

PERENTI

Critical Risk Standards



SMARTER
TOGETHER
SAFER
TOGETHER



Lifting and
suspended loads



Confined
space



Control of ground
conditions
including inrush



Entanglement
and crushing



Explosives and
blasting



Fitness for
work



Hazardous
materials



Isolation and control
of hazardous energy
sources



Maintenance
of mobile
equipment



Prevention of
falls and dropped
objects



Underground
ventilation
and safe atmospheres



Mobile equipment
operation and
interaction

**Expect
More**

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OUR PRINCIPLES

NO SHORTCUTS

We never compromise our standards. We strive for the best in everything we do and continue to raise the bar in safety, performance and transparency every day.



NEVER WASTEFUL

We make every moment count. We operate as efficiently as possible. We plan effectively, make full use of our assets and always spend our money wisely.



WALK IN THEIR SHOES

To win new clients, keep existing clients and to ensure everyone benefits, we have to really know them – not just who they are and what they're asking for, but what really matters to them.



SMARTER TOGETHER

None of us is as smart as all of us. By valuing our diversity, working together, sharing knowledge and supporting each other, we're capable of exceptional things.



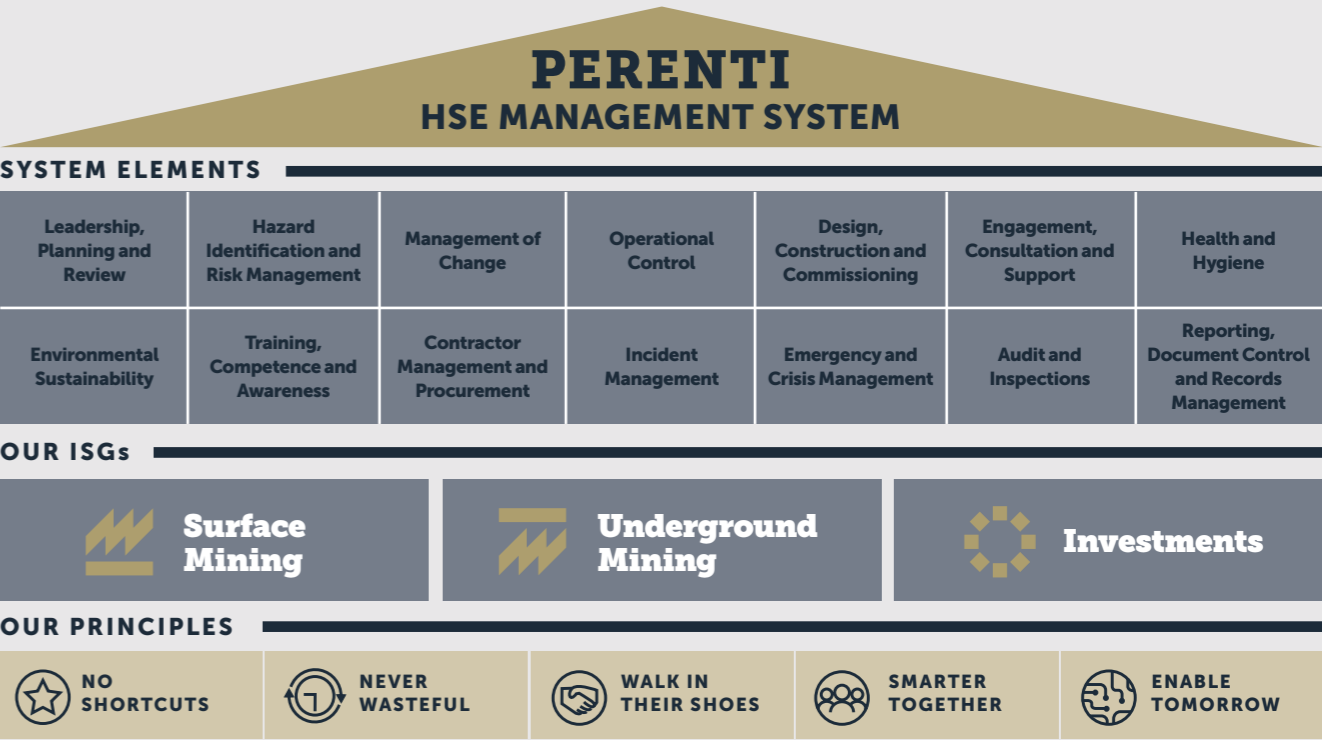
ENABLE TOMORROW

We actively embrace change, enabling new technologies and smarter ways of working, so the mine of tomorrow is safer, more productive and more reliable than ever before.



OUR PEOPLE

We have a global workforce of more than 8,000 world class employees and our culture is underpinned by our principles that drive the way we work, our actions and our behaviours, in every interaction and task we perform. By living these principles, we will deliver our purpose to create enduring value and certainty and realise our aspiration to become the indispensable mining services company.





CRITICAL RISK STANDARD



Lifting and suspended loads

1. INTENT

This standard identifies the controls required to manage the risk associated with personnel conducting mechanised lifts and lifting related activities.

2. APPLICATION

This Standard applies to all Perenti projects that use equipment such as cranes, hoists, lifting and rigging equipment.

3. REQUIREMENTS

3.1 PEOPLE

- Operators of mobile or fixed lifting equipment such as mobile cranes, integrated tool carriers, forklifts and overhead gantry cranes must be deemed competent in the safe operation of that equipment.
- A high-risk work license (minimum dogging) is required to supervise any lift requiring the following:
 - The calculation of safe angles, configurations and methods for the use of slings or chains;
 - Direction of an operator when that operator cannot maintain visual sight of the load throughout the lift.
- In jurisdictions outside Australia where high-risk work licenses do not exist, personnel are required to comply with the intent of this standard and undergo an equivalent level of training.

