphere may exist.

Confined Space

10.1 Mandatory Requirements

- 10.1.1 A risk assessment is to be conducted and documented to identify the hazards and assess the risks associated with confined space entry.
- 10.1.2 A Confined Space Procedure and Permit System is to be developed, implemented and maintained (refer to GCAA Permit *HSEC – Confined Space Entry Permit*). As a minimum, it is to include:
- a) Identification and signposting of confined spaces that exist within the operation.
 - b) A Confined Space Register.
 - c) A documented pre-entry risk assessment, atmospheric testing and clearly defined conditions of entry.
 - d) Conditions of entry are to include:
 - ▶ Isolation of energy sources.
 - ▶ Establishment and maintenance of oxygen levels required for the duration of the task.
 - ▶ Identification of contaminants, temperature extremes, concentrations of flammable substances, and any other hazards that may be harmful.
 - ▶ Continuous atmospheric monitoring of the space for the duration of the task.
 - ▶ Establishment of ventilation requirements, i.e. natural or forced.
 - ▶ Identification of the need for use of self contained breathing apparatus.
 - e) Requirement that atmospheric monitoring equipment is to be of an approved type, listed on a register, and be inspected, tested, calibrated and stored in accordance with the manufacturer's specifications.
 - f) Requirement that atmospheric monitoring equipment can only be used by personnel who have been trained, assessed as competent, and authorised.
 - g) Identification of training needs and competency requirements of relevant employees and contractors in relation to Confined Space, and the provision of adequate training and assessment to verify competency.
- ▶ The provision and use of safety harnesses with life lines attached (for recovery of persons in the event of rescue).
 - ▶ Access to the permit at the job location.
 - ▶ Sign-in and sign-out of persons who enter the confined space.
 - ▶ Nomination and identification of competent stand-by persons, who are to be present at the entry point for the duration of the work.
 - ▶ Defined communication methods to be used between the stand-by person(s) and personnel within the confined space.
 - ▶ Identification of the appropriate specification for the equipment to be taken into or used within the confined space.
 - ▶ Barricading and sign-posting requirements.
 - ▶ An area/task specific Rescue Management Plan and provision and accessibility of suitable rescue equipment and competent personnel.

△10 CONFINED SPACE AND IRRESPIRABLE NOXIOUS ATMOSPHERES

Continued

10.2 Further Considerations

10.2.1 Consider the maintenance of the competency for persons who have been authorised but have not used their skills on a regular or recent basis, in particular, regarding the use of atmospheric monitoring equipment.

Irrespirable or Noxious Atmospheres

10.3 Mandatory Requirements

10.3.1 Routine access to operational areas of a mine is to be managed in accordance with the inspection program for the monitoring of the mine atmosphere.

10.3.2 Areas of the operations are to be identified that have the potential for irrespirable or noxious atmospheres to be present which are not already identified as confined spaces or part of the normal inspection program. A risk assessment is to be conducted and documented, and controls identified and implemented before entering any areas of the operations that have this potential.

10.3.3 If personnel are required to enter an area that has a high risk of exposure to irrespirable or noxious atmosphere, the Operation is to undertake or develop the following:

- a) A permit system for access and any work to be carried out in this area.
- b) Provide for barricading and signposting to prevent inadvertent access to these areas.
- c) Pre-determine atmospheric conditions prior to entry.
- d) Procedures that minimise the risk of exposure of personnel to the irrespirable or noxious atmosphere, e.g. ventilation requirements.

- e) Provide continuous monitoring for the presence of atmospheric contaminants.
- f) Develop withdrawal conditions (Trigger, Action, Response Plans - TARPs) for the presence of atmospheric contaminants.
- g) Provide emergency equipment (including, suitable breathing apparatus and communication) for personnel who may be exposed to the irrespirable or noxious atmosphere.
- h) An area/task specific Rescue Plan and provision and accessibility of suitable rescue equipment and competent personnel.
- i) Identification of training needs and competency requirements of relevant employees and contractors in relation to irrespirable or noxious atmospheres, and the provision of adequate training and assessment to verify competency.

Notes:

Application of this Protocol is to be read with the General Mandatory Requirements outlined in Section 0 (Background) of this Fatal Hazards Protocols Document.

Where applicable, develop all permits to align with GCAA Work Authorisation and Permit Management. Refer to GCAA Protocol HSEC - Work Authorisation and Permit System.

△11 TYRE AND RIM MANAGEMENT

Intent

The intent of this Protocol is to eliminate fatalities, injuries, and incidents when working with or near tyres, rims, and wheel assemblies.

