OUR FUTURE STATE
Achieving Zero Harm in Safety

BHP Billiton is an organisation in which:

- The safety of our people is a value which is not compromised
- Safety excellence is recognised as good business
- Leaders at all levels are safety role models
- Effective safety leadership is a prerequisite for promotion
- People are aware of the hazards and risks in their workplace and act accordingly
- Compliance with safety standards and procedures is absolute
- "At risk" behaviours are not acceptable and are addressed when observed
- Effective skills to lead and work safely are developed through ongoing training and mentoring
- Repeat incidents are evidence of an out of control operation

SAFETY AWARENESS

“The state of mind where we are constantly aware of the possibility of injury and act accordingly at all times”
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BACKGROUND
A review of our fatalities and significant incidents over the last 10 years has identified a series of key fatal risks to our people – risks that require the development of sound practices to eliminate fatalities and incidents that could, in slightly different circumstances, cause fatalities. These Fatal Risk Control Protocols, developed through workgroups made up of individuals from across BHP Billiton with extensive experience in operations, establish minimum performance expectations for managing these risk areas at leading practice levels.

The existence of these Protocols does not presume coverage of all risks faced by our operations (including some which have caused multiple fatalities). These other risk areas are addressed through the risk management process that is a key element of the BHP Billiton HSEC Management Standards.

CONTEXT
These Protocols should be read and used in conjunction with the BHP Billiton Charter, HSEC Policy and HSEC Management Standards. The BHP Billiton HSEC management system, as shown below, is hierarchical where documents and systems must meet and support the requirements of those of higher levels. These Protocols are mandatory to all BHP Billiton-controlled sites and operations.

APPLICATION
These Protocols apply at all BHP Billiton-controlled sites and controlled activities, and to all BHP Billiton employees, contractors, and visitors when involved in controlled activities.
FATAL RISK CONTROL PROTOCOL

INTRODUCTION

REQUIREMENTS
The mandatory requirements of these Protocols are signified by the use of the word “shall”.

The word “should” indicates that the primary intent is to comply with the full requirements as if they were mandatory. However, there will be circumstances where local conditions may demonstrate that the requirement is either not applicable or an alternative approach is necessary. In cases where “should” has been used in a requirement, variation can only be considered as compliance if the Senior Site Executive approves it based on an evaluation of the risk. The risk management approach adopted must be consistent with the BHP Billiton HSEC Risk Management Guideline.

It is recognised that sound (and formalised) risk management principles are still required (i.e. beyond simple compliance with a mandated Protocol) to identify, quantify, control and reduce the likelihood of incidents through the investigation, assessment and understanding of hazards associated with the activities covered by these Protocols.

BHP Billiton owns and operates a diverse range of businesses in different countries and cultures around the world, with varying legal frameworks. When applying procedures and practices to meet the needs of these Protocols, the relevant legislation shall be complied with.

The nature of hazards and extent of risk may be significantly influenced by changes implemented to operations, processes, equipment, systems, services and people. This requires procedures to assess the effect of these changes and the associated risks. As with any formal risk management process, appropriate change management processes shall be place at all operations.

STRUCTURE OF THESE PROTOCOLS
The requirements of these Protocols are classified into the three broad focus areas:
A Plant and Equipment Requirements
B Procedural Requirements
C People Requirements

These three areas cover the essential controls that are to be in place in order to comprehensively manage these risk categories. The diagram below demonstrates how this approach, combined with committed leadership and supported by our Charter, HSEC Policy, and Future State is designed to deliver our goal of Zero Harm.

The Road to Zero Harm

To provide a workplace where it is possible to work without adverse impact on people, the environment or the community

To develop our people to make the right decisions

Charter
HSEC Policy
Future State

Plant and Equipment,
Workplace conditions

Procedures/
Practices

Behaviours

Systems

Leadership

People

Controls

ZERO HARM
FATAL RISK CONTROL PROTOCOL

1 LIGHT VEHICLES

INTENT
To eliminate or minimise the risk of fatalities, injuries and incidents arising from the use of light vehicles in surface operations.

APPLICATION
This Protocol applies to all light vehicles that can be road registered, and are used for transporting people and light loads. Examples of light vehicles covered by this Protocol are cars, 4WDs, sports utility vehicles (SUVs), pick-ups, utilities, mini buses, bakkies, etc.

REASON FOR INCLUSION
Light vehicles have been involved in a significant proportion of our fatal and high potential incidents. The causes and contributing factors to these incidents have been:

- Speed
- High centre of gravity vehicles
- Failure to wear seat belts
- Driver fatigue
- Lack of protective devices ie. roll-over protection

REQUIREMENTS

The mandatory requirements of these Protocols are signified by the use of the word “shall”.

The word “should” indicates that the primary intent is to comply with the full requirements as if they were mandatory. However, there will be circumstances where local conditions may demonstrate that the requirement is either not applicable or an alternative approach is necessary. In cases where “should” has been used in a requirement, variation can only be considered as compliance if the Senior Site Executive approves it based on an evaluation of the risk. The risk management approach adopted must be consistent with the BHP Billiton Risk Management Guideline.

The requirements of this Protocol are as follows:

A PLANT AND EQUIPMENT REQUIREMENTS

1 Vehicle selection shall be based on risk assessment taking account of tasks, application, environment and roll-over and crash worthiness ratings.

2 Light vehicles shall have the following minimum safety features:
   - seatbelts for all occupants;
   - horn;
   - effective windscreen wipers;
   - roll-over protection for all 4WD vehicles;
   - cargo barriers and load restraints;
   - driver side airbag; and
   - two-way radio communication at mine sites which have a permanent radio communication system for those vehicles operated on roads also used by heavy vehicles.

3 Speed alarms or speed monitors should be installed in all BHP Billiton light vehicles.

4 Light vehicles shall not have seating that is side mounted.

5 A formal maintenance inspection and preventive maintenance program shall be in place for all BHP Billiton vehicles.

6 A system should be in place for positively identifying light vehicles.

7 Light vehicles should have:
   - high visibility colour;
   - reflective taping;
   - flashing light;
   - first aid kit;
   - fire extinguisher; and
   - survival or emergency equipment suitable for the operating environment.

8 A change management process shall accompany all vehicle modifications.
B PROCEDURAL REQUIREMENTS

9 Seatbelts shall be used in all cases for all occupants.

10 A pre-operation vehicle safety check and familiarisation system shall be in place and used by the driver.

11 Systems shall be in place to ensure that risks associated with vehicle journeys are managed and controlled. The systems shall include, but not be limited to:
   • journey management plans in place prior to commencement of new or changed travel activities;
   • identification and monitoring of the risks associated with the number of journeys, routes, intersections etc, to ensure that the overall exposure is reduced to as low as reasonably practicable (ALARP);
   • assessment and communication of changed environmental and road conditions at the time of travel; and
   • provision to manage fatigue.