3.2 SYSTEMS AND PROCEDURES

- An operator must not leave the controls of any mobile or fixed lifting device while a load is suspended.
- Damaged or defective lifting equipment or implements must not be used. Defective equipment must be removed from service, tagged and quarantined.
- Cranes shall not lift above 85 per cent of the rated capacity of the crane at any time or radius.
Note: This requirement does not apply to overhead travelling cranes, portal cranes or tower cranes.
- Conducting lifts involving multiple cranes, personnel in a work cage, a crane working over 75% of its rated capacity, or the load requires lifting over live electrical facilities or occupied buildings are deemed critical lifts and must be supported by risk assessment and a dedicated lift plan.
- The crane load indicator must be assessed for accuracy with a test weight before undertaking any critical lifts.
- Personnel must visually inspect each item of lifting equipment prior to each use to ensure it is fit for use.
- Personnel must never work or travel or be otherwise positioned under a suspended load.
- Cranes must not be operated until ground conditions have been assessed as adequate to support the crane.
- When conducting pick and carry lifts the entire route of travel must be assessed for hazards prior to the lift commencing.
- Working under a charge machine boom, shotcrete machine boom or underground drill boom is permitted if the boom energy source has been isolated, as the inherent design of these machines lock movement when unpowered.
- A vehicle hoist, charge machine boom, shotcrete machine boom or underground drill boom must be supported by stands before commencing any work on the lifting structure or mechanism.
- Working under a boom or hydraulically suspended load on any other machine (than specifically listed in the previous two dot points) is not permitted unless support stands are used.
- Where equipment has designated lifting, points fitted they must be used as the attachment point for lifting operations.
- Where equipment consists of several elements mounted on a base frame (e.g. a mono pump set) the base frame must be the point of attachment for lifting operations.
- When lifting a steel section, pipe or similar load, two points of attachment must be used with the chain or slings wrapped to lock the location while under load.
- Tag lines must be attached before lifting any loads that require steadying or guidance while suspended (i.e. suspended loads must not be manipulated by hand when the load is suspended by more than 300mm).
- Manufacturer's operating manuals for mobile lifting equipment and vehicle hoists must be made available and load charts attached to the machine or plant.
- A delineated, preferably hard barrier exclusion zone must be established for any lift to restrict access to persons not involved in the lift.
- Lifting operations with fork tines must only be conducted in compliance with the integrated tool carrier and forklift procedures.
- Projects must have a system to ensure lifting and towing equipment is easily distinguishable and kept segregated.
- Lifting equipment must not be used for towing operations. If lifting equipment has been used for towing it must be destroyed.
- Lifting of mesh or submersible pumps by jumbo booms must be in accordance with the jumbo operating procedures.
- Loads must not be attached and carried external to an elevated work platform unless attached to an engineered lifting point designed for that purpose.
- A site permit may be required when working near overhead powerlines.



CRITICAL RISK STANDARD



Lifting and suspended loads

3.3 PLANT AND EQUIPMENT

- Only certified lifting equipment is to be used for all lifting and suspension of loads.
- Cranes must be fitted with a physical locking system that disables and isolates its free-fall capacity. Fork attachments must have lugs in place to prevent uncontrolled sideways movement of the tines.
- Cranes and lifting equipment must not be operated with an inoperable or defective safety device.
- Vehicle Loading Cranes shall have engineering controls to protect the operator from crush injury during lifting operations.
- Each item of lifting equipment must be individually identified with its safe working load (SWL). These details must also be recorded in the project lifting equipment register.
- Jibs must be fitted with a swivel and safety latch hook and have the capacity to be positively locked to the Tool Carrier bed.
- All Perenti and sub-contractor cranes and lifting equipment must have a current test certificate and a pre-use safety inspection. The safety inspection must satisfy regulatory and manufacturer requirements for frequency of inspection and physical condition of the machine.
- Each item of lifting equipment must be inspected periodically by a competent person and the results of these inspections recorded in the project lifting equipment register.
- Lifting equipment must be tagged with a colour-coded inspection cable tie, stamped metal tag or other means to identify the period for which it able to be used.
- Any item of lifting equipment showing signs of damage or missing identification tag must be tagged out of service, removed from service and placed in a designated quarantine bin.
- Earth moving equipment and other ancillary plant shall not be used as lifting equipment unless they:
 - Are marked with a Safe Working Load (SWL) and/or Working Load Limit (WLL) on the lifting attachment/point;
 - Have a load chart displayed in the cabin;
 - Are fitted with load lock valves.



CRITICAL RISK STANDARD

Confined space



1. INTENT

This standard identifies the controls required to manage the risks associated with personnel entering and/or working in a confined space.

2. APPLICATION

- This Standard applies to all Perenti Group projects and Contractors working directly under Perenti supervision.
- A confined space for the purpose of this standard is defined as spaces that are enclosed or partially enclosed, are not intended for continuous occupancy and have the potential during entry, occupancy or exit for one or more of the following:
 - A hazardous atmosphere as a result of:
 - Deficiency or excess of oxygen;
 - Flammable or explosive material, or
 - Dust, fume, mist, vapour, gas or other contaminants that exceed an occupational exposure limit.
 - Engulfment from free-flowing solids or liquids, and
 - Entrapment due to restricted entry or exit.

Entry is defined as whenever a person's whole body, upper body or head is within the confined space.

3. REQUIREMENTS

3.1 PEOPLE

- All persons who are required to issue a confined space permit, enter a confined space, or act as a standby person must be deemed competent and authorised.
- All persons conducting atmospheric testing must be deemed competent in the use of the specific testing equipment used for that testing and must understand the controls and treatment of the contaminants being monitored.
- All persons must comply with any reasonable instructions given relating to confined space entry permits, risk control measures and emergency procedures, and should carry out work in a confined space in accordance with any relevant information and training provided to them.
- Site Emergency Response Team members must be trained in extracting personnel from confined spaces.

3.2 SYSTEMS AND PROCEDURES

- The risks associated with all confined spaces considering the inherent hazards of the space itself, the tasks to be performed, oxygen and atmospheric contaminant levels, temperature, humidity, flammable substances, potential engulfment sources and any other foreseeable hazards must be assessed and evaluated.

- Projects must:
 - Identify all confined spaces and maintain this information in Confined Space Register including the location, type, unique identification (ID) number and risk assessment status;
 - Maintain a confined space risk assessment for each confined space identifying the potential contaminants / exposures and the required critical controls;
 - Ensure that each confined space is permanently signposted or labelled to warn of the confined space entry requirements;
 - Ensure that each confined space is secured against unauthorised entry; and
 - identify the rescue plan for each confined space.
- Entry to a confined space is only permitted when a confined space entry permit has been issued by a competent and authorised person.
- The confined space entry permit must be displayed at the entry to the confined space and must include the following:
 - A documented risk assessment;
 - Atmospheric testing results and ongoing testing requirements for each level or defined area of the confined space;
 - Requirements to clean down / wash down prior to entry;
 - Requirements for natural ventilation or forced ventilation to obtain and maintain a safe working environment;
 - Safety specification of equipment to be taken into the confined space;
 - Standby person role and responsibilities;
 - Entry / exit log of all persons entering / exiting the confined space;
 - Communication process and equipment to be used between the standby person and those in the confined space, and between the standby person and emergency response when raising the alarm;
 - An approved rescue / emergency response plan specific for the confined space;
 - A handover process for oncoming shifts;
 - Verification that equipment is safe to return to service, i.e., personal clear of the confined space, personal lock and tag removed from the isolation points; and
 - A completion sign-off to close the permit when the work is completed.
- A standby person(s) must be appointed and must:
 - Have no other duties assigned;
 - Not enter the confined space;



CRITICAL RISK STANDARD

Confined space



- Monitor all persons entering and exiting the confined space;
- Remain positioned immediately outside the confined space at the entry point at all times when people are in the confined space; and,
- Be capable of continuous communication with the persons inside the confined space;
- Hold a current First Aid ticket that includes CPR.
- There must be a procedure developed and implemented for the monitoring of gases and atmospheric contaminants in a confined space, that include as a minimum, requirements for:
 - Defined safe ranges for confined space atmospheres;
 - Type and model specification of monitoring equipment;
 - Procurement requirements for monitoring equipment;
 - Bump testing of monitoring equipment prior to use;
 - The calibration requirements for the monitoring equipment, including method and frequency of calibration, as specified by the Original Equipment Manufacturer (OEM);
 - Availability of current and valid calibration certification; and,
 - Competency requirements of personnel conducting the gas test.
- Isolation procedures or protocols must be developed and implemented that include as a minimum, requirements for:
 - The identification of all applicable energies;
 - The methods of isolation;
 - All isolation points and the devices to be used for isolations;
 - Sequence of the isolation steps;
 - Roles and responsibilities with isolations to be performed by a competent and authorised person;
 - The verification of zero energy and the safe methods to achieve this;
 - Verification of the isolation by each member of the work team entering the confined space;
 - Each member of the work team to apply their personal lock and tag;
 - Permits, communication and coordination of the isolations, including over multiple shifts;
 - Isolation exclusion zones including barriers and barricading.

