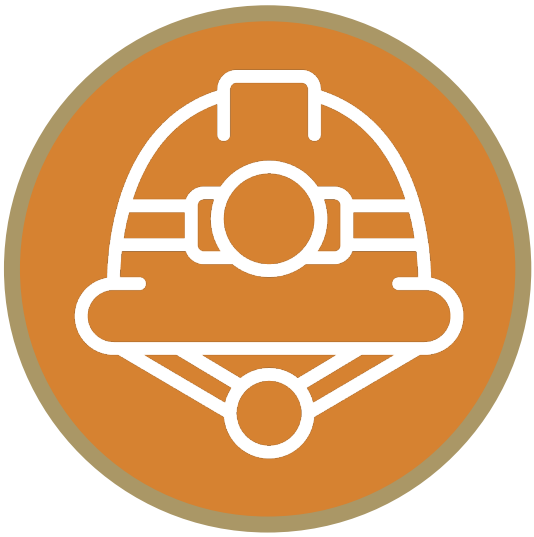
OCEANAGOLD



Safety Performance Standards Manual

Issued Version History

Date	Version	Prepared by	Notes
23 April 2019	1	Portia Weeks	Major review of safety standards to meet best practice requirements
29 May 2020	2	Portia Weeks and Elecia Duly	Major review of safety standards, and major design, consistency and formatting changes
30 March 2022	3	Bernie Murphy	Section 9.3.2 & Section 11.3.4 updated

Contents

Principle Hazard Management Plan Standards

1 Ground Control

Purpose

To eliminate or minimise the risk of fatalities, injuries and incidents arising from ground instability at any Business Unit.

Minimum Standards

1.1 Each Business Unit shall undertake risk assessments to identify risks associated with ground conditions and potential failure effects.

1.2 The identified risks and associated controls shall be recorded in the Site Risk Register to eliminate or minimise the risks.

1.3 A plan shall be developed at each Business Unit to describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risks identified by the risk assessment process. The plan shall include:

1.3.1 **Modelling and design**

Specific modelling and design standards to ensure the design, layout and construction of the working area is safe for all authorised users. The standards shall consider:

- Mapping and modelling to understand geotechnical constraints and predict structural behaviour. The mapping and modelling should consider; geotechnical, 3D, fault and structural geology, hydrogeological, numerical, rock mass, rock fall, photogrammetric, ground conditions, historical workings and testing of design data; and
- All aspects of the proposed constructed excavation, including; pit wall, slope design, primary ground support, mining regulations, large excavation support, secondary egress, portal location, drainage, Tailings Storage Facility (TSF) proximity and water retention, and earthquakes.

1.3.2 **Operating standards**

Each Business Unit shall develop processes, procedures and standards to ensure operational activities are in place to manage ground conditions and mitigate against unplanned ground movement. The processes, procedures and standards shall consider:

- Support requirements - rock buttressing, check-scaling, shotcrete, cable bolts, meshing, anchoring, void management, back filling, removal of clay and weathered material;
- Depressurising standards – dewatering and drains;
- Drill and blast standards - drilling, charging, minimising of uphole drilling, and wall and berm trim; and
- Equipment standards - remote equipment use, Roll Over Protection (ROP) and Falling Object Protection (FOP).

1.3.3 **Procedures and rules**

Each Business Unit shall develop procedures and rules for personnel to minimise risks associated with ground instability. The procedures and rules shall include:

- Work area access restrictions, including; barricading and signage requirements;
- Mandatory Personal Protective Equipment (PPE) requirements and proper fit;
- Workplace inspection and pre-start risk assessments such as pre-shift and on-shift visual examination processes;
- Communication requirements and protocols - call points, meetings, emails, and notices;
- Authorisation procedures for work activities;
- Triger Action Response Plan (TARP) and emergency response procedures; and
- Specific workplace rules - no personnel under unsupported ground, and exclusion distances from high walls.

1.3.4 **Supervision, monitoring and review**

Each Business Unit shall develop routine schedules to ensure supervision, monitoring and review of personnel and ground conditions. The supervision, monitoring and review schedule shall consider:

- People - fit for work, competent, and performance monitoring;
- Equipment - pre-start, defect reporting, condition, housekeeping, isolation, fit for purpose, ground support structures, and seismic tool calibration;
- Environment - structural geology, groundwater & ground stress, rock and soil displacements, angle of inclination, slope stability, water pressure & depth development, and rainfall and weather; and
- Procedures and processes - hazard identification and control, task methodology and equipment use fit for purpose, and contractor management.

1.3.5 **Training and competency**

Each Business Unit shall detail competency and training requirements for personnel undertaking tasks associated with the management of geotechnical stability. The training shall include:

- Hazard identification and awareness – ensuring all personnel are aware of the risks and hazards associated with their workplace and the tasks they are required to undertake; and
- Assurance of skills and knowledge required to undertake specific roles, including:
    - Mandatory equipment and its use;
    - Communication procedures and protocols;
    - First aid skills appropriate to the task and location of work;
    - Emergency contact details; and
    - Relevant rules and procedures.

1.3.6 **Quality assurance and quality control**

Each Business Unit shall have internal and external Quality Assurance (QA) and Quality Control (QC) assessments (audits) to validate the presumptions of modelling & design, as-built and for ongoing operational aspects that underpin the anticipated ground stability.

Records shall be kept of all ground/strata failures, such as; rock fall has the potential to cause serious injury to a person or persons.

1.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

2 Inundation and Inrush

Purpose

To eliminate or minimise the risk of fatalities, injuries and incidents arising from sudden and unplanned inrush of liquid, gas, rock or other materials or substances into mine workings.

Minimum Standards

2.1 Each Business Unit shall undertake risk assessments to identify risks associated with sudden and unplanned inundation and inrush in the workplace.

2.2 The identified risks and associated controls shall be recorded in the Site Risk Register to eliminate or minimise the risks.

2.3 A plan shall be developed at each Business Unit to describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risks identified by the risk assessment process. The plan shall include:

2.3.1 **Modelling and design**

Specific modelling and design standards to ensure potential sources of inrush and inundation are identified at each Business Unit and mine planning scheduled to reduce the likelihood of sudden and unplanned inundation and inrush. Where appropriate the standards shall consider:

- Active or disused nearby mine workings;
- Natural and man-made water bodies;
- Back fill operations (open pit) and underground cavities;
- Sinkholes to the surface or open pit (chimneying);
- Highly permeable aquifers and bore holes;
- Unsealed diamond drill holes;
- Surface flooding events (typhoons and rainy season);
- Faults and geological weaknesses;
- Paste and hydraulic fill operations;
- Waste areas may contain irrespirable atmospheres or flammable gases; and
- The potential effects from the identified sources of inrush or inundation on all aspects of the proposed mine sequence, design and schedule.

2.3.2 **Design and construction**

Specific engineering design and construction standards shall be adopted to ensure the design, layout and construction of the working area is safe for all authorised users. The standards shall consider:

- Draining or removing the identified potential for inundation or inrush – removing any redundant water storage, constructing water storage at the lowest part of the mine, and covering all drilling and drainage;
- Diversions - diverting water along drains to safe release points, draining away from accumulation point, and diverting surface water to minimise recharge and/or inrush into mine workings;
- Engineered barriers - levee banks, dam structures, bulk heads and crown pillars between stopes. All engineered barriers shall consider; pressure, quantity and nature of the hazard, long term stability of the barrier under stress, and suitability of the material;
- Sealing of man-made conduits;
- Ventilation of old workings to prevent the build-up of irrespirable atmospheres or flammable gas; and
- Water inrush risk zones identified by inrush hazards.

2.3.3 **Procedures and rules**

Each Business Unit shall develop management systems, procedures and rules for personnel to minimise the likelihood of being affected by inundation and inrush events. The procedures and rules shall include:

- Work area access restrictions - barricading and signage requirements;
- Workplace inspection and pre-start risk assessments such as pre-shift and on-shift visual examination processes;
- Communication requirements and protocols - call points, meetings, emails, and notices;
- Authorisation procedures for work activities;
- TARPs, including; response to water intersects or flooding events, and evacuation and emergency response procedures;
- Inrush and Inundation Principal Hazard Management Plans (PHMP); and
- Standard Operating Procedures (SOP).

2.3.4 **Monitoring and review**

Each Business Unit shall implement monitoring, tracking and/or early warning systems for potential sources of inundation and inrush. Trigger levels should be built into the systems, and where possible, shall consider:

- People - fit for work, competent, and performance monitoring;
- Equipment - pre-start, defect reporting, condition, fit for purpose, calibrated, pressure sensors, radar to detect subsidence, flow monitoring and quantity and material instability;
- Environment - structural geology, groundwater and ground stress, rock and soil displacements, water pressure and depth development, and rainfall and weather; and
- Procedures and processes - hazard identification and control, TARPs, uncontrolled water inflow equipment use, water pressure, pillar monitoring system, TSF and river monitoring system, geotechnical and hydrogeological inspection procedures, and all other routine monitoring procedures (piezometer, seepage, flows, pumping rates and flows at embankments).