Mandatory Requirements

11.1 General

11.1.1 The Operation is to complete a documented risk assessment to identify all hazards associated with managing tyres, rims and *wheel assemblies*. This includes assessing the risks and implementing the controls.

11.1.2 The Operation is to develop, implement, and maintain a Tyre, Rim, and Wheel Management Plan based on the risk assessment. As a minimum, the Tyre, Rim, and Wheel Management Plan is to include specific requirements for:

- a) All identified risks when procuring, storing, lifting, fitting, removing, testing, repairing, maintaining, and changing tyres and *wheel assemblies* where the rim diameter is 24 inch (61 centimetre) or greater.
- b) All identified risks when managing tyres and *wheel assemblies* where the rim diameter is less than 24 inch (61 centimetre).
- c) Task specific procedures to address tyre and wheel deflation, disassembly, assembly and inflation risks. For multi-piece and *split rim* (divided rim) assemblies, this includes quality checks at hold points for safety critical steps.
- d) A documented maintenance regime for the periodic testing and inspection of tyres, rims, and wheel assemblies.
- e) Rim base identification with a unique number for maintenance tracking of all rims with a diameter of 24 inch (61 centimetre) or greater, and for rims with a diameter of less than 24 inch (61 centimetre) identified for tracking in the risk assessment.
- f) Use of a tyre and rim-base register to record the history and maintenance of

tyres and *rim assemblies* identified in [FHP 11.1.2e](#).

- g) Selection of tools and equipment to be fit for purpose. This includes condition checks and calibration before use of any tool used to control pressure or torque settings.
- h) Tyres and *wheel assemblies* with no recorded maintenance history, or no documented pre-work inspection, to be deflated to zero pressure, and confirmed, before releasing tension on the rim or *wheel assembly* fastenings.
- i) The deflation of all tyres to zero pressure, and confirmation, before releasing tension on the rim fastenings, when there is no formal procedure available. A risk assessment, identifying specific *safe handling pressures*, is to support all formal procedures for the removal and handling of wheels and rim fastenings at any handling pressure greater than zero.
- j) All *split rim* (divided rim) assemblies to deflate the tyre to zero pressure, and confirm, before removal.
- k) All dual *wheel assemblies* to deflate both tyres to the specified *safe handling pressure*, and confirm, before releasing tension on the rim fastenings (refer to [FHP 11.1.2i](#)).
- l) A process to demarcate a restricted work area when changing tyres and wheels, to protect other personnel not directly involved.
- m) Formal procedures (or reference to) for managing 'no-go zones' when deflating, removing, installing, and inflating tyres. No person is to stand in the direct line of fire during tyre inflation.
- n) Restraint of *wheel assemblies* with a rim diameter of less than 24 inch (61 centimetre) during inflation.
- o) Continuous monitoring of tyres and *wheel assemblies* during inflation and deflation, from outside the no-go zone, and in a safe, remote location (refer to [FHP 11.1.2m](#)).

△11 TYRE AND RIM MANAGEMENT

Continued

- p) Any tyre in operation, with a rim diameter greater than 24 inch (61 centimetre), found to be either deflated to or running at less than 70 percent of the recommended *cold inflation pressure*, is to be deflated, then the *wheel assembly* dismantled and inspected, before reinflating the tyre. In a dual *wheel assembly* this is applicable to both wheels.
- q) The safe handling and storing of tyres, rims, and *wheel assemblies*, considering condition, identification, separation, and *component matching*.
- r) Storing and refitting tyre and wheel assemblies, where the rim diameter is less than 24 inch (61 centimetre), to allow handling at the *cold inflation pressure* only if the rim base, rim components, and tyre meet the inspection and testing maintenance regime.
- s) Preventing any *hot work* on wheels or any part of the equipment where heat transfer to any tyre is possible, while the rim assembly has a tyre mounted, whether deflated or not.
- t) A process to enable the identification, storage, and selection of *matching components* (compatible) for use in multi-piece rim and *wheel assemblies*.
- u) A process to prevent the assembly of multi-piece rim and wheel components unless they meet re-usability criteria.
- v) Multi-piece rim and wheel assembly designs include the selection of bead seat bands that prevent inflation of the tyre if the *wheel assembly* locking ring is incorrectly seated.
- 11.1.3 The Operation is to include competency requirements for managing tyre, rim, and *wheel assemblies* for relevant employees and contractors in the training needs analysis.