3.3 PLANT AND EQUIPMENT

- Each confined space on site must be permanently signposted or labelled to warn of the confined space entry requirements.
- Equipment used for the testing and monitoring of atmospheric conditions within confined spaces must be serviced, maintained and calibrated as per the OEM requirements.



CRITICAL RISK STANDARD



Control of ground conditions including inrush

1. INTENT

This standard identifies the controls required to manage the risks associated with ground movement, falls of ground, wall failure, ground collapse, rockfall, seismicity, subsidence, inrush or flooding.

2. APPLICATION

This Standard applies to both surface and underground projects where a Perenti Group company is undertaking the mining activity. Implementation of this standard may vary depending upon the existing controls in place at a client's operation. In all cases a gap analysis must be undertaken to determine which of the requirements of this standard have been satisfied by a client's existing ground control plan or programme and which have not been addressed. For those requirements within this standard not addressed by the client, the requirement must be implemented by the respective Perenti Group Company.

3. REQUIREMENTS

3.1 PEOPLE

- All personnel must be trained and assessed as competent in understanding and managing ground control hazards specific to the surface or underground environment in which they work.
- Specific to Underground:
 - All personnel must be able to identify and must not proceed beyond the "last row" of completed ground support;
 - Personnel must check-scale all exposed rock on the face, backs and walls in their work area;
 - All ground must be manually, mechanically or hydro scaled prior to the application of ground support;
 - Supervisors must undergo specific training in rockfall hazard identification and mitigation to ensure adequate communication and supervision of mining tasks associated with ground control.
- The overall mine design and ground control management plan must be developed, reviewed, monitored and updated by a competent and qualified person.
- All personnel involved in the installation of ground support must be trained and assessed as competent in the safe access methods & installation including applicable quality assurance and control procedures.
- All personnel must be trained in the control measures relevant to their role including any Trigger Action Response Plans (TARP) in relation to ground movement, falls of ground, rockfall, ground collapse, seismicity, subsidence, inrush or flooding.

3.2 SYSTEMS AND PROCEDURES

- Each project must develop a project-based risk register that includes:
 - Geological, geotechnical and hydrogeological characteristics and engineering properties of the rock mass;
 - Mining method and potential for ground movement, falls of ground, ground collapse, wall failure, rock fall, seismicity, subsidence, inrush or flooding.
- Each project must establish a Ground Control Management Plan (GCMP) that includes safe design, implementation and verification of ground control measures designed to mitigate the risks associated with that project.
- The GCMP must comply with, as a minimum, the "Code of Practice for Ground Control for Western Australian mining operations".
- The GCMP must be supported by a geotechnical model with data of sufficient quantity and quality to ensure a safe design process. This safe design process should be included or referenced within the GCMP including the following:
 - The geotechnical model, determined by the complexity of geological, geotechnical and hydrogeological characteristics and engineering properties of the rock mass;
 - Geotechnical design, with mine excavation designs and ground control designs completed, reviewed and revised by competent persons;
 - Safe systems of work to ensure that the designs are implemented according to the safe design intent;
 - Documentation to support the safe systems of work (training, safe operating procedures, QA/QC) to ensure validation of the correct implementation;
 - Communication, training, supervision and verification of mining tasks relating to Ground Control;
 - Accountabilities and those roles authorised to change either the design or mine plans;
 - Regular internal and external review of the GCMP.
- In developing, implementing or altering any ground control system, a documented geotechnical risk assessment process must be undertaken and approved by a competent person.
- The safe systems of work defined in the GCMP must include the following:
 - All excavations drives and stopes must be designed to specified and documented minimum stability criteria for all relevant rock types and the geotechnical model;
 - Safe access to work areas;
 - The materials used for all ground support elements;
 - Procedures must be developed and implemented for all aspects of ground control activity. These must specify:
 - The persons authorised to install support in accordance with approved design and the training they require;



CRITICAL RISK STANDARD



Control of ground conditions including inrush

- The tools and equipment used to install ground support to cater for all sizes of excavation encountered in the mine;
- The tools and equipment used for scaling must cater for all sizes and types of excavation encountered in the mine. The tools used must allow the removal of loose material without exposing the person performing the work to injury;
- The persons authorised to scale and the training they require; and
- Where personnel may inadvertently enter an area of unsupported or otherwise unsafe ground (such as when installing ground support or approaching a vertical mine opening or stope brow) the "safe area" must be delineated to prevent inadvertent access (i.e. barricade, bunds, signage, delineation cones or a combination of these).
- Procedures must be in place that define:
 - the frequency and responsibility for inspecting, monitoring, evaluating and reporting on ground conditions in:
 - shafts, declines, access ramps, airways, escape ways, in pit ramps, waste dumps etc; and
 - other key infrastructure in the mine i.e. workshops, stores, shaft stations.
 - the frequency and method of testing rock bolts, cables and other support elements together with the necessary record keeping.
- Programmes to measure over-break in development drives and stopes, as compared with design, must be in-place and the necessary records maintained.
- Survey accuracy of mine development must be checked against the mine's standards and recorded.
- Where pillars are required for reasons of safety they must be mathematically derived and clearly marked on all mine plans and sections.
- The safe systems of work defined for mitigation of inrush and flooding must consider the following:
 - Where the risk of uncontrolled inflow due to surface waters entering the mine exists, the following controls must be implemented:
 - Potential surface water inflow quantities (e.g.1:100-year event for storms) must be incorporated into the mine pumping system design and water management programs;
 - Diversion channels, drains, bund walls or other structures designed to divert water away from the mine workings must be designed by competent persons (engineering design) and constructed according to the design with appropriate implementation controls including QA/QC records;
 - Clear Trigger Action Response Plans (TARP) must be in place for storm events including short and long duration events.
- The mine design must consider local and regional hydrology and hydrogeology to ensure that the potential for uncontrolled inflow and inundation is understood and prevented.
- Where the hazard of uncontrolled inflow and inundation exists, the project must establish and implement an Inflow and Inundation Management Plan, or equivalent based on risk assessment.
- Where failure of the Mine dewatering systems and infrastructure poses an inundation risk, the system must:
 - Be designed based on hydrogeological measurements, predicted inflows, and modelling and have continuous monitoring and alarm systems for critical elements of the mine water management system;
 - Include procedures for the operation, monitoring, inspection and maintenance of critical elements of the mine water management system;
 - Clear Trigger Action Response Plans (TARP) must be in place to ensure appropriate actions in the event of alarm level and/or failure of critical elements of the mine water management system (e.g. a critical pump);
 - Where the risk of uncontrolled inflow from major structures and/or features, drill holes, flooded historical workings, and/or adjacent mines exists, the following controls must be implemented:
 - All drill holes which pose an inflow risk must be clearly identified on relevant mine plans;
 - All drill holes which pose an inflow risk must be plugged/ grouted upon completion of service life;
 - When excavating in areas of limited knowledge, with high inflow risk potential, a program of probe drilling ahead of the development must be conducted.
- Where there is a risk of in-rush of mass materials the following considerations must be included:
 - The presence of wet and fine material in draw points;
 - The potential for hang-ups or water build up in stopes, passes, chutes or other vertical openings;
 - Ground failure in multiple lift stopes (where there is a risk of high-speed ejection);
 - The build-up of cuttings/chippings created by the reaming action of raise bore holes;
 - Trigger Action Response Plans (TARP) to ensure appropriate actions with regard to changing conditions in draw points;
 - Backfill material specification is to be based on adequate investigation that ensures the stability of the fill material and prevention of subsidence;
 - Backfilling operations must be regularly monitored to ensure accurate volume of fill.