12 Light vehicle running lights should be left on at all times when the vehicle is in operation.

13 Mobile phones, whether hands free or not, should only be used by the driver of a vehicle whilst the vehicle is stationary and in a safe location.

14 Controls shall be in place to ensure the safety of people working in roadways, including work in and around unexpected breakdowns.

15 A site-based review of pedestrian interaction, road design and layouts (including entrance and exit points, intersections and other potential points of interaction between light vehicles and other mobile equipment) shall be conducted and updated when changes to layouts are required. Where possible, traffic segregation should be used to separate pedestrians, light vehicles and other mobile equipment.

16 A site-based traffic management plan shall be in place including, but not limited to the following:
   • setting of appropriate speed limits for vehicle types and road surfaces;
   • overtaking protocol;
   • procedures for light vehicles entering hazardous or restricted areas;
   • clear communication protocols;
   • standards for safe following distances, based on operational circumstances and near sight (blind spot) limitations of other mobile equipment;
   • installation and maintenance of road traffic control signs as appropriate to the work site; and
   • parking procedures.

C PEOPLE REQUIREMENTS

17 All employees, contractors and visitors shall be inducted in appropriate road safety and site vehicle hazards.

18 A permit or certification system shall be in place to ensure drivers are competent to drive on site. In addition, a system shall be in place to verify that operators of BHP Billiton vehicles have a valid drivers license prior to operating BHP Billiton vehicles off-site.

19 Behaviour based observations shall include the operation of light vehicles. Any need for additional specific retraining should incorporate the results of these observations.

20 A fit-for-work policy shall be in place, incorporating defined action levels for drugs and alcohol, and a fatigue management plan.
FATAL RISK CONTROL PROTOCOL
2 SURFACE MOBILE EQUIPMENT

INTENT
To eliminate or minimise the risk of fatalities, injuries and incidents arising from the use of surface mobile equipment.

APPLICATION
This Protocol applies to all surface mobile equipment (excluding light vehicles) and ancillary and earthmoving equipment that is used for transport, operations and maintenance in and around the surface area of the site. Examples of surface mobile equipment covered by this Protocol are rear dump, belly dump and water trucks, graders, dozers, loaders, forklifts, buses, other trucks larger than a pick-up, mobile cranes, bobcats, backhoes, excavators, shovels etc. Where mobile equipment falls outside these groups, a risk-based approach should be used to determine the level of compliance required with each of the specific requirements of this Protocol.

REASON FOR INCLUSION
Surface mobile equipment have been involved in a significant proportion of BHP Billiton's fatal and high potential incidents. The causes and contributing factors to these incidents have been:

- Overtaking
- Loss of traction
- Overturning
- Reversing
- Unplanned movements on slopes and inclines
- Parking protocols
- Ineffective communications
- Poor visibility
- Dropped loads
- Structural failure
- Operator fatigue

REQUIREMENTS
The mandatory requirements of these Protocols are signified by the use of the word “shall”.

The word “should” indicates that the primary intent is to comply with the full requirements as if they were mandatory. However, there will be circumstances where local conditions may demonstrate that the requirement is either not applicable or an alternative approach is necessary. In cases where “should” has been used in a requirement, variation can only be considered as compliance if the Senior Site Executive approves it based on an evaluation of the risk. The risk management approach adopted must be consistent with the BHP Billiton Risk Management Guideline.
The requirements of this Protocol are as follows:

**A PLANT AND EQUIPMENT REQUIREMENTS**

1. Surface mobile equipment shall have the following minimum safety specifications:
   - seat belts for all occupants;
   - adequate lighting (e.g. headlights, tail, turn, brake, strobe, flashing light);
   - identified isolation/lockout point in accordance with the Isolation Protocol;
   - adequate walkways, railing, steps/grab handle combinations and boarding facilities including an alternative path of disembarking in case of emergency;
   - extended front bumpers on mine haul trucks or adequate collision avoidance technology and/or procedures;
   - reversing alarms;
   - collision avoidance technology and/or procedures;
   - chock blocks;
   - horn; and
   - effective windscreen wipers.

2. Surface mobile equipment should have the following minimum safety specifications, unless exempted by risk assessment:
   - approved or certified roll-over protection;
   - a fire suppression system capable of being activated from both ground and cabin levels;
   - two-way radio communication;
   - fall on protection;
   - enclosed and tightly sealed air-conditioned cabins, with consideration of requirements for noise and dust suppression systems and shatterproof glass;
   - signage on the equipment that allows clear and easy identification from a distance; and
   - a method for transporting supplies and personal items to and from the operator cabin to enable drivers to continuously maintain three points of contact whilst mounting and disembarking equipment (e.g. a back pack or shoulder strap bag).

3. Technological advances should be considered for collision avoidance, safety management systems, fleet management and visibility improvement.

4. Design inspection and maintenance requirements should be in place for all roadways including collision protection of hazardous and critical plant and equipment. Risk assessments should be carried out prior to any changes to traffic movements.

5. Layout of cabins should take into consideration the ergonomics of seating, operator controls, and retrofitted devices.

6. Fleet and control consistency should be considered where possible to minimise operator error when changing machines.
B PROCEDURAL REQUIREMENTS

7 Seatbelts shall be used in all cases for all occupants.

8 A formal selection and acceptance process based on risk assessment shall be in place for all new (to site) and modified surface mobile equipment prior to commencement of work on site.

9 Selection of equipment, and any modification, shall be subject to a rigorous change management process.

10 A procedure and checklist system shall be in place for pre-operation inspection by the operator, including a brake functionality test, before commencing work. Log books shall be maintained and audited.

11 A procedure shall be in place to ensure surface mobile equipment only operates on surfaces that are sufficiently stable so they are within the limits of safe operation.

12 A post-maintenance machine test shall be in place after scheduled or break down maintenance.

13 On the job risk assessments shall be conducted as part of the planning process for surface mobile equipment operations, including maintenance activities.

14 A dust and water management plan for roads, mining and haulage shall be in place. Consideration shall be given to extreme wet weather and the issue of over-watering roads.

15 Parking standards shall include requirements for the immobilisation of surface mobile equipment (eg. chocking or trenching) and consideration for breakdown maintenance activities.