11.2 Further Considerations

- 11.2.1 Where applicable to the Operation, or a risk is identified, consider the use of the following equipment or processes:

- a) Specialised tyre handling equipment for tyre, rim, and *wheel assembly* management.
- b) Specialised tyre handling modules for underground tyre handling, to minimise the requirement for manual handling.
- c) Nitrogen for tyre inflation to reduce the risk of tyre fire and explosion.
- d) Wheel nut tension indicators.
- e) Remote tyre condition monitoring systems such as air pressure and temperature monitoring, or similar.
- f) Double gutter (quick change) rims for 57 inch (145 centimetre) diameter rims or greater, to reduce the need to unbolt rims in a rear dual-wheel assembly.
- g) Non-pneumatic tyres.

Notes:

Application of this Protocol is to be read with the General Mandatory Requirements outlined in Section 0 (Background) of this Fatal Hazards Protocols Document.

Refer to GCAA Guideline ENG – Tyres and Rims for additional information.



Δ12 ELECTRICAL SAFETY

Intent

The intent of this Protocol is to eliminate or minimise potential fatalities, injuries and incidents arising from risks associated with the contact with energised electrical conductors or exposure to faulty electrical systems that can cause secondary hazards such as arc blast, fire or ignition of explosives atmospheres.

Mandatory Requirements

12.1 General

- 12.1.1 A risk assessment is to be conducted and documented to identify the hazards and assess the risks associated from contact with energised electrical conductors or exposure to faulty electrical systems.
- 12.1.2 As a minimum, the following is to be complied with:
- a) All electrical work is to be conducted by competent/authorised personnel.
 - b) Electrical installations including wiring and earthing, are to comply with relevant legislation, standards, codes of practice and other external requirements, and be maintained to those standards.
 - c) Electrical competency standards are to be established for electrical work and include procedures to facilitate compliance with the relevant legislation, codes of practice and design criteria.
 - d) Appropriate PPE (including arc flash protection) requirements are to be identified and used for electrical work.
 - e) Wherever practicable, electrical protection devices, suitable for the application, are to be installed on final distribution circuits, e.g. overload protection on circuit breakers, earth leakage circuit breakers on general purpose outlets that are set to trip at pre-determined levels, (e.g. no greater than 30 milliamps) and the settings are to be established by competent and/or authorised personnel.



▲12 ELECTRICAL SAFETY *Continued*

- f) Testing of these devices are to be conducted at risk based and pre-determined intervals, by authorised personnel, and the results are to be recorded and retained.
- g) Certified explosion protected electrical equipment is to be installed on circuits in potentially explosive atmospheres.
- h) There is to be a process for removing electrical equipment from service if it is unfit for use or unsafe for its purpose.
- i) There is to be a system or procedure for documenting electrical distribution networks which may include single line diagrams, system fault calculations, equipment details, electrical protection discrimination curves and cable ratings.
- j) Electrical panels, enclosures, control centres, substations and equipment are to be appropriately guarded, labelled and signposted, and made inaccessible (except for emergency shut off mechanisms) to unauthorised personnel.
- k) All electrical isolation is to comply with GCAA Fatal Hazard Protocol *FHP 7 - Inadequate Energy Isolation*.
- l) A site assessment of overhead and underground/buried power lines and a system in place to control the risks associated with working in close proximity to prevent contact by personnel or equipment.
- m) Identification of training needs and competency requirements of relevant employees and contractors in relation to electrical safety, and the provision of adequate training and assessment to verify competency.



Notes:

Application of this Protocol is to be read with the General Mandatory Requirements outlined in Section 0 (Background) of this Fatal Hazards Protocols Document.

*Where applicable, develop all permits to align with GCAA Work Authorisation and Permit Management. Refer to GCAA Protocol *HSEC - Work Authorisation and Permit System*.*

GLOSSARY

Glossary

Action Plan - A documented plan of actions to achieve a specific goal or goals which details responsible people and completion dates.

Anti Two-Block Device - An anti two-block device is an electrical sensing device that is installed on a crane. It prevents the lower load block or hook assembly from coming into contact with the upper load block or boom point sheave assembly and consists of a weighted ring around the hose line. The ring is suspended on a chain from a limit switch that is attached to the boom tip. If the hook assembly (sometimes referred to as a 'headache ball') touches the suspended weighted ring, the switch opens and an alarm sounds in the cab to warn the operator to stop hoisting.

Audit – Third or second party formal assessment of a process, system, activity or other element of the business against set criteria such as legal requirements, site procedures or these Protocols.