3.3 PLANT AND EQUIPMENT

- Design and selection of equipment used in ground control applications must meet the required GCMP specifications.
- Materials used in the ground support system must be selected and routinely tested to ensure they meet the required GCMP specifications.
- All engineering controls including barricades and bulkheads must be designed and manufactured by competent persons with regard to the safe design intent and conditions likely to be encountered.

**CRITICAL RISK STANDARD****Entanglement and crushing****1. INTENT**

This standard identifies the controls required to manage the risk where personnel are required to work on or near rotating equipment.

2. APPLICATION

This Standard applies to all Perenti Group projects.

3. REQUIREMENTS**3.1 PEOPLE**

- Induction training must include the use of isolations, e-stops, pull cords, guards, interlocks, barriers and barricades, etc.
- All persons who are required to perform isolations must be deemed competent and authorised.

3.2 SYSTEMS AND PROCEDURES

- All plant and equipment must be risk assessed to identify where guarding and interlocks are required.
- Where guarding and interlock systems are insufficient to protect personnel, access to plant and equipment must be controlled with isolations which are conducted as per the requirements of the Perenti Isolation and Control of Hazardous Energy Critical risk Standard.
- There must be a system for the design, procurement, installation, commissioning and maintenance of all plant and equipment that considers all energy sources and the requirement for guarding or barricading. Where practicable, plant and equipment design should seek to eliminate the need for guarding. Any changes to the system need to follow the Change Management Procedure prior to implementation or removal.
- A formal system must be in place to ensure the integrity of plant and equipment guarding.
- Guards must only be removed for maintenance, repair, cleaning, clearing, etc., and only after plant and equipment has been isolated, locked and tested in line with the isolation requirements above.
- Where the temporary removal of guards is necessary on operating plant and equipment for the purposes of fault-finding, testing and commissioning, the task must be conducted under a "live work" risk-based procedure, following the required authorisation and approval process.
- Guards must be replaced prior to plant and equipment being put back into operation.
- A procedure must be developed and implemented for the use of hand tools under mechanical or hydraulic power on drill strings, including the requirements for hands off controls.

3.3 PLANT AND EQUIPMENT

- Guarding must be designed such that it can only be removed with the use of tools.
- Crush prevention systems must be fitted to work boxes, elevated work platforms (EWPs), or equivalent. These must include consideration of operator protective structures, electronic warning devices, retraction devices and other protection technologies.
- Crush prevention devices must be routinely inspected, tested and maintained.
- Equipment controls must be designed to prevent inadvertent operation and must be clearly labelled in the local language.
- Where identified as being required by risk assessment safety interlocks must be fitted and operate to restrict equipment and machinery movement when activated. Safety interlocks must be failsafe and be designed to prevent them being bypassed.
- Start-up audible alarms with appropriate delays must be fitted to conveyors and large moving equipment where persons may be present at start-up.
- Emergency stop functionality, e.g., pull cords, must be fitted, and located for easy access and operation.
- Fail-to-safe switches or devices must be installed on all manually operated rotating plant and equipment and power hand tools (e.g., saws, lathes, drill presses).
- Deadman switches, emergency stops and pull cords, safety interlocks and start-up alarms must be routinely tested, inspected and maintained.

**CRITICAL RISK STANDARD****Explosives and blasting****1. INTENT**

This standard identifies the controls required to manage the risk associated with personnel handling, transporting, storing or using explosives.

2. APPLICATION

This standard applies to all Perenti projects where explosives are transported, stored and used.

3. REQUIREMENTS**3.1 PEOPLE**

- Personnel who are involved in the storage, transport, handling and use of explosives must be trained, assessed as competent and where required hold a licence according to local legislative requirements.
- All personnel who require regular access to explosives must be appointed by the Project Manager, SSE or explosives licence holder. Any other persons who require access to explosives as part of their employment must always be supervised by a secure nominee.
- Charging and firing will be conducted under direct supervision of an appointed shotfirer.
- All personnel who have access to explosives must have their original security clearance (where required) available upon request.
- All personnel working with explosives must carry a time piece that is synchronised to 'mine time'.

3.2 SYSTEMS AND PROCEDURES

- All Projects will develop and maintain applicable documentation as per their respective jurisdiction's legislative requirements with a minimum of:
 - Explosives Risk Assessment;
 - Explosives Management Plan, inclusive of security arrangements;
 - Blast plans;
 - Misfire Record book;
 - Standard Operating Procedures for safe handling, transport, storage, theft or loss and disposal of explosives;
 - Procedures for explosives inventory management, control and reconciliations, with records kept for a minimum of two years;
 - Explosive manufacturers Safety Data Sheet (SDS) or Technical Data Sheet (TDS) available at the entrance to the magazine;
 - A copy of the magazine storage license detailing the maximum capacity of the magazine.

3.3 TRANSPORT AND STORAGE OF EXPLOSIVES

- No ignition sources (naked flames, welding or smoking) are permitted within 10 metres of explosives.
- Mobile phones are not permitted inside explosives magazine compounds, explosives transport vehicles or where explosives are to be used.
- Surface Magazines require lightning protection as per AS/NZS 1768:2007 Lightning Protection.
- Explosives must not be transported on the surface during lightning storms.
- All unattended explosives must be secured in an approved locked container or magazine.
- Charge and transport vehicles must be shut down and isolated before loading of any explosives.
- Charge and transport vehicles must only carry enough explosives and detonators for the shift.
- Explosives and detonators must be segregated in magazines as per AS 2187.1 Explosive – Storage, Transport and Use.
- Explosives and detonators must be transported and stored in approved, separate and secured containers as per AS 2187.1 Explosive – Storage, Transport and Use.
- Any explosives spillage must be cleaned up and neutralised.
- Waste material (rubbish) must be stored outside a magazine and removed each shift to reduce the potential or escalation of a fire.