2.3.5 **Training and competency**

Each Business Unit shall detail competency and training requirements for personnel to ensure possible sources of inundation and inrush are prevented, monitored and actively managed. The training shall include:

- Hazard identification and awareness – ensuring all personnel are aware of the risks and hazards associated with their workplace and the tasks they are required to undertake; and
- Assurance of skills and knowledge required to undertake specific roles, including:
    - Mandatory equipment and its use;
    - Communication procedures and protocols;
    - First aid skills appropriate to the task and location of work;
    - Emergency contact details;
    - Relevant rules and procedures;
    - Engineering designs - mine plans and dewatering systems;
    - Areas may contain irrespirable atmospheres, flammable gases, or water storage underground; and
    - Inrush risk controls, zones and exclusion zones.

2.3.6 **Quality assurance and quality control**

Each Business Unit shall have internal and external QA and QC assessments (audits) to validate the assumptions of modelling, management systems and control design for preventing inundation and inrush. This includes QA and QC on historical records and data provided by a registered authority. Records shall be kept on:

- All inrush and inundation events;
- The number and location of people who may be impacted by inundation and inrush; and
- Audits, reviews, inspections and monitoring results that measure and control effectiveness.

2.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

3 Traffic Management

Purpose

To eliminate or minimise the risk of fatalities, injuries and incidents arising from mobile equipment use at Business Units.

Minimum Standards

3.1 Each Business Unit shall undertake risk assessments to identify risks associated with the use of mobile equipment in the workplace.

3.2 The identified risks and associated controls shall be recorded in the Site Risk Register to eliminate or minimise the risks.

3.3 A plan shall be developed at each Business Unit to describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risks identified by the risk assessment process. The plan shall include:

3.3.1 **Equipment standards**

Each Business Unit shall develop equipment standards to ensure all mobile equipment used at the Business Unit is fit for purpose. The standards shall consider:

- Make, model and performance requirements - 4-wheel drive, transmission, and standard safety fittings;
- Vehicle visibility and audibility - alarms, flags, colours, identification requirements, and reflective tape;
- Vehicle specific safety requirements - ROPS/FOPS, cameras, braking systems, isolation points, fire suppression types, proximity sensors, and seatbelt/restraint devices;
- Equipment maintenance system - inspections, services, and preventative maintenance;
- Ancillary equipment standards - towing equipment;
- Certification requirements (roadworthy); and
- Newly purchased light vehicles shall meet the host country regulatory requirements.

3.3.2 **Traffic area standards**

Each Business Unit shall develop traffic area standards to ensure the design, layout, operation, construction, and maintenance of each road and other vehicle operating area at the Business Unit is safe for all authorised users. The standards shall consider:

- Road design and construction criteria (camber, grade, and surface condition);
- Signage;
- Parking locations and requirements;
- Demarcation and segregation (bunds, bollards, and pavement markings);
- Collision protection; and
- Warning devices (convex mirrors and flashing lights).

3.3.3 **Traffic procedures and rules**

Each Business Unit shall develop traffic rules and procedures to manage the risks associated with interactions between a mobile plant, fixed structures, remote control vehicles, pedestrians and other traffic. The procedures and rules shall consider:

- Road rules - speed limits, overtaking, right of way, restricted areas, and safe distance of travel;
- Communication protocols - radio channels, positive comms prior to overtaking horn signals, emergencies, underground cap lamp signals, and mobile phone policy;
- Restricted vehicle uses - adverse weather, loading, spotters, refuelling, emergency braking, and defect notification; and
- Safe parking - location, chocking, gradient, reverse parking and v-drains.

3.3.4 **Supervision, monitoring and review**

Each Business Unit shall develop routine schedules for the supervision, monitoring and review of mobile equipment and associated traffic interactions. The supervision, monitoring and review schedule shall consider:

- People - fit for work, competent, and performance monitoring;
- Equipment - pre-start, defect reporting, condition, housekeeping, isolation, and fit for purpose;
- Environment - constructed workplace standards (road condition checks, delineation and bunds, workplace inspections) and rainfall and weather (slippery surfaces and reduced visibility); and
- Procedures and processes - hazard identification and control, task methodology and equipment use fit for purpose, communications requirements and protocols, including; call points, meetings, emails, notices and contractor audit.

3.3.5 **Training and competency**

Each Business Unit shall detail training and competency requirements for personnel using mobile equipment to eliminate or minimise the risk of incidents. The training shall include:

- Hazard identification and awareness – ensuring all personnel are aware of the risks and hazards associated with their workplace and the tasks they are required to undertake; and
- Assurance of skills and knowledge required to undertake specific roles, including:
    - Mandatory equipment and its use;
    - Communication procedures and protocols;
    - First aid skills appropriate to the task and location of work;
    - Emergency contact details; and
    - Relevant rules and procedures.

3.3.6 **Fitness for work**

Each Business Unit shall establish processes and procedures to support employees in being deemed ‘fit for work’. The processes and procedures shall include:

- Medical and fitness assessments;
- Fatigue Management Awareness;
- Drug & Alcohol Testing; and
- Hydration monitoring.

3.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

4 Tips, Ponds and Voids

Purpose

To eliminate or minimise the risk of fatalities, injuries and incidents arising from activities associated with working around tips, ponds and voids.

Minimum Standards

4.1 Each Business Unit shall undertake risk assessments to identify risks associated with tips, ponds and voids.

4.2 The identified risks and associated controls shall be recorded in the Site Risk Register to eliminate or minimise the risks.

4.3 A plan shall be developed at each Business Unit to describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risks identified by the risk assessment process. The plan shall include:

4.3.1 **Management of tipping and tip heads**

A description of the controls used to prevent potentially fatal incidents identified in the operational risk assessment where tipping occurs at the Business Unit. The controls listed shall include:

- A dump design to consider and manage the stability of the dump considerate of the material being dumped, equipment being used and the effect of climatic conditions;
- Operational procedures, including:
    - Traffic management - restrictions for light vehicles and pedestrians on and below the dump;
    - Dump and berm standards with required berm height, shape and approach camber to prevent reversing over the edge;
    - Requirements for spotting;
    - Positive communications;
    - Visibility and lighting requirements; and
    - Workplace inspections and monitoring.
- Management of the dump toe such that:
    - The dump surface is not undercut from materials being retrieved or eroded; and
    - Material from the tip face is prevented from impacting work activities and personnel near the toe of the dump.

4.3.2 **Void safety management**

A description of the controls used to prevent potentially fatal incidents identified in the operational risk assessment where access to open voids occurs at the Business Unit. The controls listed shall include:

- A procedure to check ground and identify potential voids, where historic mining has occurred;
- Edge protection practices during operations; and
    - Visibility, fencing, barricading and warning signs; and
    - Vehicle and equipment stoppers when backfilling open stopes or using ore passes.

- Identifying, removing and restricting access to surface voids.

4.3.3 **Pond safety management**

A description of the controls used to prevent potentially fatal incidents identified in the operational risk assessment associated with sumps, ponds and water bodies at the Business Unit. The controls listed shall include:

- Restricting access to the sump or pond location - restrictions for light vehicles and pedestrians;
- Fencing or bunding the sump/pond edge to restrict unplanned vehicle movement;
- Establishing operational procedures for working on the sump/pond as required, including; life jackets, isolation of pumps and working in pairs;
- Life rings and rope ladders to escape the sump/pond where appropriate; and
- Emergency preparedness and response.

4.3.4 **Supervision, monitoring and review**

Each Business Unit shall develop routine schedules to ensure the supervision, monitoring and review of personnel undertaking tasks around tipping, voids and ponds. The supervision, monitoring and review processes shall consider:

- People - fit for work, competent, and performance monitoring;
- Equipment - pre-start, defect reporting, condition, housekeeping, isolation, fit for purpose, ground support structures, and seismic tool calibration;
- Environment - structural geology, groundwater & ground stress, rock and soil displacements, angle of inclination, slope stability, water pressure & depth development, and rainfall and weather; and
- Procedures and processes - hazard identification and control, task methodology and equipment use fit for purpose, and contractor management.

4.3.5 **Training and competency**

Each Business Unit shall detail competency and training requirements for working around tips, ponds and voids. The training shall include:

- Hazard identification and awareness – ensuring all personnel are aware of the risks and hazards associated with their workplace and the tasks they are required to undertake; and
- Assurance of skills and knowledge required to undertake specific roles, including:
    - Mandatory equipment and its use;
    - Communication procedures and protocols;
    - First aid skills appropriate to the task and location of work;
    - Emergency contact details; and
    - Relevant rules and procedures.

4.3.6 **Fitness for work**

Each Business Unit shall establish processes and procedures to support employees in being deemed ‘fit for work’. The processes and procedures shall include:

- Medical and fitness assessments;
- Fatigue Management Awareness;
- Drug & Alcohol Testing; and
- Hydration monitoring.