Basic Isolation – A simple isolation on a single isolation device that is easy to apply and involves a single energy source. (This may involve one or more personnel and may include multiple isolation of differing energies on the same equipment or feeding equipment.)

Broadbrush Risk Assessment/ Baseline Risk Assessment – See GCAA Standard *FIN - Risk Management*.

CAT – Collision Avoidance Technology.

Change Management – The process of clearly identifying, assessing and managing the planned and unplanned changes that occur within our activities, Operations and facilities.

Cold Inflation Pressure – The tyre inflation pressure set in accordance with both the tyre and rim manufacturer's recommendations.

Complex isolation – An isolation that is not basic.

Confined Space – A confined space means an enclosed or partially enclosed space that:

- ▶ Is not designed or intended primarily to be occupied by a person.
- ▶ Is, or is designed or intended to be, at normal atmospheric pressure while any person is in the space.
- ▶ Is, or is likely to be a risk to health and safety from.

- ▶ An atmosphere that does not have a safe oxygen level, or
 - contaminants, including airborne gases, vapours and dusts, that may cause injury from fire or explosion, or
 - harmful concentrations of any airborne contaminants, or
 - engulfment.

Designated Work Area – An area in which typical hot work tasks (such as welding, grinding, cutting, etc.) may be undertaken with confidence that:

- ▶ Adequate fire response controls are easily accessible in the area.
- ▶ Flammable or combustible items/fuels are well clear of the task (more than 15 meters).
- ▶ There is adequate ventilation, lighting, space and work surfaces to easily perform the hot work tasks without additional hazards being created.
- ▶ There is adequate shielding, floor/catch protection and PPE in the location for the safety of those performing hot work tasks and those in close vicinity to the tasks.
- ▶ It is free from water and damp conditions.
- ▶ Safe Working Procedures are in place.

Document Control – Formal process for managing documentation, i.e. version number, review date, owner, approver. Documents are to meet the intent and requirements of GCAA Standard *HSEC – Documents and Records*.

Excavations – Excavation is the removal of earth for non-mining activities such as the development of:

- ▶ Trenches
- ▶ Ditches
- ▶ Pits
- ▶ Shafts
- ▶ Wells
- ▶ Tunnels
- ▶ Pier holes.

Hazardous Zone – A hazardous zone in a coal mine typically means anywhere on the return ventilation side of a point 100 metres before a pillar where mining operations are taking place, all the way back to where the ventilation exhausts to

▲ GLOSSARY

Continued

surface and where there is a risk of a methane gas explosion. (Within such a zone all equipment is to be either flame-proof or intrinsically safe).

Hot Work - Hot work is any welding, thermal or oxy cutting, frictional cutting and grinding, heating or other fire or spark producing operation.

Inrush – Relates to the sudden flow of water or other substance which could result in drowning, asphyxiation, entrapment or physical impact. Potential inrush hazards need to be identified considering:

- ▶ The potential sources of inrush including current, disused or abandoned mine workings, along the same seam or across strata, surface water bodies, backfill operations, highly permeable aquifers, bore-holes, faults or other geological weaknesses.
- ▶ The potential for the accumulation of water, gas or other materials that could liquefy or flow into other workings or locations.
- ▶ The magnitude of all potential sources and maximum flow rates.
- ▶ The Maximum Probable Consequence scenarios for each potential source, especially including the accuracy of plans of other workings, variation in rock properties, geological weaknesses or similar unknowns.
- ▶ The potential sources of inundation (slower flow of water) including extreme weather, overflow or failure of levies and dam structures, failure or blocking of flow channels (either regular, overflow, or emergency), which have potential to accumulate/accelerate and escalate to an inrush event.

Issue Specific Risk Assessment – Risk assessment which identifies and assesses the risk related to a specific topic, i.e. strata, which is normally identified as a risk in the Baseline Risk Assessment or BBRA.

Dragline Bucket Jewellery – Miscellaneous items used to attach the dragline bucket to the hoist ropes.

Management Plan - Formal process for management of a particular activity, task or are of the business which articulates management activities and roles and responsibilities.

Work Basket – A work basket is an attachment that is attached to a piece of equipment, i.e. a crane.

Monitoring Program – Agreed program to regularly monitor and measure the effectiveness of specific aspects of controls, procedures and management plans.

Operational Areas – Any areas where production activities are undertaken.

Operations Engineering Management Plan – Formal process for management of engineering practices, in particular as it relates to design, install, commission, use, maintenance and decommissioning.