16 A maintenance and inspection program for critical equipment and components shall be in place.

17 A site-based traffic management plan should be in place including, but not limited to the following:
   • setting of appropriate speed limits, and installation and maintenance of road signage;
   • right-of-way rules (including over-taking restrictions);
   • access planning in areas identified as hazardous and having significant associated risk;
   • systems to control movement of mobile equipment in areas accessible to pedestrians, into and out of workshops, and for controls on pedestrian and light vehicle movement around mobile equipment;
   • designated parking areas for heavy vehicles and light vehicles including around maintenance areas;
   • systems to control approaching, refuelling, parking, boarding, disembarking, and isolation by production and maintenance crews. Equipment operators or drivers shall be out of the cabin and dismounted onto ground level when their direct involvement with maintenance or servicing is not required;
   • guidelines for abnormal road conditions prior to use (eg. rain, high winds) giving “go/no go” criteria and stating the responsible person for this decision;
   • clear communication procedures for interactions between all vehicles;
   • truck loading/unloading protocols - to avoid material falling from the vehicle;
   • guidelines for wide or abnormal loads including offsite transport; and
   • systems to control equipment use within the vicinity of overhead power lines.

18 Procedures should be in place which detail what maintenance an operator is allowed to perform and what maintenance personnel can operate under testing conditions.

19 A tyre management system should be in place to address issues including fire, heating, electrical contact and separations.
C  PEOPLE REQUIREMENTS

20  Recruitment and induction processes for surface mobile equipment operators shall encompass past work history, site testing, comprehensive medical examinations and psychological testing.

21  Site and area induction of operators shall be performed prior to starting work in a new area.

22  A permit or certification system shall be in place to ensure drivers are competent to drive on site. In addition, a system shall be in place to verify that operators of BHP Billiton vehicles have a valid drivers license prior to operating BHP Billiton vehicles off-site.

23  A fit-for-work policy shall be in place, incorporating defined action levels for drugs and alcohol and a fatigue management plan.

24  Behaviour based observations shall include the operation of surface mobile equipment. Any need for additional specific retraining shall incorporate the results of these observations.
FATAL RISK CONTROL PROTOCOL
3 UNDERGROUND MOBILE EQUIPMENT

INTENT
To eliminate or minimise the risk of fatalities, injuries and incidents arising from the use of mobile equipment underground.

APPLICATION
This Protocol applies to all underground mobile equipment, including rubber tyre mounted and rail mounted equipment.

REASON FOR INCLUSION
Underground mobile equipment is a core risk for underground operations. Several fatalities and high potential incidents have occurred involving underground mobile equipment. The causes and contributing factors to these incidents have been:
- Interactions between vehicles and pedestrians ie. passing, working close by
- Unplanned movements of vehicles down inclines and slopes
- Poor visibility
- Speed
- Rolling and tipping over of vehicles

REQUIREMENTS
The mandatory requirements of these Protocols are signified by the use of the word “shall”.

The word “should” indicates that the primary intent is to comply with the full requirements as if they were mandatory. However, there will be circumstances where local conditions may demonstrate that the requirement is either not applicable or an alternative approach is necessary. In cases where “should” has been used in a requirement, variation can only be considered as compliance if the Senior Site Executive approves it based on an evaluation of the risk. The risk management approach adopted must be consistent with the BHP Billiton Risk Management Guideline.

The requirements of this protocol are as follows:

A PLANT AND EQUIPMENT REQUIREMENTS

1 Underground mobile equipment shall have the following minimum safety specifications:
   - roll-over protection for load haul dump machines;
   - operator overhead protection (ie. fall on protection system, canopy or cab structure);
   - automatic reversing alarm;
   - roof mounted flashing lights on light vehicles;
   - seat belts and/or passenger restraints;
   - fail safe brakes;
   - automatic or manual fire suppression system;
   - restricted area and/or pinch point access controls or guarding where practicable; and
   - a device to automatically immobilise a vehicle in the absence of operator actions (the specific design requirements for this system should be determined using a risk assessment eg. deadman type switch, automatic braking system).

2 Design, selection, maintenance, and use criteria shall be in place for all remote controlled equipment.

3 Design and maintenance requirements shall be in place for all transport roadways.
4 Risk assessments shall be undertaken as part of the design, selection, commissioning, operation, modification, and maintenance process for all underground mobile equipment.

5 A formal acceptance process shall be in place for all new (to site) and modified underground mobile equipment prior to commencement of work on site.

B PROCEDURAL REQUIREMENTS

6 A procedure shall be in place to ensure that mobile equipment stops to allow pedestrians to pass in underground roadways.

7 All people underground shall wear reflective clothing to a recognised standard (eg. Australian Standard for Reflective Clothing).

8 Parking rules shall be in place including, but not limited to the following:
   • engine should be shut down before the operator leaves the machine except where safe operating procedures are authorised by the Senior Site Executive and supported by a documented risk assessment;
   • parking brakes shall be applied;
   • wheels should be turned into the rib/wall or chocked, and positioned as close to the rib/wall as possible; and
   • all lifting and elevating attachments lowered or secured in the parked position when not in use.

9 A system shall be in place to identify the maintenance and inspection requirements for underground mobile equipment (including where the underground mobile equipment should be located during the work).

10 A process shall be in place for pre-use and operational checks that clearly defines if underground mobile equipment is safe to operate.

11 Controls shall be in place to ensure the safety of people working in roadways including work in and around unexpected breakdowns. The risk to any attendant employees (eg. cable handlers) shall be specifically addressed.

C PEOPLE REQUIREMENTS

12 A competency based training system shall be in place for operation and maintenance of underground mobile equipment.

13 Key behaviours necessary to carry out activities associated with mobile equipment safely shall be identified.

14 A fit-for-work policy shall be in place, incorporating defined action levels for drugs and alcohol and a fatigue management plan.

15 Behaviour based observations shall include the operation and maintenance of underground mobile equipment. Any need for additional specific retraining should incorporate the results of these observations.
FATAL RISK CONTROL PROTOCOL

4 UNDERGROUND GROUND CONTROL

INTENT
To eliminate or minimise the risk of fatalities, injuries and incidents arising from falls of ground and collapse in underground operations.

APPLICATION
This Protocol applies to all underground ground control planning and activities.

REASON FOR INCLUSION
A significant proportion of fatalities and potentially fatal events in underground mines are connected with falls of ground and rock falls. The causes and contributing factors to these incidents have been:
• Inadequate knowledge of ground stability characteristics at site
• Working under unsupported ground
• At-risk installation of support practices
• Failure of ground support systems
• Lack of monitoring of effectiveness of ground supports
• At-risk barring and scaling down practices
• Carrying out remedial support activities

REQUIREMENTS
The mandatory requirements of these Protocols are signified by the use of the word “shall”.