4.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

5 Underground Ventilation

Purpose

To eliminate or minimise the risk of fatalities and chronic illnesses arising from substandard atmospheres in underground mines, and to ensure ventilation is sufficient enough to extract and dilute contaminants if produced in the course of the operation from both naturally occurring or mining activities.

Minimum Standards

5.1 Each Business Unit shall develop a Principle Control Plan (PCP) to address the requirements of the OceanaGold Underground Ventilation standard.

5.2 An annual review of the ventilation PCP is required as a minimum, or when major changes are proposed to the ventilation network.

5.3 The PCP shall describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risk of a substandard underground working atmosphere. The plan shall include:

5.3.1 **Modelling and planning**

Specific modelling and design standards shall ensure the effectiveness and adequacy of the primary and secondary ventilation systems, including:

- Compliance with the host country's legislation;
- A plan to control the supply of air flow to various parts of the mine;
- A means to document and secure the ventilation control devices so they aren't tampered with;
- Regular inspections to monitor for integrity of return airways;
- Measurement of air temperature and humidity underground;
- Routine and regular testing of diesel exhausts;
- The assessment of air volume and quality on all aspects of the proposed mine sequence, design and schedule;
- Correct selection of primary and secondary ventilation on the basis of performance;
- Schematic of most recent ventilation circuit should be displayed;
- A current ventilation model shall be maintained for each Business Unit; and
- A schedule for primary and secondary ventilation surveys and a checklist to ensure all information required is collected during the survey.

5.3.2 **Procedures and rules**

Each Business Unit shall develop management systems, procedures and rules for personnel to ensure safe underground ventilation. The procedures and rules shall include:

- The appointment of a Ventilation Officer;
- The requirement for no persons to enter areas of the mine that are sealed, disused or otherwise not ventilated;
- The requirement that only mine workers with the required competencies are permitted to operate, maintain or adjust any part of the ventilation system;
- SOPs for primary fans, auxiliary fans, booster fans and scrubber fans (where applicable) shall detail how monitoring, maintenance and operation shall be undertaken;
- Lockable and easily accessible points for energy isolation on ventilation systems;
- Placement of main ventilation fans in locations that are unlikely to be impacted in the event of an explosion;
- A process for isolation of areas underground and the precautions required in the event of an explosion or fire (refer to IMS 4.1 crisis and emergency preparedness and response);
- Construction, installation, use and maintenance of ventilation control devices in line with the manufacture's recommendations;
- TARPs in the event of failure or partial failure of the primary ventilation system; and
- Operational standards, including; air velocities, temperature, primary airflow and levels of oxygen, diesel particulate matter, toxic and asphyxiant gases.

5.3.3 **Monitoring and review**

Each Business Unit shall implement systems to provide real time atmospheric air quality monitoring. Warning systems and procedures for ventilation infrastructure failure (i.e. unplanned main fan outage) should also be developed. Trigger action levels shall be built into the monitoring and inspection systems where possible.

5.3.4 **Training and competency**

Each Business Unit shall have a dedicated Underground Ventilation Officer (UVO). The UVO shall be trained and competent in professional development as a requirement of employment. The training, competency and assessment process shall include:

- Hazard identification and awareness – ensuring personnel understand the potential risks from inadequate ventilation standards, the effect of seasonal changes on temperature and humidity, the anticipated size of diesel fleet operating underground, and consideration for the mine emergency response strategy in the event of a fire (inclusive of fire simulations for different types of equipment in different locations throughout the mine);
- Verification on control effectiveness;
- Maintenance requirements for fans and warning devices; and
- Assurance of competency.

5.3.5 **Quality assurance and quality control**

Each Business Unit shall have internal and external QA/QC assessments (audits) to validate the controls in place. Records shall be controlled, secured and readily available either in electronic or hard copy format. Records shall be kept on:

- Memorandums in relation to primary and secondary surveys;
- The register of fans in use, including existing fan performance curves;
- Maintenance records, including; mobile filter checks, ventilation fans, monitoring devices;
- Vent ducts are inspected daily;
- Audits, reviews, inspections and monitoring results;
- Shift supervisor's inspection records; and
- Action registers for outstanding and/or corrective actions.

5.4 The General Manager and SSE of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

6 Fire and Explosion

Purpose

To eliminate or minimise the risk of fatalities, injuries and incidents arising from unplanned and uncontrolled fire and explosion.

Minimum Standards

6.1 Each Business Unit shall undertake risk assessments to identify the potential for risks from unplanned and uncontrolled fire and explosion and shall consider:

- Potential sources of flammable, combustible and explosive materials including; gas, dust, fuels, solvents and timber;
- Potential sources of ignition;
- Pressure vessel storage and use; and
- Potential for propagation of fire or explosion to other parts of the Business Unit.

6.2 The identified risks and associated controls shall be recorded in the Site Risk Register to eliminate or minimise the risks.

6.3 A site plan shall be developed to describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risks identified by the risk assessment process. The plan shall include:

6.3.1 **Procedures to manage 'hot work', including:**

Specific modelling and design standards shall ensure the effectiveness and adequacy of the primary and secondary ventilation systems, including:

- Designated hot work stations (such as in workshops), which require:
    - No contactable, combustible or flammable material within a radius of 10 metres;
    - Screens or other suitable partitions to protect other people who are working in, visiting or walking past the area; and
    - Adequate ventilation to ensure possible fumes are not drawn through an employee's immediate breathing zone.
- Permits to undertake hot work outside of the designated hot work areas and safeguards required (fire watch, fire extinguisher etc.)
- Standards for equipment used in hot work including:
    - Residual Current Devices (RCD) on all welding equipment;
    - Flashback arresters fitted to all oxygen and acetylene cylinders on the operator's side of each regulator connection or gas discharge of a manifolded cylinder pack as a minimum;
    - Leakage current limits; and
    - Insulation resistance limits.
- Equipment monitoring and maintenance requirements, including:
    - A thorough visual inspection process undertaken prior to using equipment;
    - Equipment tested and tagged by an appropriately qualified worker;
    - Quarterly inspections on all welding and oxy acetylene equipment;
    - Records of equipment testing, and inspection are retained; and
    - Training and competency requirements met for all personnel.

6.3.2 **Requirements for the safe transport, storage and use of flammable, combustible and explosive material including:**

- OceanaGold Explosives Standard;
- OceanaGold Chemical and Hazardous Substances Standard; and
- Site waste disposal procedures.

6.3.3 **Requirements to manage compressed gases and pressure vessels including:**

- A register of all pressure vessels located at Business Units;
- In the absence of host country standards, storage and transport of gas cylinders and associated equipment shall comply with appropriate New Zealand, Australian or other International Standards;
- Cylinders shall be transported in a purpose-built pallet or basket designed to transport upright, protect against falling and impact damage and be fitted with valve covers;
- All boilers and pressure vessels shall be designed, fabricated, installed, maintained, operated, and modified in accordance with applicable codes, international standards, government regulations and manufacturers specifications;
- Signage including caution against smoking and naked lights;
- Leaking gas cylinders shall be taken out of service immediately and removed to a well-marked and separate ventilated area;
- Ring main systems shall be inspected regularly, and leak tested every 12 months.
- Ring main systems shall have hazard warning signs posted on or near the piping.
- Pressure relief valves shall be installed and positioned so discharge is not directed towards persons;
- Where shutoff valves are not present, safety chain or other suitable locking devices shall be used at connections where connection failure would create a hazard;
- Pressure vessels shall be included in a planned inspection and preventative maintenance schedule to detect leaks, cracks, corrosion, and other forms of deterioration and the inspection results documented in a register; and
- Maintenance, inspection and testing of pressurised systems including the pressure relief devices shall meet legislative and manufacturers' requirements and be conducted as part of the scheduled maintenance program.

6.3.4 **Fire detection and suppression system requirements, including:**

- Mandatory fire detection equipment, including; fire alarms, heat detectors and smoke detectors shall be installed in locations where a fire risk exists. Fire/emergency alarms shall be distinctly different from other sirens used at the Business Unit;
- Mandatory fire protection equipment, including; fire extinguishers, fire doors, fire panels, sprinkler systems, hydrants, fire hose installations, deluge systems and foam injection systems shall be installed in compliance with the host country legislation. Where no such requirement exists, the relevant New Zealand or Australian standards shall apply;
- All mobile equipment used within areas deemed a high-risk shall be fitted with a fixed fire suppression system capable of automatic or manual activation;
- Fire detection and protection equipment including back up power supplies shall be regularly inspected to ensure equipment is accessible, available, and operable at all times; and
- All fire protection equipment shall be identified with a unique number/description to correspond with its location/cabinet numbers. They will be recorded on a preventative maintenance program and the inspection findings are to be documented and recorded.

6.3.5 **Emergency response capacity:**

- Each Business Unit shall detail their fire response capacity in the Site Emergency Management Plan.

6.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

7 Explosives

Purpose

To minimise the risk of fatalities, injuries and incidents from the use of explosives at OceanaGold sites.