3.4 USE OF EXPLOSIVES

- All charging of explosives must be completed according to an approved blast plan.
- The nominated shotfirer must complete and sign off on the blast plan.
- Primers are only to be made up at the point of charging.
- When charging and an intersecting drill hole or void is encountered, this must be reported to the supervisor prior to firing.
- There must be a procedure for dealing with misfires.
- All misfires must be reported to the responsible supervisor prior to any remedial action. All misfires must be recorded in the Misfires Record Book.



CRITICAL RISK STANDARD

Explosives and blasting



3.5 BLASTING

- The location and times of blasting operations must be communicated to personnel who work at the mine.
- All blast areas must be visually inspected by the firing crew prior to seeking approval for permission to blast.
- Blast sites must be adequately signed and barricaded to prevent unauthorised or inadvertent access.
- Only approved equipment is to be used to initiate blasts.
- Initiation of any blast will only occur at a firing point designated in the project-specific Explosives Management Plan.

3.6 PLANT AND EQUIPMENT

- Explosives vehicles must meet the requirements of the Australian Code for the Transport of Explosives by Road and Rail including the relevant jurisdiction (Explosives) Regulations including:
 - Dangerous Goods placarding and relevant warning signage for the type of explosives and detonators being carried;
 - EXPLOSIVES sign, 150mm high lettering in red uppercase on a white background and an orange Dangerous Goods Class Diamond sign, displayed front, rear and sides when carrying explosives.
 - Be earthed with an approved earthing system;
 - Have approved lockable explosives containers securely attached to the vehicle;
 - Have two accessible handheld 9kg dry chemical fire extinguishers;
 - Have an operational blue flashing light (LED rotating beacon).
- Ignition sources must be kept at least 10 metres away from any explosive's vehicle.
- ANFO kettles must have a secured guard or covering fitted to prevent detonators or foreign material from entering the kettle opening.
- Before entering any workshop or commencing any hot work, all explosives carrying vehicles must be free from any explosives, detonators and be washed down to remove any explosive residues.
- Equipment used to mix, or transport explosives must be located to ensure isolation from the potential for impact damage, or any spillage contacting electrical sources, hot surfaces or flammable liquid storage infrastructure.



CRITICAL RISK STANDARD

Fitness for work



1. INTENT

This standard identifies the controls required to manage operational risks associated with fitness for work.

2. APPLICATION

This standard applies to all Perenti projects.

Fitness for work includes:

- Presenting to work free of alcohol, or illicit drugs; or any unauthorised, excessive or undeclared prescription medications;
- Preventing and effectively managing dehydration, heat illness and fatigue;
- Maintaining physical health including the capacity/physical capability necessary to perform the inherent requirements of the job;
- Managing mental health conditions and stress;
- The assessment, monitoring, management and prevention of occupational health-related risk exposures;
- The management and outcomes of rehabilitation, injury management and return to work processes following a work-related injury, including work capacity assessment and periodic medical and health assessments as required; and,
- Providing a workplace and work processes that support mental health and wellbeing in the workplace.

3. STANDARD

3.1 PEOPLE REQUIREMENTS

- All persons are to present for work fit and healthy to undertake the duties of their role. Any person with a condition, physical or psychological, that may prevent them from being able to safely carry out their assigned tasks must be raised with that person's immediate supervisor.
- Whenever rostered for, or when attending work, employees must have a Blood Alcohol Concentration (BAC) of zero (0.00% BAC).
- Attendance at work with a detectable amount of an illicit drug which is at or which exceeds the concentration limits specified in the Australian/New Zealand Standard 4308-2008 is prohibited.
- The possession, sale, procurement or use of any illicit drug, or any implement related to illicit drug use is prohibited at any work location including onsite accommodation.
- Prescription medication must be for personal use only by the person to whom the medication is prescribed and within the specified use-by dates.
- The use of prescription medication by any person must be declared to their immediate supervisor and be accompanied by a current prescription or label issued to that person.
- Pharmacy (non-prescription) medication must be for personal use only and where there is a credible risk to the safe conduct of work must be declared to the immediate supervisor.

3.2 SYSTEMS AND PROCEDURAL REQUIREMENTS

- All prospective employees must pass a pre-employment medical assessment before commencing their employment with Perenti, including:
 - Appropriate functional testing to confirm their ability to meet the physical requirements of their role;
 - Alcohol and drug screening.
- ISG's will implement and maintain an Employee Assistance Program (EAP) through an external provider and will communicate information about the context, purpose and contact details for the program to all employees in each work location.
- ISG's must implement, maintain and communicate the following awareness and education programs consistent with the Perenti Health and Hygiene standard including:
 - Mental health and wellness;
 - Physical health and wellness (with the aim of mitigating musculoskeletal risk exposures);
 - Fatigue management;
 - Managing fitness for work for Leaders;
 - Dehydration and heat illness;
 - Occupational Hygiene;
 - Injury management for Leaders.
- Every work location must have calibrated equipment for the purpose of workplace alcohol and drug testing and a trained and competent person to conduct that testing.
- Every employee at a Perenti work location must participate in fitness for work testing, including breath alcohol testing, hydration testing and Fatigue self-assessments according to procedure or safety management plan requirements.
- In the case where an employee is injured at work, processes must be in place to ensure appropriate and timely medical treatment and rehabilitation programs are provided to expediate recovery and return to work.
- Following an absence due to personal illness or injury, an employee may be required to undertake a fitness for work assessment and obtain a medical certificate prior to returning to work.

3.3 PLANT AND EQUIPMENT REQUIREMENTS

- A documented process must be developed and implemented to ensure that equipment used for fitness for work assessments is inspected, maintained and calibrated as per the manufacturer's requirements.
- Every work location must keep a register of calibrated equipment and must have access to relevant calibration or service records.

**CRITICAL RISK STANDARD****Hazardous materials****1. INTENT**

This standard identifies the controls required to manage the risks involved when personnel use, transport, store and dispose of hazardous materials.

2. APPLICATION

This Standard applies to all Perenti projects. Hazardous Materials in this standard includes but is not limited to any chemical, biological or radiological material with potential to cause harm to personnel.

3. REQUIREMENTS**3.1 PEOPLE**

- Personnel required to work with hazardous materials must be provided with information, training and instruction with regard to:
 - the use of the material/s;
 - the personal protective equipment and clothing required to handle the material/s;
 - correct storage of the material/s;
 - the labelling of containers;
 - any health monitoring which may be required;
 - the arrangements in place to deal with an emergency or spill;
 - the availability and accessibility of the Safety Data Sheets (SDS);
 - cleaning up and disposal of hazardous materials;
 - How to correctly report spills and who to contact.
- Information about hazardous materials must be included in the induction training program for new personnel.
- Health monitoring programs will be undertaken for workers exposed to hazardous materials as determined by risk assessment or as a result of an OEL monitoring programme.