The word “should” indicates that the primary intent is to comply with the full requirements as if they were mandatory. However, there will be circumstances where local conditions may demonstrate that the requirement is either not applicable or an alternative approach is necessary. In cases where “should” has been used in a requirement, variation can only be considered as compliance if the Senior Site Executive approves it based on an evaluation of the risk. The risk management approach adopted must be consistent with the BHP Billiton Risk Management Guideline.

The requirements of this protocol are as follows:

A PLANT AND EQUIPMENT REQUIREMENTS

1 Design and selection of equipment used in ground control applications shall meet the requirements specified in the ground control plan.

2 The equipment design shall incorporate removal or separation of the operator from unsecured ground, or the equipment shall provide a physical barrier to protect the operator in the event of an uncontrolled ground movement from roof or walls.

3 Materials used in the ground support system shall be selected and routinely tested to ensure they meet the required specifications of the ground control plan.

4 Equipment used in the ground control system shall be maintained and tested on a regular basis to ensure that it meets the ground control plan requirements and specifications (eg. longwall system health, torque settings for bolt installation, etc).

5 Advances in ground control technology shall be monitored, and appropriate engineering reviews should be conducted to determine whether new technology should be implemented or used.
BPROCEDURAL REQUIREMENTS

6 Initial and ongoing geotechnical analysis and assessment shall be an integral part of the mine design process and carried out by a qualified and competent person(s).

7 As part of the change management process, geotechnical assessment shall be undertaken during modification to the mine operation or design.

8 In developing, implementing or altering any ground control system a geotechnical risk assessment process shall be undertaken.

9 Adequate contingency in ground control systems shall be provided by a multi-tiered ground support response plan.

10 A process shall be in place for assessing ground to be secure.

11 No person shall go beyond the area of secure ground.

12 Systematic collection and analysis of data shall be in place for management of prevailing and predicted conditions and to assist with pre-empting changes to the physical conditions.

13 Systematic and ongoing monitoring shall be in place that assesses the implementation and effectiveness of the ground control system.

14 Documented procedures shall be in place to ensure the safe and effective installation and removal of ground support.

15 A documented risk assessment shall be conducted before any remedial work is carried out to improve or regain stability, and appropriate risk reduction measures adopted.

CPEOPLE REQUIREMENTS

16 The Senior Site Executive shall authorise the ground control plan and is accountable for its implementation and ongoing effectiveness.

17 Roles and responsibilities shall be assigned to ensure implementation and management of the ground control plan.

18 A competency based training program shall be in place including, but not limited to the following criteria:
   • support design principles;
   • the ground control plan;
   • placement and removal of supports;
   • recognition of indicators of change that may affect ground stability; and
   • on-the-job training and assessment.

19 Suitably qualified, competent and experienced person(s) shall be involved in the design, planning and implementation of the ground control plan.

20 A process shall be developed and maintained for ongoing communication between the geotechnical team, operations management and operators.

21 Shift change procedures shall include the requirement to notify relevant personnel of changes to ground control.

22 Behaviour based observations shall include work and tasks associated with ground control systems. Any need for additional specific retraining should incorporate the results of these observations.

DEFINITIONS

i Secure ground is ground that is supported in accordance with the ground control plan, or unsupported ground which has been assessed as not requiring support in accordance with the ground control plan.

ii A multi-tiered ground support response plan is a plan in which additional levels of support may be added according to triggers defined under that plan.
FATAL RISK CONTROL PROTOCOL
5 HAZARDOUS MATERIALS MANAGEMENT

INTENT
To eliminate or minimise the risk of fatalities, injuries and incidents arising from the storage, handling, production, transport, recycling and disposal of hazardous materials.

APPLICATION
This Protocol applies to hazardous materials that, in one or more of their forms (solid, liquid or gas), have the potential to lead to harm to people, the environment, or to the community, either in an incident involving loss of control, or in normal, controlled activities (eg. storage, handling, production, transport, recycling and disposal). This Protocol does not cover handling of radioactive materials.

REASON FOR INCLUSION
Hazardous materials have caused several fatalities, continue to contribute to the number of significant incidents in BHP Billiton, and are generally associated with all areas of the business. They are generally associated with uncontrolled releases and have the potential to affect a wide area around the incident (eg. gases can travel significant distances). It is therefore necessary to ensure that equipment, processes, and behaviours are developed and adopted that will manage the risk associated with these materials. The causes and contributing factors to these incidents have been:

- At-risk maintenance activities
- At-risk manual handling activities
- Equipment failure
- Lack of understanding of properties
- Insufficient management of risk

REQUIREMENTS
The mandatory requirements of these Protocols are signified by the use of the word “shall”.

The word “should” indicates that the primary intent is to comply with the full requirements as if they were mandatory. However, there will be circumstances where local conditions may demonstrate that the requirement is either not applicable or an alternative approach is necessary. In cases where “should” has been used in a requirement, variation can only be considered as compliance if the Senior Site Executive approves it based on an evaluation of the risk. The risk management approach adopted must be consistent with the BHP Billiton Risk Management Guideline.

The requirements of this Protocol are as follows:

A PLANT AND EQUIPMENT REQUIREMENTS

1 The basis of design of the hazardous materials facility shall be reviewed, amended as necessary and documented utilising HAZOP studies and hazard analysis processes. As-built design drawings (eg. process and instrumentation diagrams, process flow diagrams, layout drawings, isometrics) shall be updated as a result of these reviews.

2 Design specifications for all new or modified hazardous materials facilities shall be subject to risk assessment and shall detail hazardous materials selection, storage, loading and unloading facilities, leading industry practices, applicable regulations, and learnings from previous incidents to ensure risk is as low as reasonably practicable (ALARP).

3 All hazardous materials facilities shall provide for response to credible hazardous materials emergencies including the provision of safe refuge for personnel and emergency response equipment for spillage containment, fires, explosions, burns, etc and recovery and disposal of the hazardous material.

4 Provisions shall be made for safe venting and drainage, where required by normal operation, emergency situations, HAZOP analyses or risk management.
5 Labelling shall be in place on all storage vessels, containers and tanks, as per appropriate national or international standards. This labelling shall clearly identify the carried or stored material. Supporting information (eg. material safety data sheets [MSDS]) shall also be readily available at the point of use and storage to identify appropriate first aid procedures.

6 Piping should be marked such that the contents of the piping can be identified.

7 Security and access control systems and hardware shall be in place, appropriate to the risk, to manage access to areas where hazardous materials are stored and used.

8 Control systems shall ensure that the potential for personnel to be exposed to hazardous materials is removed wherever possible or, where this is not possible, the associated risk is reduced to ALARP.

9 Automatic plant control systems should be in place to eliminate the need for operator intervention to maintain operation within the design envelope. Such systems shall incorporate fail safe systems in the event of emergencies. Where automatic control is not practicable, risk assessment shall be used to identify and implement alternate risk management options that reduce HSEC risk ALARP.