Minimum Standards

7.1 Each Business Unit shall undertake risk assessments to identify risks associated with the transport, storage, handling and use of explosives in the workplace.

7.2 The identified risks and associated controls shall be recorded in the Site Risk Register to eliminate or minimise the risks.

7.3 A plan shall be developed at each Business Unit to describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risks identified by the risk assessment process. The plan shall include:

7.3.1 **Modelling and design**

Specific aspects of design and modelling for the storage, transport and use of explosives, including:

- Drill and blast design - blast hole design, timing, layout, method of initiation, and product usage and quantity;
- Magazine design - layout (distance from other infrastructure such as electrical substations, workshops and crib rooms, etc.), adequate segregation of initiating agents and explosives, and statutory design requirements (e.g. lightning rod overhead, provision for stock control processes, and heat/ventilation management); and
- Mobile equipment design (mobile manufacturing unit, and shotfirers vehicle) - regulatory requirements, engineering standards and adequate segregation of explosives and initiating agents.

7.3.2 **Standards and compliance requirements**

Each Business Unit shall develop operating standards to ensure drill and blast activities, explosives storage facilities, explosive transportation and delivery processes are undertaken in a manner that minimises the risk of fatalities, injuries and incidents. The standards shall consider:

- Compliance with statutory requirements for transport, storage, handling and use of initiating agents, and explosives and their constituents;
- Maintenance of equipment used for the transport and charging of explosives;
- Contractor management and personnel records;
- Procurement and security; and
- Environmental noise, vibration and dust.

7.3.3 **Procedures and rules**

Procedures and rules for the safe transport, handling and use of explosives, including:

- Charging procedures;
- Establishing exclusion zones;
- Security and access rules;
- Blast re-entry;
- Demarcation and signage requirements;
- Smoking and hot work restrictions; and
- Vehicle use.

7.3.4 **Supervision, inspection and review**

Each Business Unit shall develop routine schedules to ensure supervision, monitoring and review of drill and blast designs, product storage, procurement, transport and use of explosives. The supervision, monitoring and review schedule shall consider:

- People - fit for work, competent, authorised, performance monitoring, contractor management;
- Equipment - pre-start, defect reporting, condition, housekeeping, isolation, fit for purpose storage, signage;
- Environment - noise, atmosphere, vibration, light, and rainfall and weather (slippery surfaces and lightning potential); and
- Procedures and processes - hazard identification and control, task methodology and product storage, receipting and stocktake of inventory, blast notification and demarcation and contractor audits secure access to magazines and drill and blast areas.

7.3.5 **Training and competency**

Each Business Unit shall detail competency for personnel working with explosives. The training shall include:

- Hazard identification and awareness – ensuring all personnel are aware of the risks and hazards associated with their workplace and the tasks they are required to undertake; and
- Assurance of skills and knowledge required to undertake specific roles, including:
    - Mandatory equipment and its use;
    - Communication procedures and protocols;
    - First aid skills appropriate to the task and location of work;
    - Emergency contact details; and
    - Relevant rules and procedures.

7.3.6 **Fitness for work**

Each Business Unit shall establish processes and procedures to support employees in being deemed ‘fit for work’. The processes and procedures shall include:

- Medical and fitness assessments;
- Fatigue Management Awareness;
- Drug & Alcohol Testing; and
- Hydration monitoring.

7.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

8 Tyre and Rim Management

Purpose

To eliminate or minimise the risk of fatalities and injuries associated with personnel working with or near vehicle wheels, rims and tyres.

Minimum Standards

8.1 Each Business Unit shall undertake risk assessments to identify the risks of working with or near wheels, rims and tyres of mobile equipment and light vehicles.

8.2 The identified risks and associated controls shall be recorded in the Site Risk Register to eliminate or minimise the risks.

8.3 A plan shall be developed at each Business Unit to describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risks identified by the risk assessment process. The plan shall include:

8.3.1 **Equipment and wheel standards**

To ensure all equipment, wheel components and tools are fit for purpose. The standards shall consider:

- Quality and certification requirements for tyre, rim, and wheel assemblies;
- Quality and certification requirements for all appropriate tooling, handling equipment, mounting devices and hardware consistent with any referenced original equipment manufacturer instructions; and
- Reference to a wheel, rim and tyre maintenance system (inspections and services) to maintain the equipment to the designated standards.

8.3.2 **Tyre bay management**

Each Business Unit shall develop tyre bay maintenance area standards to ensure the maintenance activities associated with mobile equipment tyres and rims are conducted in an appropriate location with fit for purpose equipment. The standards shall consider:

- Location - restricted access, signage and barricading, and isolated from traffic;
- Equipment - tyre cage, guarding, tyre handler, and barricading;
- Inflation mechanisms to prevent over inflation and isolation of energy source; and
- Storage - flat ground with adequate drainage, disposal and change out area, adequate working space with access for firefighting equipment, and tyre storage to minimise toppling and roll away.

8.3.3 **Procedures and rules**

Each Business Unit shall develop tyre and rim management procedures and rules to manage the risks arising from maintenance processes. The procedures and rules shall include:

- De-energising requirements – equipment isolation, chocking, and tyre deflation;
- Mandatory PPE requirements;
- Work area access restrictions and induction requirements - designated equipment parking areas, barricading, location and orientation of the work area; and
- SOP’s for all tyre maintenance activities.

8.3.4 **Supervision, monitoring and review**

Each Business Unit shall develop a routine schedule to ensure adequate supervision, monitoring and review of tyre and rim management to meet legal, Business Unit and corporate requirements. The supervision, inspection and review shall consider:

- People - fit for work, competent, and performance monitoring;
- Equipment - pre-start, defect reporting, isolation, and fit for purpose;
- Environment - constructed workplace standards (housekeeping, component storage, waste removal) as well as climate effects on safety, including; slippery surfaces, and excessive heat and cold; and
- Procedures and processes - task methodology and equipment used is fit for purpose.

8.3.5 **Training and competency**

Each Business Unit shall detail the competency and training requirements for personnel conducting maintenance activities on mobile and light vehicle equipment wheels and rims. The training shall include:

- Hazard identification and awareness – ensuring all personnel are aware of the risks and hazards associated with their workplace and the tasks they are required to undertake; and
- Assurance of skills and knowledge required to undertake specific roles, including:
    - Mandatory equipment and its use;
    - Communication procedures and protocols;
    - First aid skills appropriate to the task and location of work;
    - Emergency contact details; and
    - Relevant rules and procedures.

8.3.6 **Fitness for work**

Each Business Unit shall establish processes and procedures to support employees in being deemed ‘fit for work’. The processes and procedures shall include:

- Medical and fitness assessments;
- Fatigue Management Awareness;
- Drug & Alcohol Testing; and
- Hydration monitoring.

8.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

9 Working at Heights

Purpose

To eliminate or minimise the risk of fatalities, injuries and incidents from falling or being struck by falling objects.

Minimum Standards

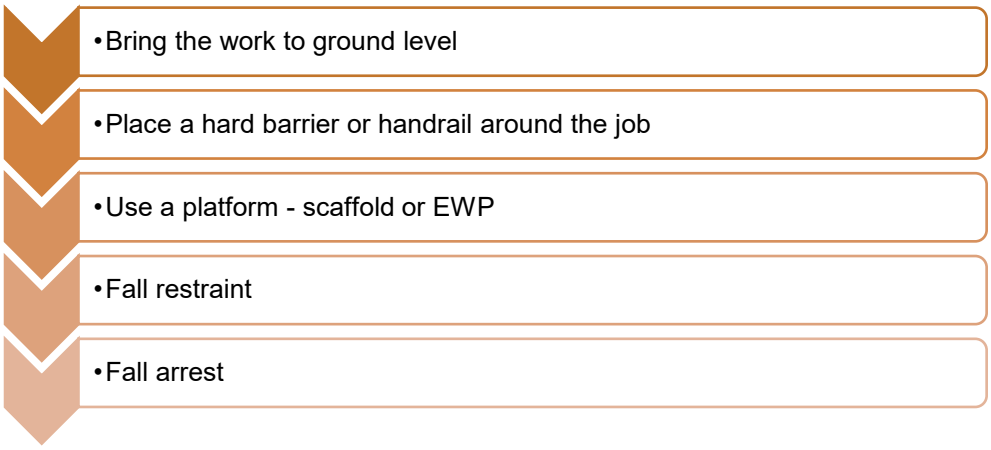
9.1 Each Business Unit shall undertake risk assessments to identify risks associated with working at height activities.

9.2 The identified risks and associated controls shall be recorded in the Site Risk Register to eliminate or minimise the risks.

9.3 A plan shall be developed at each Business Unit to describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risks identified by the risk assessment process. The plan shall include:

9.3.1 **Permitting and approval**

- Where there is potential to fall more than two metres, systems of work shall be implemented to manage the potential for falls based on the Hierarchy of Control for Fall Prevention below; and



- A Working at Height Permit shall be implemented to allow persons to work safely within 3 metres of an unprotected edge or where they are able to fall 2 metres (6 feet) or greater.