3.2 SYSTEMS AND PROCEDURES

- The risks associated with using, handling, transporting and storing hazardous materials in the workplace must be identified and recorded in the project specific risk assessment.
- Each project must have a hazardous material register that lists all hazardous materials used in the workplace. The register must include the following information for each hazardous material:
 - name;
 - storage locations;
 - maximum quantity stored at on site at any given time (stock holdings);
 - risk assessment outcomes covering the full life cycle from acquisition to disposal.

- The hazardous materials register must be readily accessible to all workers and others who are involved in using, handling, transporting and storing hazardous materials and anyone else who is likely to be affected by the hazardous material used at the work site.
- Safety Data Sheets (SDS) in hard copy are to be kept in a location that is readily accessible to all workers and others who handle or may be exposed to a hazardous material.
- SDS must also be readily accessible to emergency services and medical personnel when required.
- A procedure must be developed and implemented to ensure all hazardous materials are risk assessed and approved prior to purchase and despatch to site.

3.3 PLANT AND EQUIPMENT

- All hazardous materials must be stored as per the recommendations of the SDS, the Australian Dangerous Goods Code or relevant Australian Standard.
- Each storage location must have the appropriate warning signs and Globally Harmonised System (GHS) pictograms.
- Any pipework containing hazardous materials must be labeled.
- Emergency response (e.g. deluge systems, fire extinguishers, spill containment kits) and first aid equipment (e.g. eye wash stations, emergency showers, first aid kits) must be installed or made available as required by the project risk assessment and local legislative requirements.
- The requirements of the GHS segregation chart must be applied to all storage locations to ensure hazardous materials are appropriately isolated, separated or segregated.

**CRITICAL RISK STANDARD****Isolation and control of hazardous energy sources****1. INTENT**

This standard identifies the controls required to manage the risk of personnel being exposed to the release of uncontrolled hazardous energies.

2. APPLICATION

This standard applies to all maintenance and operational activities across the Perenti business. Hazardous energy in this standard includes but is not limited to electrical, mechanical, pneumatical, pressure, gravity, vehicle and thermal.

3. REQUIREMENTS**3.1 PEOPLE**

- Employees and contractors must receive energy isolation training and be deemed competent prior to starting any work.
- No person will work on any item of plant, electrical system, piping or pressure system unless all energy sources relevant to the work have been isolated, tested and proven and they have placed a personal danger tag and lock on the isolation points.
- No person will work on any item of plant with energised systems unless working under a testing and adjusting protocol. The exception to this requirement is where work/testing occurs on mobile equipment that is fitted with a start circuit isolator that has been locked out.

3.2 SYSTEMS AND PROCEDURES

- Hazardous energy isolation/testing and adjusting requirements for all plant and equipment must be identified in a formal risk assessment and controls developed before equipment is commissioned.
- A point of work risk assessment (SWIC or Take 5 etc) must be used to identify relevant energy isolation points before attempting any work on plant and equipment with single energy sources and a single isolation point.
- A Job Safety Analysis (JSA) or a Safe Work Procedure (SWP) must be used to identify relevant energy isolation points before attempting any work on plant and equipment with multiple energy sources and/or multiple isolation points.
- Out of service tags must only be removed by a competent and authorised person able to declare that the equipment is safe and serviceable.
- Personal danger locks and tags must only be removed by the person who placed them.

3.3 ISOLATIONS

- The ISG or individual ISG business units will develop and implement detailed isolation procedures reflective of their isolation needs that must include the following minimum requirements:
 - the identification of all applicable energies (including but not limited to electrical, pneumatic, hydraulic, stored, potential and gravitational);
 - the methods of isolation;
 - all isolation points and the devices to be used for isolations;
 - sequence of the isolation steps for both Single point or Group Isolations;
 - roles and responsibilities with isolations to be performed by a competent and authorised person;
 - the verification of zero energy and the safe methods to achieve this;
 - verification of the isolation by each member of the work team (i.e. a process to test for dead);
 - each member of the work team to apply their personal lock and tag;
 - permits, communication and coordination of the isolations, including over multiple shifts;
 - isolation exclusion zones including barriers and barricading;
 - the process for removal of a personal lock and tag left on the isolation.
- Every isolation performed must positively isolate the energy source, be locked and tagged at the isolation point(s), de-energise stored energy and be able to be tested for a de-energised state (i.e. tested for dead) by work team members before commencing work.
- Isolation must be undertaken at the energy source and not relied upon at control circuitry, (e.g., push buttons, stop switches, interlocks, emergency stops, pilot circuitry, instrument air).
- 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) must not be transferred to another person for lock removal;
- The removal of a personal danger lock and tag by any person other than the person who applied the lock and tag requires the documented authorisation of the authorised person or delegate;
- When working forward of Jumbo jacks the boom isolator must be engaged and no movement is to occur.

**CRITICAL RISK STANDARD****Isolation and control of hazardous energy sources****3.4 LIVE TESTING AND ADJUSTING**

- ISG's must develop a testing and adjusting procedure to be used where plant and equipment is required to remain energised for maintenance activity, commissioning or testing of that equipment.
- When commissioning/testing tasks are being conducted all persons in the immediate work area must be signed on to the JSA for the task, the testing and adjusting tag itself and be notified and clear of any exposure prior to any movement taking place.
- Only the authorised controller or nominated person when directed by the controller will operate or use the controls for a piece of plant or equipment which has a testing and adjusting tag attached.
- Testing and Adjusting tag(s) must be placed in a prominent position on both the isolation and control point(s) (e.g. steering wheel/ignition switch of a vehicle) where it can be easily seen by anyone attempting to start, operate or access the plant or equipment.

3.5 ELECTRICAL ISOLATIONS

- No electrically powered equipment is to be moved unless de-energised and isolated from the main electrical power source (excludes hand tools and electronic devices):
 - Electrically powered mobile plant may be moved, and persons can go forward of the outriggers/jacklegs when done in accordance with the specific procedures for these machines.
- All electrical equipment that is connected to a power supply by a plug must be isolated by turning off the power supply then removing the plug from the power source and locking and tagging the plug with the appropriate purpose made device.
- Where electrical equipment is hard wired to an electrical reticulation system and is fitted with a lockable isolator switch an electrician is not required to complete the isolation.
- Only licensed and authorised electricians will perform isolations on electrical reticulation or where distribution box entry is required, for systems above 32 volts or with mixed voltage e.g. pilot and power.

3.6 PLANT AND EQUIPMENT

- All mobile equipment must be able to be positively isolated by:
 - being fitted with lockable main isolation point;
 - being fitted with lockable start circuit isolation point.
- Designated isolation points must be clearly labelled to identify the circuit or system over which they have direct control.
- Stored energy systems that exist within items of plant such as air receivers, hydraulic accumulators, capacitors and batteries; must be identified, discharged or isolated before commencing any maintenance work.
- Where equipment has locking pins or articulation locks, these must be in place during servicing and maintenance work.
- All hired and contracted equipment must be audited to ensure it meets the projects isolation requirements and the requirements of this standard, before use on site.
- Equipment that is not in a state to be returned to service must be tagged as Out of Service.