10 Fixed and personal detection devices shall be considered as options in the selection of potential risk reduction measures. These are the redesign and separation controls, and personal protective equipment as described in the hierarchy of controls (refer 11 below).

B PROCEDURAL REQUIREMENTS

11 Management of risk associated with hazardous materials shall be supported by a documented process that incorporates risk reduction using the hierarchy of controls, applied in the following order (a number of these options may be considered and applied individually, or in combination):
- Elimination - the complete elimination of the hazard
- Substitution - replacing the material or process with a less hazardous one
- Redesign - redesign the equipment or work process
- Separate - isolating the hazard by guarding or enclosing it
- Administrative controls - providing controls such as training, procedures, etc
- Personal protective equipment - use properly fitted PPE where other controls are not practical; impact minimisation equipment such as spill clean up or dust suppression measures

12 A risk assessment process shall be in place for all hazardous materials to identify:
- the level of risk associated with the hazardous materials;
- controls required to manage the risk to levels that are ALARP; and
- the performance requirements (reliabilities and capacities) of specific equipment and systems included in these controls.

13 A system shall be in place to identify and document maintenance, inspection and testing schedules for critical equipment associated with hazardous materials.

14 A system shall be in place whereby the introduction and disposal of hazardous materials must be sanctioned and approved by the site Hazardous Materials Co-ordinator (refer 29 below) prior to introduction or disposal.

15 A system shall be in place for the management of change of equipment and/or processes for handling, storage, and transportation, and shall include specific steps to assess the impact of changes on the risk associated with hazardous materials.

16 A site register shall be in place for all hazardous materials, (including name, HAZCHEM code, MSDS, summary of maximum inventory, location, physical properties of the materials where they are used, and approved disposal methods). The inventory movement of hazardous materials should be controlled by means of a register or manifest.
17 A system shall be in place to ensure that MSDS are available to all personnel (including first
aiders and medical personnel) involved in the storage, handling and disposal of hazardous
materials on site.

18 A system shall be in place to ensure that all relevant design documents and drawings,
associated with this Protocol, are up to date, controlled and available to relevant personnel.

19 Critical activities involving hazardous materials shall be identified and safe operating
procedures documented, including storage of incompatible hazardous materials.

20 Safe operating limits for plant and equipment handling hazardous materials shall be clearly
defined, documented and available to operations and maintenance personnel. The limits
should be marked on equipment.

21 Monitoring systems for hazardous materials shall be in place to ensure that the status of
operation is understood and shown clearly at all times. These systems shall include the
procedure for a documented hand-over between shifts that records any relevant
information/changes in operating status.

22 A permit to work system shall be in place to ensure proper decontamination of plant and
equipment, isolation, use of the correct personal protective equipment, and any special
requirements or precautions (e.g. requirements for venting or when using naked flames)
where the occupational exposure limit of a hazardous substance could be exceeded. The
application of the permit to work process shall be used in the planning, preparation, and
execution of all tasks where the exposure of personnel during operation, maintenance or
inspection activities is a hazard.

23 A system shall be in place to control simultaneous operations involving hazardous materials
to avoid mixing of incompatible materials.

24 Emergency response plans for hazardous materials related incidents shall be in place and
annual simulation exercises shall be conducted as a minimum.

25 A system shall be in place to control and monitor access to areas where hazardous materials
are stored and handled. This shall also identify specific areas where hazardous materials
may be released under certain operational circumstances (e.g. vent opening during process upset,
infrequent discharge points) and what restrictions are placed on access to those areas.

26 A system shall be in place to authorise and control the training of appropriate personnel in
normal handling of, and emergency response procedures for hazardous materials.

27 A system shall be in place to monitor short and long-term exposure to hazardous materials.
This system shall ensure that fatality potential is also addressed.
C PEOPLE REQUIREMENTS

28 A site Hazardous Materials Co-ordinator shall be appointed at sites where hazardous materials are processed, stored and handled. This person shall have training and be competent to understand and evaluate the risks associated with a wide variety of substances, and be able to identify where additional expert advice can be sourced. The individual shall be responsible for assessing the hazardous properties and disposal requirements of materials used, monitoring the consumption and management of inventory, and also provide an “as needed” service to supply, warehousing, operational and HSEC personnel.

29 A competency based training system shall be in place for operations and maintenance roles involving hazardous materials. Use should be made of supplier expertise to supply this training with annual refresher courses if required.

30 Behaviour based observations shall include the operation of equipment and systems handling hazardous materials. Any need for additional specific retraining shall incorporate the results of these observations.
FATAL RISK CONTROL PROTOCOL

6 MOLTEN MATERIALS MANAGEMENT

INTENT
To eliminate or minimise the risk of fatalities, injuries and incidents arising from the handling and processing of molten materials.

APPLICATION
This Protocol applies to operational activities in and around furnaces and smelters, and includes hazards associated with the processes of tapping, handling and transport of molten materials, and the operation of the smelting process. The additional requirements of the Hazardous Materials Management Protocol also apply to materials covered by the Molten Materials Management Protocol.

REASON FOR INCLUSION
Molten materials have been involved in a number of fatalities in BHP Billiton, and require specialist management equipment, processes, and competencies over and above those applied to handling of other hazardous materials. The causes and contributing factors to these incidents have been:
- Inappropriate moisture levels
- Water/metal contact
- Equipment failure due to heat
- Loss of control during ladle movement
- Lack of personnel access control

REQUIREMENTS
The mandatory requirements of these Protocols are signified by the use of the word “shall”.

The word “should” indicates that the primary intent is to comply with the full requirements as if they were mandatory. However, there will be circumstances where local conditions may demonstrate that the requirement is either not applicable or an alternative approach is necessary. In cases where “should” has been used in a requirement, variation can only be considered as compliance if the Senior Site Executive approves it based on an evaluation of the risk. The risk management approach adopted must be consistent with the BHP Billiton Risk Management Guideline.
The requirements of this Protocol are as follows:

**A PLANT AND EQUIPMENT REQUIREMENTS**

1. The basis of design of molten material facilities shall be reviewed, amended as necessary and documented utilising the HAZOP and hazard analysis processes. As-built design drawings (e.g. process and Instrumentation diagrams, process flow diagrams, layout drawings, isometrics) shall be updated as a result of these reviews.

2. Design specifications for all new or modified molten material facilities shall be subject to risk assessment and shall detail hazardous materials selection, storage, loading and unloading facilities, leading industry practices, applicable regulations and learnings from previous incidents.