9.3.2 Equipment standards

Approved design standards and manufacturer specifications shall be used to ensure the design, construction and use of equipment associated with work at height activity is safe. The standards shall include:

- All platforms, scaffolds and any other temporary structures, which place a hard barrier or hand rail around the job, and shall be constructed under the direction of competent and authorised persons;
- An authorisation tagging system for the scaffolding and/or protective railing shall be implemented;
- All forms of portable and movable Elevated Work Platforms (EWP) and suspended work cages shall conform to relevant approved design standards and include crush prevention features ie. Physical protection or automatic device/cut out switch;
- Employees working on portable and movable work platforms or baskets shall wear a full body harness attached by a lanyard to a suitable approved anchor point;
- Fall arrest and fall restraint equipment shall be provided and used as identified through Job Hazard Analysis (JHA) and Permit to Work (PTW) system;
- A formal routine inspection process for all fall arrest and fall restraint equipment shall be implemented;
- All working at heights equipment shall be rated and visually inspected prior to use;
- Single person anchor points shall be rated to withstand 22.2kN or 5000 pounds; and
- Where it is not practicable to install dedicated anchor points (i.e. ad hoc work), anchor points capable of withstanding 22.2kN shall be identified through a risk assessment process and shall be approved by a competent person prior to commencement of work.

9.3.3 Protection from falling objects

Each Business Unit shall develop procedures and rules to minimise the likelihood of objects/materials falling from height. The procedures and rules shall include:

- Barricading and warning signs being placed at lower levels, identifying and restricting access to areas associated with work above; and
- A system to prevent tools, materials and other objects from falling.

9.3.4 Training and competency

Each Business Unit shall detail training and competency requirements for personnel engaged in work at height activities. The training, competency and assessment process shall include:

- Knowledge of the Work at Height requirements PTW and risk assessment procedure;
- Understanding of fall prevention strategies, drop zone awareness, exclusion zones and relevant procedures, including selection and use of the nominated equipment;
- Equipment inspection requirements;
- Correct fitting and wearing of specialist PPE;
- Safe set up of anchor points, and suitability of position;
- Use and inspection of EWPs; and
- Reference to competency assurance for skills and knowledge required to undertake working at height activities.

9.3.5 **Supervision and monitoring**

Each Business Unit shall develop routine schedules to ensure supervision, monitoring and review of work at height activities. The supervision, monitoring and review schedule shall consider:

- People - fit for work, trained and competent;
- Equipment - inspected and in good condition, suitable for the task and inclusive of but not limited to; harness, anchor points, EWP, barricading, planking and scaffolding, and structural stability;
- Environment - exclusion zones & control of access, and slippery surfaces; and
- Procedures and processes - implementation of hazard identification and controls, equipment use fit for purpose, and demonstrated use/knowledge of the Hierarchy of Control for Fall Prevention.

9.3.6 **Response and recovery**

Each Business Unit shall describe the systems, processes, procedures and rules implemented to manage any risks identified in the risk assessment, and shall include:

- TARPs shall be developed for the rapid retrieval of personnel in the event of a fall from height incident; and
- Routine response exercises on retrieval from fall from height scenarios shall be undertaken by the Emergency Response Team and recorded to capture key learnings.

9.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

10 Confined Space

Purpose

To eliminate or minimise the risk of fatalities, injuries and incidents when conducting work within a confined space.

Minimum Standards

10.1 Each Business Unit shall undertake a risk assessment to identify all risks associated with working in a confined space.

10.2 The identified risks and associated controls shall be recorded in the Site Risk Register to eliminate or minimise the risks.

10.3 A plan shall be developed to describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risks identified by the risk assessment process. The plan shall include:

10.3.1 **Permitting and approval**

A Confined Space Entry (CSE) Permit process shall be implemented where workers are required to access and undertake work in a confined space. This process shall authorise the activity, and ensure adequate supervision is in place and the required controls are implemented. The CSE Permit shall include;

- The appointment of a CSE Permit Acceptor at the beginning of each shift, who is directly responsible for controlling the work environment;
- A dedicated sentry at all times to prevent unauthorised access and monitor the workers within the confined space;
- An approved JHA or procedure based on the identification of hazards associated with the work undertaken within the confined space;
- A CSE rescue plan and emergency rescue capability; and
- The required sign off by all employees involved in the activity, including the sentry and located as a hard copy at the entrance to the confined space.

10.3.2 **Supervision, monitoring and review**

The supervision, monitoring and review of confined space access and work activities shall include:

- People - fit for work, competent and authorised;
- Equipment - pre-start, condition and defect reporting, housekeeping, and fit for purpose, including PPE;
- Environment - exclusion zones, delineation, atmospheric, fire and explosion hazards, slippery uneven surfaces and working below walls and ceilings (hang ups); and
- Procedures and process – including; hazard identification and control, task methodology and, communications requirements and protocols, Permit completed and JHA specific to the task.

10.3.3 **Training and competency**

Each Business Unit shall detail training and competency requirements for personnel engaged in CSE and work activities. The training, competency and assessment process shall include:

- Specific training for confined space work for all roles, including; the permit issuer, atmospheric tester, confined space and emergency rescue members, acceptor, and any others associated with authorising the work and accessing the confined space;
- Verified knowledge of all relevant OceanaGold corporate standards, including; Risk Management, Energy Isolation and Permitting procedures;
- The inspection and management of equipment prior, during and after work is completed; and
- Correct fitting and wearing of specialist PPE.

The Business Unit shall maintain a formal record of training and competency and shall include:

- A site induction;
- CSE training and competency requirements;
- A PTW; and
- Energy isolation requirements.

10.3.4 **Rules and procedures**

A Business Units processes and procedures for confined space access and work shall have specific rules and requirements, including;

- All confined spaces shall be identified, labelled with a unique identifier and recorded in a register and site plan;
- All confined spaces shall be tested with monitoring equipment to determine whether a hazardous atmosphere exists prior to entry and routinely throughout the work activity;
- Ventilation to the confined space shall be ensured to prevent the build-up of hazardous atmospheres and heat;
- All ventilation and air quality monitoring equipment shall be appropriately calibrated and maintained according to the OEM guidelines;
- Signage and barricading shall be provided to prevent involuntary entry at all entrance points, but allowing for emergency egress;
- No pressure vessels or compressed or liquefied gas is to be taken into a confined space;
- Double insulated or residual current device electrical tools, and low current/low voltage devices with a max of 24-volt lighting shall be used in damp or metallic confined spaces;
- Adequate lighting shall be provided to enable work to proceed safely and to facilitate any emergency exit; and
- All stored and potential energy associated with the confined space shall be isolated prior to any person entering the space. Isolations are to be performed as per corporate isolation standards.

10.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

11 Lifting and Crane Works

Purpose

To eliminate or minimise the risk of fatalities, injuries and incidents caused by falling objects or uncontrolled movement of suspended loads.

Minimum Standards

11.1 Risk assessments shall be conducted to identify the risk of exposure associated with lifting and crane activities undertaken at each Business Unit.

11.2 A plan shall be developed to describe all systems processes, procedures and safeguards undertaken to manage the risks identified in the risk assessment.

11.3 The General Manager of the Business Unit shall review and authorise the plan and be accountable for its implementation and ongoing effectiveness. The plan shall include:

11.3.1 **Equipment standards and maintenance**

Each Business Unit shall implement minimum requirements to ensure the safe capacity of site based lifting equipment, including:

- Lifting equipment shall be identifiable with a unique identification number and listed on an equipment register;
- The register shall include all dedicated lifting equipment, including;
  - Gantry cranes;
  - Mobile cranes, including hiabs;
  - Boom type elevated platforms;
  - Vehicle hoists; and
  - All load bearing stands and jacks.
- A schedule of inspections and preventative maintenance shall be developed and implemented on all registered equipment, based on manufacturer's recommendations;
- Records of inspections, faults, repairs and servicing shall be maintained for each item on the register;
- All cranes shall be capable of being de-energised and positively isolated, including a physical locking system that disables and isolates its free-fall capability;
- Electrical overhead travelling and portable cranes shall have overload protection;
- Lifting slings, tackle blocks, chains and work at height safety harnesses shall be subject to quarterly inspections by a competent person, tagged or labelled to identify inspection currency, and reinspected by the operators and checked prior to use;
- A system shall be implemented to immediately remove or tag out failed lifting equipment; and
- All crane hooks shall be fitted with a positive locking safety catch.

11.3.2 Training and competency

Each Business Unit shall detail training and competency requirements for personnel authorised to undertake lifting and crane work activities, including contractors. Records of training and verification of competency shall be retained in a site based system. The training, competency and assessment process shall include:

- Competency and external certifications requirements for crane and/or plant use;
- Knowledge of the inspection and management requirements of specific equipment prior, during and after work is completed;
- Load and rigging hardware limitations, including; the capacity of lifting devices and the working load limit of the lifting ropes, slings, and other hardware;
- Lift plan requirements;
- Verified knowledge of all relevant OceanaGold operational requirements, including; risk assessments, energy isolation and PTW requirements; and
- Correct fitting and wearing of specialist PPE.