**CRITICAL RISK STANDARD****Maintenance of mobile equipment****1. INTENT**

This standard identifies the controls required to manage the risk when personnel are required to perform maintenance on mobile equipment.

2. APPLICATION

This Standard applies to all mobile equipment operated or maintained at Perenti projects and off-site workshops.

3. REQUIREMENTS**3.1 PEOPLE**

- A competency-based training system must be in place for maintenance personnel required to conduct work on mobile equipment.
- Maintenance personnel must, as a minimum, have achieved all mandatory competencies required for the task they are to perform before conducting the task without direct supervision.
- Maintenance personnel must not operate mobile equipment unless competent or under instruction (or "in training").
- Personnel must hold the appropriate high-risk work licence required for the task being performed (e.g. Dogging, forklift). In jurisdictions outside Australia where high-risk work licenses do not exist, personnel are required to comply with the intent of this standard and undergo an equivalent level of training.
- Only a licensed electrician can perform work on electrical systems over 24 Volts on mobile equipment.

3.2 SYSTEMS AND PROCEDURES

- When mobile equipment arrives at a Perenti project, it must be inspected by a competent person to ensure compliance with Perenti, ISG Business unit and project-specific requirements.
- Mobile equipment must be chocked or onboard jacks grounded before maintenance activity commences.
- All elevating machine assemblies (e.g. booms) must be supported before maintenance activity involving the boom structure or lift mechanism commences. Feeds and rod handlers may be worked on without supporting the boom providing power sources have been isolated.
- A point of work risk assessment (SWIC, Take 5, JSA) must be completed for all maintenance tasks other than routine servicing.
- Mobile equipment must be positively isolated before any maintenance activity can take place.
- Mobile equipment must not be operated during maintenance activity unless under a testing and adjusting or testing and commissioning protocol.
- Maintenance personnel must control risks associated with defective critical components in accordance with maintenance procedures before relocating mobile equipment to facilitate repair.
- Trained operators and spotters must be used when mobile equipment enters or departs workshops to control risks associated with equipment movement in restricted spaces.

- OEM diagnostic equipment, parts manuals, and maintenance manuals must be available at each project and accessible by site maintenance personnel.
- Minimum requirements and specifications for the storage, assembly and maintenance of tyres and rims must be documented at each project. These requirements must include the tools and equipment to be used and the procedures and competencies required for stripping, assembly and inflation. The following requirements must be included:
 - Tyre, rim and wheel maintenance work (including tyre pressure checks and tyre handler operation) may only be undertaken by adequately trained, competent and authorised personnel;
 - Tyre, rim and wheel maintenance work (including routine tasks) must not take place without a point of work risk assessment (SWIC, Take 5 or JSA);
 - When inflating / deflating tyres, a remote device fitted with a pressure gauge, shut off and dump valve must be used and monitored by personnel for the entire duration of the task;
 - Remote inflation / deflation device hose length must allow for personnel to keep a minimum of 3 metres perpendicular distance from the outer limit of potential hazardous trajectory of assembly failure and all personnel must keep this distance during the task;
 - Heat must never be applied (weld, grind, torch etc) to an inflated and or assembled tyre/rim/wheel. Deflation and full disassembly must be completed if hot works are required;
 - All tyres of 24" rim / wheel diameter or less must be inflated in a purpose built and certified tyre inflation cage;
 - All tyres of 25" rim / wheel diameter or where a cage cannot practically be used, must be inflated with use of an adequately positioned blast guard / equipment such as a tyre handler, forklift or IT loader to reduce the hazardous potential of assembly failure;
- Tyres that have been run flat or found to be 20% under their OEM specified inflation pressure shall not be re-inflated unless first disassembled, inspected and verified as serviceable by trained and competent personnel:
 - Prior to removal from mobile plant, all assemblies (inclusive of adjacent wheels in dual wheel groups) must be deflated to the required safe removal pressure as risk assessed and dependent on OEM specifications, industry standards and point of work risk assessments;
 - Where rubber tyred equipment is subject to electrification (lightning, powerlines) catch or come into contact with fire or a hot tyre / pyrolysis is suspected emergency procedures must be followed;
 - Tyre handlers and mechanical lifting aids shall not be used for any purpose other than that specified in their design;
 - Personnel shall never leave the controls of the tyre handler or other mechanical lifting aid whilst it is supporting a load;
 - Personnel must never enter the area between an assembly and tyre handler attachment unless adequate controls are in place as specified in the point of work risk assessment (eg Wheel Chocks, Fallback arrestors, spotters, positive communications); and



CRITICAL RISK STANDARD



Maintenance of mobile equipment

- Assemblies must never be inflated whilst clamped by a tyre handler or mechanical lifting aid.
- A maintenance strategy should be implemented on site to cover preventative maintenance, corrective maintenance, breakdown maintenance and plant and equipment inspections.

3.3 PLANT AND EQUIPMENT

- All mobile equipment must be subject to a risk assessment before mobilisation, and all engineered risk controls must be identified in an ISG Business unit build specification.
- All new Perenti mobile equipment must conform to the current ISG Business Unit build specification at the time of delivery.
- Inspection and maintenance strategies must be developed and implemented for each item of mobile equipment before its commissioning.
- All mobile equipment must be maintained to a functional condition consistent with Perenti ISG and OEM specifications.
- When a build specification is updated, the requirement to upgrade existing mobile equipment of that model must be risk assessed and a change management program implemented, should existing equipment require upgrading.
- OEM parts must be used for all brake and steering maintenance.
- All hydraulic lines and fittings must meet or exceed OEM specifications.
- All hoses and harnesses must be returned to the as built location and be secured by the intended clamps at the completion of maintenance activity.

3.4 TEMPORARY REPAIRS

- Any maintenance activity that returns a machine to an operational state but does not achieve normal manufacturer's specifications is deemed a temporary repair. In order for such a machine to be used the temporary repair must:
 - not impede or alter the operation of any safety function or critical component;
 - not create an unsafe condition if the temporary repair fails;
 - be reported to project maintenance management so that a permanent repair can be scheduled.

3.5 EQUIPMENT MODIFICATIONS

- Mobile equipment and tools used to perform maintenance work must not be modified from ISG business unit build specification unless approved by the responsible ISG business unit maintenance manager or equivalent.
- Equipment modifications must be subject to the ISG management of change process.



CRITICAL RISK STANDARD



Prevention of falls and dropped objects

1. INTENT

This standard identifies the controls required to manage the risk associated with personnel required to work at height or operate mobile equipment that may fall into vertical openings.

2. APPLICATION

This standard applies to all Perenti Group Projects wherever the risk of a person, object or occupied equipment falling cannot be eliminated and applies to all work conducted at height or near an open edge.

The preferred approach to the prevention of falls from height is to eliminate the need for the activity to occur at height through equipment design or engineering changes. Should this not be possible or practicable the hierarchy of PPE control to be used within Perenti is as follows:

- fall restraint techniques (preventing access to an edge where a fall can occur);
- limited free fall technique (where if a fall occurs it is arrested within 600mm);
- fall arrest (where more than a 600mm fall is possible).