3. All molten material facilities shall provide for response to credible emergencies involving molten materials, including the provision for safe refuge and emergency response equipment for spillage containment, fires, explosions, burns, etc and recovery and disposal of the molten material.

4. Alterations to the layout, risk control and mitigation equipment and systems shall be covered by change management procedures.

5. Equipment associated with the handling and processing of molten materials shall be designed to fail safe in the event of power failures, power dips and surges.

6. Automatic plant shutdown systems (local and remote to the hazard) shall be in place to eliminate the need for operator intervention to maintain operation within the design envelope.

7. Transport roads and rail systems for molten metal carriers should, wherever possible, be dedicated for this purpose and clearly demarcated. Where this is not possible, risk analysis shall be undertaken to identify the additional controls required to manage the activities and potential conditions in the event of a molten material spillage, or loss of vehicle control and other hazards associated with transport over non-dedicated routes.

8. Molten materials processing and handling areas shall have sufficient emergency exits to provide at least two means of egress from any point.

9. Water supplies to molten material areas shall be limited to dedicated systems (e.g. jacket cooling) and free access to water tapping points eliminated, as far as practicable.

10. The tapping and casting processes should, wherever possible, be mechanised, automated and controlled from a remote location. Where this is not possible, the alternate or additional controls required shall be determined by risk analysis.

11. Restricted areas for handling and processing of molten materials shall be defined and demarcated, and compliance managed using a system of access controls. Where this is not possible, risk analysis shall be undertaken to identify the additional controls required.

12. Restricted areas, and areas directly exposed to molten materials processing and handling risk, shall be safeguarded to prevent personnel coming into contact with molten material or hot surfaces. Risk analysis should be undertaken to identify any additional controls required.

13. All surfaces in contact with molten materials shall be coated, prepared or of such a nature or grade that no exothermic reaction will occur when in contact with the molten material.

14. Molten materials processing and handling areas shall be designed to contain any spillage that may occur, and provide for safe clean up and disposal.

15. Molten materials processing and handling areas shall have general ventilation services, fume extraction facilities and emergency venting systems to minimise the exposure of people to dust, fume and gases.
B PROCEDURAL REQUIREMENTS

16 All molten materials processing and handling shall be subject to risk assessment.
17 Procedures shall be in place for all molten materials processing, handling and safe disposal activities.
18 A system shall be in place to ensure that all process drawings are current, and are easily accessible to operations personnel.
19 Monitoring systems shall be in place to ensure that the status of operation is shown clearly at all times. These systems shall include the procedure for a documented hand-over between shifts that records any relevant information/changes in operating status.
20 The safe operating envelope for molten materials shall be defined and understood by all process personnel. This shall include the indicators (physical, systems or observation based) that demonstrate that the limits of safe operation are being approached or have been breached (eg. indicators of moisture present in systems containing molten metal).
21 Critical equipment shall be defined, and maintenance plans for that equipment shall be documented.
22 Emergency response plans shall be in place, and an annual simulation exercise shall be conducted as a minimum. Specialist first aid and pre-hospitalisation trauma care for injuries shall be a component of the emergency response services and shall be tested during simulation exercises.
23 A procedure shall be in place to provide a quarantined store for alloys and other material to be recycled into systems containing molten materials so as to prevent explosions, contamination or other uncontrolled reactions.
24 A procedure that has the approval of the local traffic authorities shall be in place for the vehicle transportation (other than rail) of any molten materials along, or crossing public roads, over railway level crossings and past, or through, residential areas.
25 The management of change process for any operation shall include specific steps to assess the impact of changes on the risk associated with molten materials.
C  PEOPLE REQUIREMENTS

26  The roles and responsibilities for molten materials processing and handling shall be defined and assigned.

27  A competency based training system shall be implemented for operation and maintenance roles involving molten materials processing and handling.

28  All personnel shall be trained in their duties and responsibilities under emergency conditions.

29  All personnel shall be trained on the potential acute health effects of their working conditions and the materials handled.

30  The use of effective personal protective equipment shall be monitored and enforced in all areas where this type of control is required.

31  A fit-for-work policy shall be in place, incorporating defined action levels for drug and alcohol and fatigue management plan.

32  Behaviour based observations shall include the operation of equipment and systems handling molten materials. Any need for additional specific retraining should incorporate the results of these observations.
FATAL RISK CONTROL PROTOCOL
7 EQUIPMENT SAFEGUARDING

INTENT
To eliminate or minimise the risk of fatalities, injuries and incidents arising from hazards associated with contact with plant and equipment.

APPLICATION
This Protocol applies to safeguarding of people from plant and equipment.

REASON FOR INCLUSION
A number of high potential and fatal incidents have been associated with the inadequate and inappropriate safeguarding of equipment. The causes and contributing factors to these incidents have been:

- No guarding in place
- No process to identify guarding needs
- Ineffective guarding standards in place
- Working on moving parts with guarding removed
- Working alongside unguarded moving parts
- Lack of guarding interlocks on high risk potential equipment (eg. stripping machines)

REQUIREMENTS
The mandatory requirements of these Protocols are signified by the use of the word “shall”.

The word “should” indicates that the primary intent is to comply with the full requirements as if they were mandatory. However, there will be circumstances where local conditions may demonstrate that the requirement is either not applicable or an alternative approach is necessary. In cases where “should” has been used in a requirement, variation can only be considered as compliance if the Senior Site Executive approves it based on an evaluation of the risk. The risk management approach adopted must be consistent with the BHP Billiton Risk Management Guideline.
The requirements of this Protocol are as follows:

**A. PLANT AND EQUIPMENT REQUIREMENTS**

1. Equipment shall be designed to eliminate the need for guarding where practicable. Safeguarding should be selected where other potential mitigation measures do not adequately protect personnel as identified in the risk assessment.

2. Equipment safeguards shall be designed and constructed to comply with legislation, codes of practice and relevant recognised leading industry practices.

3. The integrity of plant and equipment safeguarding measures shall be continually maintained and monitored.

4. Risk assessments shall be undertaken to identify any safeguarded hazards that require interlock systems as an additional control.

5. Access to equipment shall be controlled and monitored where safeguarding and interlock systems are insufficient to protect persons from moving plant and equipment.

6. Fail safe switches or devices shall be installed on all rotating fixed plant and hand tools (e.g. saws, lathes, drill presses, etc).

7. Guards shall only be removed for maintenance and repair, and only once equipment is isolated and locked out. Guards shall be replaced prior to equipment being put back into service.

**B PROCEDURAL REQUIREMENTS**

8. A risk based process shall be used to identify all possible areas where safeguarding is required.

9. All documentation related to the risk assessment and selection of the safeguarding equipment required shall be retained and controlled.