11.3.3 Permitting/lift plan approval

A lift plan shall be developed for all critical lifts - a lift that is risk assessed as high or where the supervisor considers there are heightened risk factors inclusive of, but not limited to:

- Dual crane lifts;
- Overlapping crane lift radius;
- Load passes over or within 10m of power lines;
- Involves the use of a workbox or crane;
- Lifting in adverse weather;
- Lifting over water;
- Lifting at the load rated capacity; and
- Lifting people in a work box or man cage.

The lifting permit and/or lift plan shall include:

- An authorised PTW under the Business Units PTW system;
- An approved JHA or procedure based on the identification of hazards associated with the work undertaken within the critical lift;
- Crane and lifting equipment operating manuals and load charts;
- Work area barricading and restricted access to the work area; and
- Sign off by all employees involved in the activity and person responsible for the lift.

11.3.4 Rules and procedures

Specific rules and requirements shall be included in the operational processes and procedures for lifting and cranage work, including:

- The OEM manual must be followed for all lifting configurations and maintenance procedures. If an OEM manual is not provided or an alternative lifting configuration or maintenance procedure is proposed, then the task must be supported by a JHA authorised by the area superintendent.
- Safe Work Load (SWL) and Working Load Limit (WLL) shall be clearly identified and labelled on all cranes and all lifting equipment;
- Cranes used for lifting of personnel shall have limit trip switches installed;
- Crane operators and crew shall communicate in a common language and use industry standard and agreed crane signals;
- No lifting from a mobile crane shall be carried out without outriggers being deployed and locked (if fitted);

- Lifting equipment which has been used for towing or pulling shall be identified and tagged as 'not approved for lifting'; and
- Drop zone demarcation shall consider potential for dropped items to deflect and bounce and shall provide a visually clear and complete exclusion boundary to prevent walking/working under a suspended load.

11.3.5 **Supervision, monitoring and review**

Supervision, monitoring and review processes shall be implemented at each Business Unit to assess the safety of lifting and shall include:

- People - fit for work, competent and authorised;
- Equipment - pre-start, condition and defect reporting, housekeeping, and fit for purpose, including PPE;
- Environment - exclusion zones, delineation, atmospheric, fire and explosion hazards, slippery uneven surfaces and working below walls and ceilings (hang ups); and
- Procedures and process - hazard identification and control, task methodology and, communications requirements and protocols, Permit completed and JHA specific to the task.

11.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

12 Tree Felling

Purpose

To eliminate or minimise the risk of fatalities, injuries and incidents arising from Tree Felling/Lopping, Bucking/Delimbing, and Sizing/Lumbering activities (Tree Felling associated activities) at OceanaGold controlled sites.

Minimum Standards

12.1 Each Business Unit shall undertake risk assessments to identify risks associated with Tree Felling associated activities at Business Units.

12.2 The identified risks and associated controls shall be recorded in the Site Risk Register to eliminate or minimise the risks.

12.3 A plan shall be developed at each Business Unit to describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risks identified by the risk assessment process. The plan shall include:

12.3.1 **Permitting, supervision and monitoring**

Tree Felling and associated activities shall be authorised under a Business Unit permit.

The supervision, monitoring and review of Tree Felling associated activities shall include:

- People - fit for work, competent, and authorised;
- Equipment - pre-start, condition and defect reporting, housekeeping, and fit for purpose, including PPE;
- Environment - exclusion zones, delineation, biological hazards, geographical hazards, tree stands condition and location, and rainfall and weather (slippery surfaces and windy conditions); and
- Procedures and processes - hazard identification and control, task methodology, communication requirements and protocols and permit and JHA specific to the task.

12.3.2 **Training and competency**

Each Business Unit shall detail competency and training requirements for personnel undertaking Tree Felling associated activities. The training shall include:

- Hazard identification and awareness – ensuring all personnel are aware of the risks and hazards associated with their workplace and the tasks they are required to undertake; and
- Assurance of skills and knowledge required to undertake specific roles, including:
    - Mandatory equipment and its use;
    - Communication procedures and protocols;
    - First aid skills appropriate to the task and location of work;
    - Emergency contact details; and
    - Relevant rules and procedures.

12.3.3 **Equipment standard**

Each Business Unit shall authorise the appropriate equipment for the task as determined through the risk assessment process and advice given from a subject matter expert. The equipment standard shall:

- Be specifically identified in the JHA as fit for purpose;
- Include all specific and required PPE;
- Undergo a formal signed inspection prior to use daily; and
- Regulatory permit/certification if applicable.

12.3.4 **Procedures and rules**

Each Business Unit shall describe the systems processes, procedures and rules implemented to manage any risks identified in the risk assessment and shall include:

- Approved regulatory permit (if applicable);
- The permit process to authorise the activity;
- Competency and training requirements;
- Environment - exclusion zones, restricted areas, and safe distances of people and equipment in the area;
- Communication protocols - radio channels, positive communications prior to commencing work, emergencies, and mobile phone rules); and
- Field based risk management requirements.

12.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

13 Extreme Weather

Purpose

To eliminate or minimise the risk of fatalities, injuries and incidents arising from extreme weather events at Business Units.

Minimum Standards

13.1 Each Business Unit shall undertake risk assessments to identify risks associated with reasonably foreseeable extreme weather events at the locations where business activities are undertaken.

13.2 The identified risks and associated controls shall be recorded in the Site Risk Register to eliminate or minimise the risks.

13.3 A plan shall be developed at each Business Unit to describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risks identified by the risk assessment process. The plan shall include:

13.3.1 **Infrastructure and equipment standards**

Specific design and construction standards shall be nominated and adopted to ensure the infrastructure and equipment at each Business Unit can withstand reasonably foreseeable extreme weather events. Where appropriate the standards shall include reference to:

- Nominated average recurrence intervals for rainfall events;
- Cyclone or wind impact ratings;
- Heat/cold cycles; and
- Earthquakes.

13.3.2 **Warning, tracking and monitoring**

Each Business Unit shall implement early warning systems for extreme weather events. Monitoring, tracking and warning systems shall be fit for purpose and may include:

- Lightning tracking; and
- Local and national weather alerts.

13.3.3 **Procedures and rules**

Each Business Unit shall develop a specific TARPs for identified extreme weather risks. The TARP shall include procedures and rules for personnel to minimise the potential for exposure to the extreme weather. The procedures and rules shall include:

- Stopping and re-starting work activities; and
- Specific areas of accountability and supervision during the nominated events.

13.3.4 **Emergency preparedness and response**

Each Business Unit shall be prepared to respond to reasonably foreseeable extreme weather scenarios. Responses shall be detailed within the specific TARP and referred to in the Site Emergency Response Plan. Training drills shall be scheduled and undertaken to ensure the effectiveness of response plans.

13.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

Principle Control Plan Standards

14 Worker Health

Refer to the OceanaGold Health Performance Standards Manual, found on SharePoint.

15 Electrical Safety

Purpose

To eliminate or minimise the risk of fatalities, injuries and incidents arising from electrical contact and electrical equipment failure at Business Units.

Minimum Standards

15.1 Each Business Unit shall undertake risk assessments to identify risks associated with the use of electrical equipment in the workplace.

15.2 The identified risks and associated controls shall be recorded in the Site Risk Register to eliminate or minimise the risks.

15.3 A plan shall be developed at each Business Unit to describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risks identified by the risk assessment process. The plan shall include:

15.3.1 **Equipment, design and installation**

Each Business Unit shall develop equipment and installation standards to ensure all electrical equipment and installation at each Business Unit is safe and fit for purpose. The standards shall include:

- Electrical design requirements referencing recognised electrical standards;
- Equipment standards referencing recognised safety standards and industry best practice;
- Installation by qualified personnel;
- Commission testing to confirm appropriate installation and performance; and
- Mandatory installation and testing of safeguards, including; earth leakage or ground fault circuit interrupters and emergency stops.

15.3.2 **Monitoring and maintenance**

Each Business Unit shall develop and implement an electrical preventative maintenance program to manage routine inspections, tests and servicing of electrical equipment to ensure impending failures can be detected and reduced or prevented. The program shall include:

- Referencing against on-site standards, including; equipment details and ratings, OEM requirements, fault current calculations, design diagrams and protection settings, as well as recognised standards for electrical maintenance and safety. All reference documents shall be up to date and version controlled;
- A register of all electrical equipment to record key details, including; a unique identification number, description, location, test schedule, last test date, due test date, pass/fail, testers name and electrical qualification, and its compliance with the Business Units design and installation requirements;
- Quarterly testing of portable electrical equipment and annual testing of all fixed or stationary electrical equipment and appliances; and
- Specific routine testing of critical electrical safeguards, including; earth continuity, insulation resistance and emergency stops.