Outburst – Outburst is the sudden and violent ejection of coal, gas and rock from a coal face and surrounding strata in an underground coal mine.

PAT – Proximity Awareness Technology.

PDT – Proximity Detection Technology.

Positive Communication – Includes the active communication between both mobile equipment operators and confirmed responses.

Permit System – Formal system required for specific tasks or activities, i.e. working in confined space, whereby a permit has to be issued to an operator prior to commencing work.

Procedure – Documented process detailing the requirements for conducting an activity or task.

Rigger/Dogger – A Rigger is a person that specialises in the lifting or moving of extremely large or heavy objects, and a Dogger is a person who directs the operation of a crane.

Rim – Part of a wheel assembly, mounted to a vehicle using cleats and studs or nuts.

Rim Assembly – The assembly of wheel components, not including a tyre. A rim assembly typically comprise a rim base, flanges, bead seat band and lock ring.

Rim Base – The part of the rim assembly on which the tyre is mounted and supported.

Safe Handling Pressure - The nominal pressure, determined by risk assessment, for handling wheel assemblies during dismantling, mounting, storage and transport.

SAT – Safety Adherence Technology.

△ GLOSSARY

Continued

Self Assessments – Internal formal assessment of a process, system, activity or other element of the business against set criteria such as legal requirements, site procedures or these Protocols.

Slope Stability – Relates to the stability of material on a stockpile or dump.

Split Rims - Rims that bolt together and form the mating surface between the rim and the hub.

Surface Operations – Includes all surface areas relating to all activities (Open cut, Underground, CHPP or Port).

Suspended Load – A load which is being supported by a crane or other lifting device.

Training – Refers to the initial training to verify competence and subsequent refresher training to verify that the competencies have been retained.

Underground Operations – Includes all operations from the entrance to the drift or shaft.

Wheel Assemblies – Comprises a rim base, flanges, bead seat band, lock ring and a wheel disc or nave plate welded to the rim base. A wheel assembly is mounted to earth moving machinery by a wheel disc and fasteners.

REFERENCES

References:

The following references can be a useful source of additional information in relation to the issues addressed in these Protocols:

Related Documents

Title
Risk Management (<i>GCAA Finance Standard</i>)
Documents and Records (<i>GCAA HSEC Standard</i>)
Leadership, Culture, and Accountability (<i>GCAA HSEC Standard</i>)
Training (<i>GCAA HSEC Standard</i>)
Change (<i>GCAA HSEC Standard</i>)
Assurance (<i>GCAA HSEC Standard</i>)
Incident Management Manual - Part 1 (<i>GCAA HSEC Manual</i>)
Incident Management Manual - Part 2 (<i>GCAA HSEC Manual</i>)
Work Authorisation and Permit System (<i>GCAA HSEC Protocol</i>)
Hot Work (surface) Permit (<i>GCAA HSEC Permit</i>)
Confined Space Entry Permit (<i>GCAA HSEC Permit</i>)
Complex Lift Permit (<i>GCAA HSEC Permit</i>)
Work at Height Permit (<i>GCAA HSEC Permit</i>)
High Voltage Access Permit (<i>GCAA HSEC Permit</i>)
Group Isolation Permit (<i>GCAA HSEC Permit</i>)
Tyres and Rims (<i>GCAA Engineering Guideline</i>)

Reference Information

Reference	Title
ACARP	Australian coal industry's research program.
MiRMgate	Industry recognised databases, including records of industry related incidents, hazards, causation factors, and recommended preventative measures.

DOCUMENT HISTORY

Version	Date	Details
1	April 2017	<p>New GCAA document with updates including:</p> <ul style="list-style-type: none"> - Changes approved through CMO Change Management - refer GCAA FHP Booklet changeover - New document identification number issued: GCAA-625378177-13287 - Content based on previous Glencore Coal Protocol <i>CA HSEC PCL 0009 - Fatal Hazard Protocols</i>, version 4 - January 2013 - Updates to align with Glencore SafeWork Protocols - Reference to GCAA HSEC Permits and other related documents - FHP 1 update - reworded 1.1.4 f to include rules to control access when required to work near a highwall - FHP11 full content review, consultation, and update, including photograph (refer to separate Change Management for details) - Minor formatting and layout changes to other FHPs (no technical content changes) - Updated FHP7 Figure 7-1 for isolation to include test for dead as part of Step 5 - Replacement of FHP8 photographs to correctly identify minimum personal protective equipment requirements and to reflect GCAA operations - Update of Glossary definitions to include new terms from FHP11 review

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