10. Procedures shall be in place for situations when safeguards on operating plant and equipment need to be removed temporarily for any purpose.

11. A system shall be in place for the management of change to equipment and/or processes to ensure the integrity of safeguarding is maintained and to determine requirements for additional safeguarding.

12. No guarding shall be modified or altered in any way except through the application of a detailed risk assessment and change management process.

**C PEOPLE REQUIREMENTS**

13. A competency based training system shall be in place for operations and maintenance that includes the requirements of this Protocol.

14. Behaviour based observations shall include work activities associated with equipment safeguarding. Any need for additional specific retraining should incorporate the results of these observations.
FATAL RISK CONTROL PROTOCOL

8 ISOLATION

INTENT
To eliminate or minimise the risk of fatalities, injuries and incidents arising from the uncontrolled release of energy or hazardous materials.

APPLICATION
This Protocol applies to the isolation of all sources of energy (electrical, mechanical, hydraulic, chemical, gravitational etc).

REASON FOR INCLUSION
A significant proportion of our potential fatalities have included steps where sources of energy were not isolated adequately. The causes and contributing factors to these incidents have been:

- Failure to identify or recognise a source of potential or stored energy
- Inadequate lockout/tagout systems
- Working on, or isolation of, the wrong equipment
- Inadequate training or competence
- Complacency

REQUIREMENTS
The mandatory requirements of these Protocols are signified by the use of the word “shall”.

The word “should” indicates that the primary intent is to comply with the full requirements as if they were mandatory. However, there will be circumstances where local conditions may demonstrate that the requirement is either not applicable or an alternative approach is necessary. In cases where “should” has been used in a requirement, variation can only be considered as compliance if the Senior Site Executive approves it based on an evaluation of the risk. The risk management approach adopted must be consistent with the BHP Billiton Risk Management Guideline.
The requirements of this Protocol are as follows:

A  PLANT AND EQUIPMENT REQUIREMENTS
1  Purchase and design of equipment shall give due consideration to meeting the requirements of this Protocol.
2  Isolation shall provide positive protection and be achieved by the use of locking devices or establishment of a physical barrier or separation. All separations or physical barriers shall be provided with either a permanent or temporarily fitted locking device whenever possible.
3  Personal locking devices shall:
   • be uniquely keyed;
   • not be combination locks;
   • not have an unauthorised second-party master override key; and
   • be kept under the exclusive control of the owning individual, and key(s) shall not be transferred to another person for lock removal.
4  Designated isolation points shall be clearly labelled to identify the circuit or system over which they have direct control. These labels shall be applied following a process of pre-isolation identification using isolation lists, marked drawings etc (where permanently applied, these labels shall be physically verified prior to the isolation).
5  Lockout boxes, stations or equivalent shall be provided where required.
6  All hired and contracted equipment shall be reviewed to ensure it meets site isolation requirements and the requirements of this Protocol, before use on site.
7  All designated isolation points fitted with personal locking devices shall be tagged. The isolation tagging system shall ensure that:
   • isolation points are positively identified;
   • the reason for the isolation is clearly identified; and
   • isolation tags are highly visible to prevent inadvertent operation.

B  PROCEDURAL REQUIREMENTS
8  All sites shall have a documented isolation and lockout/tagout system.
9  The isolation system shall be applied to all activities on site, including contractor activities (ie. construction, commissioning, operation, maintenance, return to service, emergency, modification or demolition of equipment).
10 An additional overall isolation and lockout guideline shall be in place, and include definitions of appropriate treatment for routine isolations, non-routine isolations, group, master and/or multiple isolations, short-term isolations and long-term isolations (‘mothballing’ procedures are only required prior to such activity).
11 The isolation guideline should use a risk based process to determine the appropriate isolation method for any activity (either by way of a full description for specific cases, or by demonstrating the process that shall be followed to achieve the appropriate level of isolation in new activities). This shall include, but not be limited to:
   • the role of work instructions, checklists, tagging requirements and the permit to work system;
   • a positive registration process for people working on isolated equipment (personal tag, logsheet etc);
   • changed requirements associated with the duration of the isolation and task(s), or when tasks take longer than planned to complete;
   • energy sources to be isolated (hazardous materials, mechanical, electrical etc);
• the physical state of the energy sources such as their phase (liquid, solid, vapour etc) and other characteristics (eg. pressure, temperature, voltage etc);
• controls required for the duration of the activity (temporary engineering and operating changes, emergency procedures, personal protective equipment, etc);
• the requirements for formal contact with representatives in charge of each facility area affected, and the process for granting written authorisation to proceed; and
• special precautions when isolations cover one or more shift changeovers.

12 A procedure shall be in place for transfer (hand-over) and return (hand-back) of control of plant or equipment between operations and maintenance teams.

13 A system of formal documented ‘clearances’ for work to proceed following isolation and de-isolation shall be in place.

14 Documented system-specific isolation procedures shall be in place for critical equipment (such as critical alarms, emergency shutdown devices, relief and blow-down valves, fire and gas detection and protection devices, and other items as designated in the critical equipment register).

15 Specific procedures shall be developed to address software overrides as their functions are electronically initiated and applied to control rather than power circuits.

16 Documented test procedures shall be provided to verify isolation integrity including, but not limited to the following principles:
• identification of all energy sources or hazardous materials directly and indirectly associated with the work to be performed;
• confirmation of those systems requiring isolation;
• isolating the confirmed energy or hazardous material sources;
• application of lock/tag;
• application of isolation tag; and
• trying/testing of all systems and non-redundant isolations when reasonably or feasibly possible (to verify the integrity of the isolation and ensure a zero energy state exists).

17 A procedure shall be in place to mitigate hazards in special cases where any one of the following is not achievable:
• a zero energy state;
• a test/try of non-redundant means of isolation; or
• use of a locking device is not feasible.

18 Formal isolation procedures shall include requirements for investigation, reporting and removal of personal locks/tags by an authorised person other than the originator.

19 A system shall be in place for the management of change of equipment and/or processes for the isolation system, or installed isolations, and shall include specific steps to assess the impact of changes on the risk associated with these changes. This system shall include, but not be limited to:
• changes to process conditions;
• purchase/installation of new equipment;
• modifications to existing equipment;
• internal and external incident findings and learnings; and
• the need for revision of the system and/or guideline and/or additional training.

20 The isolation system shall be regularly reviewed to capture any previously unidentified changes and revised when necessary.
C PEOPLE REQUIREMENTS

21 Site role(s) for individuals with responsibility for electrical, mechanical, or process isolation management shall be defined.

22 A competency based training system and field assessment shall be in place to approve personnel before they conduct isolation processes.

23 Behaviour based observations shall include tasks and activities associated with isolation. Any need for additional specific retraining should incorporate the results of these observations.