15.3.3 Training and competency

Each Business Unit shall detail training and competency requirements for personnel authorised to undertake electrical work, including any statutorily appointed electrical roles. Competency requirements shall include formal qualifications in electrical engineering and/or electrical trades, as appropriate to the position description and accountabilities.

Training shall include; general and work specific inductions for workplace hazard identification and awareness to ensure all personnel are aware of the risks and hazards associated with their workplace, as well as for the specific tasks they are required to undertake. Assurance of the skills and knowledge required to undertake specific electrical roles shall include:

- Mandatory equipment and its use;
- Communication procedures and protocols;
- First aid skills appropriate to the task and location of work; and
- Relevant Business Unit rules and procedures, including; permitting systems (PTW) and Lock Out, Tag Out, Test Out guidelines (LOTOTO).

15.3.4 Electrical isolation

Each Business Unit shall establish processes and procedures to minimise the potential for exposure to electricity. The procedures shall include:

- Establishing and maintaining safe work spaces around electrical hazards, including power line corridors;
- Restricting access to electrical installations, including; fencing, locked rooms, cupboards and other barriers;
- Security for accessing and controlling electrical system software and control circuits; and
- Electrical isolation requirements for undertaking operational and maintenance activities.

15.3.5 Rules and procedures

Each Business Unit shall develop specific rules and procedures to manage the risks associated with contact with electricity. The rules and procedures shall include:

- A procedure to describe the management of faulty and redundant equipment and cables, including; tagging, disconnection, removal, identification, termination and protection, as well as return to service tests and inspection requirements;
- Procedures and rules to ensure all instruments, tools and PPE used to perform electrical works are calibrated, stored, inspected and maintained suitable for use;
- Specific rules regarding the mandatory use of PPE for electrical tasks;
- Restrictions and authorisation rules for “live” work;
- Cable and outlet labelling and signage requirements;
- Rules for use of extension cords, power boards and personal electrical appliances in the workplace;
- Dig permits to consider potential buried electrical services;
- Rules and specifications for electrical equipment used in confined space and other areas not protected by earth leakage (or equivalent) safety devices; and
- Document and record keeping requirements for all electrical infrastructure, equipment, maintenance activities, inspections and upgrades or changes, including; document/record location, authorisation and minimum archiving needs.

15.3.6 **High voltage management**

Each Business Unit shall establish processes and procedures to prevent exposure to high voltage electricity. The rules and procedures shall include:

- Barriers and restrictions (restricted access) to high voltage equipment and installations;
- Signage and other warning requirements;
- No high voltage work is to be carried out without the authorisation of a qualified, designated accountable person, supported by a risk assessment/JHA and completion of a High Voltage Access Permit;
- Only authorised personnel having the ability to operate high voltage switching equipment;
- A process to identify, record and authorise personnel to undertake high voltage electrical work shall be implemented at each Business Unit;
- Work involving high voltage equipment inside the minimum approach distance shall be controlled by a High Voltage Access Permit;
- The permit shall ensure the switching, isolation and application of protective earthing is considered and managed correctly; and
- Document management processes for current plans and records associated with High Voltage installations, equipment, monitoring, inspections and work activities.

15.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

16 Mechanical Safety (Fixed Plant)

Purpose

To eliminate or minimise the risk of fatalities, injuries and incidents arising from mechanical contact and mechanical equipment failure at Business Units.

Minimum Standards

16.1 Each Business Unit shall undertake risk assessments to identify risks associated with the use of mechanical equipment in the workplace.

16.2 The identified risks and associated controls shall be recorded in the Site Risk Register to eliminate or minimise the risks.

16.3 A plan shall be developed at each Business Unit to describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risks identified by the risk assessment process. The plan shall include:

16.3.1 **Equipment, design and construction**

Each Business Unit shall develop equipment and installation standards to ensure all mechanical equipment and mechanical installations at each Business Unit are safe and fit for purpose. The standards shall include:

- Mechanical design requirements referencing recognised mechanical standards;
- Tool and equipment standards referencing recognised safety standards and industry best practice, including OEM recommendations;
- A review of potential workplace exposure stressors (noise, vibration, dust, light emissions etc.) to ensure compliance with the host countries Occupational Exposure Limits (OELs);
- A rule that all installation shall be completed by qualified/competent personnel;
- Commission testing to confirm appropriate installation and performance to OEM ratings; and
- Mandatory installation and testing of safeguards, including; appropriate safe access and egress, lighting, alarms/lights for start-up and failure warning, effective isolation points, interlocks, non-return systems, pull wires and emergency stops.

16.3.2 **Monitoring and maintenance**

Each Business Unit shall develop and implement a mechanical preventative and corrective maintenance program to describe the routine inspections, testing and servicing of mechanical equipment undertaken to ensure impending and actual failures can be detected, reduced prevented and corrected. The program shall include:

- Referencing against actual equipment details and ratings, OEM requirements, design diagrams and protection settings, as well as planned operational performance loads. All reference documents shall be up to date and version controlled;
- A schedule of inspections and preventative maintenance based on the manufacturer's recommendations and the local exposure and wear conditions. The schedule shall consider;
  - Integrity testing for major structures;
  - Crack testing;
  - Vibration monitoring; and
  - Daily, weekly and monthly inspection checklists and maintenance requirements.
- A process to report and correct defective equipment and machinery, including;
  - Out of service/isolation procedures; and
  - Incident/damage notification.
- Records of inspections, faults, repairs and servicing;
- Specific routine testing of critical mechanical safeguards; and
- Maintenance activities conducted by authorised qualified personnel.

16.3.3 **Training and competency**

Each Business Unit shall detail training and competency requirements for personnel authorised to undertake their work activities. Records of training and verification of competency shall be retained in a system. The training, competency and assessment process shall include:

- Competency and external certification requirements to supervise, operate or inspect tools and equipment as appropriate to the role and accountabilities;
- General and work specific inductions, to ensure all personnel are aware of the risks and hazards associated with their workplace, as well as for the specific tasks they are required to undertake;
- Relevant Business Unit rules and procedures, including; permitting systems (PTW) and Lock Out, Tag Out, Test Out procedures (LOTOTO); and
- The use of specific equipment (as identified for the role).

16.3.4 Rules and procedures

Each Business Unit shall develop rules and procedures to manage specific risks identified for using and working around mechanical equipment. The rules and procedures shall include, as a minimum:

- Workplace inspection and equipment pre-start check requirements;
- Procedures for specific maintenance activities requiring the removal of guarding and effective isolation (guard shall not be removed without appropriate isolation);
- No guarding shall be modified or altered except through the application of a risk-based change management process;
- Rules regarding the mandatory use of PPE, including fit testing;
- The consideration of potential buried mechanical services through the application of dig permits;
- Rules and specifications for the use of mechanical equipment in confined spaces and other areas;
- Mechanical equipment registers, including; banned tools, vehicles and required specialist equipment;
- Procedures relating to the inspection and authorisation of vehicles, to ensure only appropriate vehicles and equipment are utilised in the work area;
- A rule regarding the mandatory use of an outrigger, if fitted; and
- All manually operated hand tools have a failsafe switch to ensure they cannot operate without being held.

16.3.5 Physical barriers and energy isolation

Each Business Unit shall establish processes and procedures to minimise the potential for unplanned exposure to machinery movement, and mechanical and kinetic energy. The processes and procedures shall include:

- Meeting the most stringent requirements outlined in the AS 4024 and ISO 13849, as a minimum;
- The installation and maintenance of guarding to ensure;
    - Physical access is blocked during machine and equipment operation;
    - Efficient operation of the machine or equipment;
    - There is no weakening of the structure;
    - It cannot be removed without the use of tools;
    - It does not create an additional safety hazard;
    - All conveyor drives and tail ends are guarded; and
    - All v-drives, chain-drives, shaft-ends, keyways, couplings, clutches and similar moving machinery parts shall be guarded to prevent deliberate or accidental contact.
- Establishing an effective permanent and temporary personnel exclusion zone, supported by clearly defined standards for demarcation, including; and
    - Barricading (type, colour, tape, cones or fencing etc.);
    - Effective duration;
    - Signage (information requirements size, interval);
    - Communication; and
    - PPE.
- Implementing isolation requirements for safely undertaking operational and maintenance activities, described in the OceanaGold LOTOTO guideline.

16.3.6 **Supervision, monitoring and review**

Supervision, monitoring and review processes shall be implemented at each Business Unit to assess the safety of work activities associated with using mechanical equipment, and shall consider:

- People - fit for work, competent, and authorised;
- Equipment - pre-start, condition and defect reporting, housekeeping, and fit for purpose, including PPE;
- Environment - exclusion zones, delineation, abrasive/corrosive, and slippery uneven surfaces etc.; and
- Procedures and process - hazard identification and control, task methodology, communications requirements and protocols, check sheets and permits and JHAs specific to the task.

16.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

17 Permit to Work and Energy Isolation

Purpose

To minimise the risk of fatalities, injuries and incidents from any uncontrolled or unplanned release of energy and ensure specific high-risk work activities are identified and authorised through a formal Permit to Work (PTW) process.