DEFINITIONS

i An isolation tag is a tag applied to an isolation point that prohibits all use, operation or start-up of plant and/or equipment.

ii Routine work is work that does not require a permit and is covered by a procedure, work instruction or checklist.

iii Non-routine work is any activity that is outside the regular operation of the site. Non-routine work is not normally covered by a management system procedure, work instruction or checklist.

iv A group isolation is achieved when there is a single common isolation point that isolates more than one unit of equipment.

v A multiple isolation is a single isolation point that is locked and/or tagged by more than one person.

vi A short-term isolation is an isolation in place for one shift period or less.

vii A long-term isolation is an isolation in place for more than one shift period.

viii Software overrides are those that either electronically set and hold a device or electronically defeat an output action for emergency and safety shutdown systems.
FATAL RISK CONTROL PROTOCOL
9 WORKING AT HEIGHTS

INTENT
To eliminate or minimise the risk of fatalities, injuries and incidents arising from working at heights.

APPLICATION
This Protocol applies wherever there is potential for any person to fall 2 metres or more, or to gain access to within 2 metres of an open edge from where there is the potential to fall 2 metres or more, including working from various forms of portable and moveable elevated work platforms, cages, and where objects could fall and cause injuries. (Note: if local legislation requires, more stringent controls then those controls shall be implemented.) This Protocol does not apply to rope rescue situations and abseiling that are regarded as specialist functions.

REASON FOR INCLUSION
Falls from heights have contributed to a significant proportion of our fatal and high potential incidents. The causes and contributing factors to these incidents have been:
- Failing to wear a harness
- Wearing the wrong sort of harness
- Wearing the harness incorrectly
- Lack of job planning and job assessment
- Unstable set up of elevated work platforms

REQUIREMENTS
The mandatory requirements of these Protocols are signified by the use of the word “shall”.

The word “should” indicates that the primary intent is to comply with the full requirements as if they were mandatory. However, there will be circumstances where local conditions may demonstrate that the requirement is either not applicable or an alternative approach is necessary. In cases where “should” has been used in a requirement, variation can only be considered as compliance if the Senior Site Executive approves it based on an evaluation of the risk. The risk management approach adopted must be consistent with the BHP Billiton Risk Management Guideline.
The requirements of this Protocol are as follows:

**A PLANT AND EQUIPMENT REQUIREMENTS**

1. All working at heights equipment shall comply with relevant approved design standards.
2. Single person anchor points shall be capable of withstanding 15kN (approximately 3,372lb).
3. Where personnel are required to work within 2 metres of an opening where they could fall, they shall use personal fall restraint equipment, such as a fixed lanyard and harness as a minimum, which will prevent them from falling over the edge.
4. Where there is potential to fall more than 2 metres, personnel shall wear appropriate personal fall arrest equipment. In such circumstances a full body harnesses, including shock-absorbing lanyard, is mandatory. The use of body belts for fall arrest is prohibited, except for specialised tasks such as pole-climbing belts worn by specially trained linesmen.
5. All forms of portable and movable elevated work platforms and suspended work cages shall conform to relevant approved design standards. People in the work platform basket shall wear a correctly fitted harness attached by a lanyard to a suitable anchor point in the basket. This does not apply to people working from a properly constructed and certificated scaffold with the requisite handrails and toe boards.

**B PROCEDURAL REQUIREMENTS**

6. The need to work where there is the risk of a fall shall be eliminated where reasonably practicable. Personal fall arrest equipment shall be used only when all other control measures have been explored and deemed to be not reasonably practicable.
7. Standard work procedures shall be in place for the correct wearing and use of personal fall arrest and fall restraint equipment.
8. There shall be a work permit system in place to control all working at heights.
9. A documented risk assessment shall be conducted before the commencement of work and at any time the scope of work changes or the risk of a fall increases. The risk assessments shall include:
   - consideration for the potential of objects, as well as personnel, to fall;
   - selection of appropriate control measures using the hierarchy of controls;
   - the possibility for weather and other environmental conditions to influence the working conditions (eg. wind, rain, snow, dust, gases, poor lighting, temperature etc);
   - selection of appropriate equipment;
   - selection of anchor and tie off points;
   - condition of supporting structures such as roofs; and
   - fall clearances ie. length of lanyard + tear-out distance + height of user + safety margin.
10. All equipment shall be fit-for-purpose and undergo pre-use checks and a minimum of six-monthly (bi-annual) documented inspections by a competent person. An equipment register and tagging system shall be in place to indicate compliance with this inspection.
11. Where the work method requires persons to detach and re-attach at height, a dual lanyard system shall be utilised to ensure that at least one connection point is maintained at all times.
12. Where the use of personal fall arrest equipment is required, a person shall not work alone and there shall be other personnel in the vicinity who can raise the alarm immediately should a person fall.
13. Persons working at height shall ensure that their safety helmets are secured by using a helmet chinstrap.
14. A system should be in place to prevent tools and other objects from falling from height.

15. Barricading and warning signage should be placed on all lower levels where personnel or objects may fall.

16. Personnel operating elevated work platforms and cages shall be trained and certified for the equipment they are using.

17. The site emergency response plan(s) should include plans for the rapid retrieval of personnel in the event of a fall from height. (Response time is critical if a person is left suspended in a harness.)

C. PEOPLE REQUIREMENTS

18. Sites shall conduct a process to ensure selected personnel to work from heights are physically and psychologically suitable for work at height. Specific consideration shall be given to personnel who suffer medical conditions, such as vertigo and epilepsy, as well as considering the weight of the person using the harness. (Note: many harness systems have a maximum weight limit of 136kg/300lbs.)

19. A competency based training program for employees and supervisors shall be in place, which includes provisions for maintaining competence. All persons engaged in work covered by this Protocol shall be adequately trained and assessed for competency.

20. Behaviour based observations shall include activities and tasks associated with working from heights. Any need for additional specific retraining shall incorporate the results of these observations.
OUR FUTURE STATE
Achieving Zero Harm in Safety

BHP Billiton is an organisation in which:
- The safety of our people is a value which is not compromised
- Safety excellence is recognised as good business
- Leaders at all levels are safety role models
- Effective safety leadership is a prerequisite for promotion
- People are aware of the hazards and risks in their workplace and act accordingly
- Compliance with safety standards and procedures is absolute
- "At risk" behaviours are not acceptable and are addressed when observed
- Effective skills to lead and work safely are developed through ongoing training and mentoring
- Repeat incidents are evidence of an out of control operation

SAFETY AWARENESS

"The state of mind where we are constantly aware of the possibility of injury and act accordingly at all times"
CONTACT US

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