Minimum Standards

17.1 Each Business Unit shall implement a process to isolate potential energy sources to prevent uncontrolled or unplanned release of energy during the task/activity. Energy isolation shall be undertaken in accordance with the Lock Out, Tag Out, Try Out (LOTOTO) OGC Guideline OGC-450-GUI-009.

17.2 Each Business Unit shall also identify the high-risk activities undertaken at the operation that require specific authorisation before they can be commenced. The high-risk activities shall be recorded and shall include the following activities as a minimum:

- Hot work (excluding hot work in designated locations);
- Confined space work;
- Work at heights (including any removal of grid mesh flooring or safety barrier);
- Surface excavations;
- Work performed near x-ray or radioactive sources;
- High voltage work (voltage exceeding 1,000 V a.c.) including exclusion zones as described in the operations electrical management plans;
- Vegetation clearing; and
- Commissioning of plant or equipment.

17.3 A PTW System shall be developed and implemented to ensure the specific identified high-risk activities are approved by an authorised person.

17.3.1 **A Permit to Work can only be issued by an authorised person. A register of authorised permit issuers shall be maintained at each Business Unit.**

17.3.2 **The permit issuer is responsible to:**

- Raise, complete and authorise the PTW;
- Ensure all control measures identified on the JHA and the PTW are in place;
- Review the job, hazards, control measures and the associated documentation with the work permit acceptor;
- Inspect the work area to ensure the task has been completed and the area/equipment is safe to be returned to normal operations; and
- Cancel/close the permit.

17.3.3 **Permits to work shall:**

- Be approved prior to commencing the task;
- Clearly define the scope of the task to be completed;
- Show the expected duration of the work activity;
- Have a maximum working duration not exceeding twenty-four hours unless prior approval is obtained from the relevant department manager;
- Refer to an accompanying JHA or work procedure;
- Describe the controls required to undertake the activity in a safe manner; and
- Include a response/recovery plan where required.

17.3.1 **Permits to work shall be reviewed:**

- At the beginning of a shift; and
- Whenever there is a change of permit acceptor.

17.3.2 **Permits to work shall be renewed whenever there is:**

- A significant change in risk;
- Expiry of the PTW; and
- Interruption to the activity due to fire, Business Unit alarms or evacuation.

17.3.3 **A permit acceptor shall be appointed prior to commencing the task and is responsible for directly controlling the work described in the permit.**

17.3.4 **The permit acceptor shall:**

- Confirm the scope of work and develop the JHA for inclusion in the PTW;
- Ensure all control measures identified on the JHA and any associated permits are implemented prior to commencing work;
- Ensure all persons involved in the task have been advised of and understand the requirements of the JHA and the PTW prior to commencing work and all personnel have signed onto the JHA;
- Sign off the PTW at the end of the task and return the permit to the PTW issuer.

17.3.5 **Permits to work shall be held on file in the department for a minimum of one year for audit purposes.**

18 Emergency Preparedness and Response

Refer to the OceanaGold IMS Standards 3.7, found on SharePoint.

Operational Safety Standards

19 Remote or Isolated Workers

Purpose

To eliminate or minimise the risk of fatalities, injuries and incidents arising from delayed responses to remote or isolated workers at Business Units.

Minimum Standards

19.1 Each Business Unit shall undertake risk assessments to identify risks associated with persons who may be required to work alone for extended periods of time, or who may be required to work or drive in remote or isolated areas at Business Units.

19.2 The identified risks and associated controls shall be recorded in the Site Risk Register to eliminate or minimise the risks.

19.3 A plan shall be developed at each Business Unit to describe all systems, processes, procedures, operational controls and safeguards undertaken to manage the risks identified by the risk assessment process. The plan shall include:

19.3.1 **Procedures and rules**

Each Business Unit shall describe the systems, procedures, rules and safeguards undertaken to manage any risks for remote and isolated workers as identified in the risk assessment, it shall include:

- Road rules - speed limits, overtaking, right of way, restricted areas, exclusion/prohibited zones, and safe distance of travel;
- Communication protocols - radio channels, positive communication prior to overtaking horn signals, emergencies, underground cap lamp signals, and mobile phone policy;
- Restricted vehicle uses - adverse weather, loading, spotters, refuelling, emergency braking, and defect notification; and
- Safe parking - location, chocking, gradient, reverse parking and v-drains.

19.3.2 **Supervision and review**

Each Business Unit shall develop routine schedules to ensure supervision, monitoring and review of remote and isolated work. The supervision, monitoring and review schedule shall consider:

- People - fit for work, competent, and performance monitoring);
- Equipment – pre-start, defect reporting, condition, housekeeping, isolation, and fit for purpose);
- Environment - constructed workplace standards (exclusion zones, delineation and bunds, and workplace inspections) and rainfall and weather (slippery surfaces and reduced visibility); and
- Procedures and processes - hazard identification and control, task methodology and equipment use fit for purpose, and communication requirements and protocols.

19.3.3 **Training and competency**

Each Business Unit shall detail competency, training and permitting requirements for personnel undertaking remote or isolated work. The training shall include:

- Hazard identification and awareness – ensuring all personnel are aware of the risks and hazards associated with their workplace and the tasks they are required to undertake; and
- Assurance of skills and knowledge required to undertake specific roles, including:
    - Mandatory equipment and its use;
    - Communication procedures and protocols;
    - First aid skills appropriate to the task and location of work;
    - Emergency contact details; and
    - Relevant rules and procedures.

19.3.4 **Fitness for work**

Each Business Unit shall establish processes and procedures to support employees in being deemed ‘fit for work’. The processes and procedures shall include:

- Medical and fitness assessments;
- Fatigue Management Awareness;
- Drug & Alcohol Testing; and
- Hydration monitoring.

In addition, an annual health assessment for employees who routinely work in remote areas shall be undertaken to ensure no adverse medical conditions exist, which may place them at an elevated risk, considering the nature and remoteness of the work involved.

19.4 The General Manager of the Business Unit shall review and authorise the plan and shall be accountable for its implementation and ongoing effectiveness.

20 Personal Protective Equipment (PPE)

Purpose

To ensure appropriate PPE is available and able to be utilised to reduce the personal impacts of workplace incidents and exposures.

Minimum Standards

20.1 Each Business Unit shall undertake site wide and task-based risk assessments to identify appropriate Business Unit PPE requirements, and to determine the required protection standards associated with each item of PPE.

20.2 All PPE shall at a minimum meet the AS/NZ standard, or the host countries standard if it is more stringent.

20.3 Employees, visitors and contractors shall be provided with the PPE appropriate for the hazards associated with their job role or task.

20.4 Employees, visitors and contractors shall be provided with appropriate training to understand and fit the PPE provided.

20.5 A Business Unit procedure shall be developed, implemented and maintained to describe:

- How PPE is provisioned, including any appropriate re-allocation and availability;
- A process to ensure only authorised PPE is purchased and used;
- Training for use where appropriate, including fit testing of nominated PPE;
- Cleaning and maintenance procedures for any shared PPE; and
- Clear visible signage for mandatory PPE requirements at the different work areas.

20.6 Employees, visitors and contractors shall:

- Wear the required PPE at all times in designated areas and for designated tasks;
- Inspect, clean and maintain their PPE; and
- Immediately notify their supervisor of any problems encountered while using the required PPE correctly.

21 Aviation

Purpose

To minimise the risk of aviation related fatalities, injuries and incidents by ensuring appropriately qualified and equipped aviation services are provided for employee use.

Minimum Standards

21.1 Commercial carriers

Travel on commercial carriers shall be undertaken in line with the OGC Travel Management Procedure and OGC Travel Risk Guideline with reference to the Corporate Airline Risk Calculator through the OGC SharePoint page.

21.2 Charter services

21.2.1 A risk assessment shall be undertaken for the chartering of an independent airline service. The risk assessment shall include, but is not limited to:

- Results of external safety audits of the service provider;
- Review of the safety record of the service provider;
- Verification of pilot competency and experience;
- Emergency response plans and capability;
- Safety and operating rules and protocols;
- Records of aircraft maintenance; and
- Validation of any required commercial licensing.

21.2.2 Where a charter service is used repeatedly beyond a two-year period third-party audits shall be conducted by approved aviation specialists and every two years thereafter.

21.3 Site based Aviation Facilities

21.3.1 Business Units with site based aviation facilities (landing strip/pad and refuelling facilities) shall develop a formal Aviation Management Procedure, which shall describe:

- Compliance with local (or relevant International) civil aviation rules;
- Location - geographic location, climatic conditions, and obstacles in peripheral areas (obstacle limitation surfaces);
- Infrastructure design and construction parameters - runway/pad surface, dimensions and peripheral areas, marking requirements, fuel storage, tie downs, and lighting (night access);
- Control procedures and rules - communication requirements and protocols, passenger and vehicle movement, maintenance and inspections of facilities, refuelling, and security;
- Limitations on use (type and size of aircraft); and
- Emergency response procedures.