Throughout this standard, a reference to a safety barricade means a permanent or temporary physical device (or devices) including loosely placed rock (i.e. bund) where access across or past the barrier is deliberate and cannot be considered inadvertent or accidental.

3. REQUIREMENTS

3.1 PEOPLE

- Anyone required to work at height, including in an EWP or near a vertical opening must hold an Australian nationally recognised safe work at height competency or an international equivalent. Where no international equivalent exists person must be trained to an equivalent level of competency through either internal or external training programs.

3.2 SYSTEMS AND PROCEDURES

- Anyone working at height must not work alone.
- The use of Fall Arrest PPE requires specific approval from the Project Manager or their delegate.
- Any time Fall Arrest is used a working at height permit shall be issued and a specific emergency response plan must be developed and communicated to all participants and project-based emergency services.
- An emergency response plan that includes working at height risks as identified in either the project risk assessment or the JSA specific for the task must be readily available in the workplace when work at height is conducted (the plan must include plan activation, standby equipment if applicable, emergency procedure).

- No person is allowed within three metres of an unprotected open edge such as a stoep or vertical opening without the use of fall restraint equipment.
- Standard work procedures must be in place for the correct donning, use and operation of personal fall protection equipment.
- Fall protection equipment (full body harness, lanyards and attachment devices) must be issued to individuals required to work at height who then become accountable for its proper storage and maintenance whilst in their possession.
- While working at height, personnel must wear a full body harness attached to an adjustable lanyard which is securely attached to a rated anchor point or static line. The adjustable lanyard must be adjusted to prevent the person from reaching an edge from which they can fall.
- Fall protection equipment must be inspected quarterly by a competent person, tagged or otherwise identified to confirm the last inspection and period for use and recorded on a register.
- Fall protection equipment must be inspected by the user immediately prior to and after use. Defective equipment must not be used. Defective equipment must be removed from service, have an out of service tag attached and be quarantined for further inspection or disposal.
- There must be a system to manage the risk of objects (such as tools, materials, debris and build-up, spillage or overflow, etc.) falling onto or striking persons below or in adjoining areas. The system must consider controls such as:
 - concurrent work activities and segregation controls;
 - design and installation of prevention systems such as securing, screening and edge protection;
 - use of appropriate storage, transfer and retention devices for tools, e.g., lanyards, grommets, tool buckets;
 - design and installation of catch netting, overhead structures, load rated decking, etc.;
 - exclusion zones that protect the potential drop and bounce zones through the use of barriers, barricading, demarcation and signs.
- Three points of contact must be maintained when climbing and descending ladders, or during access to and egress from plant.
- Where three points of contact cannot be maintained (e.g. working from a ladder in an escapeway) fall prevention measures must be applied.
- Standard work procedures for routine work must indicate tasks where a fall hazard exists and the controls that are to be applied.



CRITICAL RISK STANDARD

Prevention of falls and dropped objects



- Whilst involved in work at height activity, Elevated Work Platform (EWP) baskets attached to Integrated Tool Carriers (IT) must have the locking pins engaged and isolated with a personal danger tag and lock for each person involved in the task.
- Procedures for the operation of an EWP must define the communication process between operator and person in the work platform. No movement of the controls by a person not located in the basket is to take place unless in accordance with approved Business unit specific approved procedures.
- All work in an EWP requires the presence of a dedicated spotter competent to raise an emergency alarm and lower the EWP should an emergency arise. In the case of an EWP basket fitted to an IT or equivalent the spotter may be the IT operator.
- Permanent and temporary anchor points must be designed and installed according to an engineering standard.
- Permanent anchor points must be recorded on a register and undergo a documented inspection by a competent person at least annually.
- Temporary anchor points must be removed once the planned work is complete.
- Personnel must not climb onto or work from loader buckets, forks, machine booms, the cabin roof of any mobile equipment or any other structure that is not a designated work area/work platform. This includes the trays of light vehicles or decks of road going trucks, except when edge fall protection is in place.
- No work is to be conducted from a portable ladder with exception of platform ladders designed for this purpose.
- Open edges and open holes must have a safety barricade and appropriate signage placed to warn personnel of the hazard present.
- When loaders and trucks are required to tip over the edge of a vertical opening underground an engineered safety wheel stop must be installed until a rill is established. A Shift Supervisor must inspect the work area prior to authorising a travelling bund arrangement.
- Engineered wheel stops/barriers for mobile equipment must undergo periodic inspections to ensure integrity of the wheel stop.
- Loaders and trucks on the surface must only tip over the edge of a dump that has clearly identified windrows established for this purpose.
- Lighting must be provided at the tip edge.
- Any safety barricade designed to stop vehicle access must be at least the half the wheel height of the largest mobile equipment that will work in the area. The width of the barricade must prevent all vehicular access beyond the barricade. A minimum height and depth of 1 meter is required.

3.3 PLANT AND EQUIPMENT

- All fall prevention equipment must be designed, purchased, and maintained in accordance with relevant approved design standards and manufacturers recommendations for its intended application.
- Only full body fall arrest harnesses (with anti-suspension trauma straps) are to be used for work at height.
- Lanyards must be securely attached to the harness manufacturer’s designated attachment points and not to any strap or webbing component that is not designed for this purpose.
- Harnesses, when worn for work at height must be securely attached to a shortened adjustable rope lanyard or retractable inertia reel with shock absorber built in and attached to an approved anchor point.
- A twin tailed lanyard must be used instead of two separate lanyards if personnel are required to move from one surface to another and remain anchored at all times.
- Lanyards must be attached to a suitable anchor point using a triple action karabiner or double action snap-hook and not back-hooked around a structure onto itself.
- Single anchor points must be engineered to meet a minimum ultimate strength of 15kN for one person or 21kN for a maximum of two people.
- All EWP work baskets must have crush protection utilising operator protective structures, electronic warning devices, retraction devices or other protection technologies that prevent an operator becoming trapped between the basket and structures overhead.
- Where plant is fitted with an approved access system (e.g. mechanised stairway), that system must be used as the primary method for access and egress.
- Where personnel need to gain access to places at height on large plant and mobile equipment (e.g. to clean windscreens or filters), access ways must be provided or such tools and equipment to enable completion of the task from the ground.
- Stands and portable work platforms over 600mm in height require fall prevention measures (e.g. handrails).
- Access ladder ways, handrails and self-closing gates must be in good condition, regularly inspected and maintained.
- Mobile equipment fitted with fold up/down handrails must have these items maintained in good condition such that they can be used during access.
- Structures, equipment, securing devices and fixtures that support or store objects at height must be engineered, designed and installed to support the applied load.
- Racking must be designed for the load, suitably identified with the SWL, inspected for integrity and the stored material secured to prevent unintended movement.



CRITICAL RISK STANDARD

Underground ventilation and safe atmospheres



1. INTENT

This standard identifies the controls required to manage the risk associated with underground atmospheric contaminants and atmospheres.

2. APPLICATION

This standard applies to all Perenti Group underground projects.

3. REQUIREMENTS

3.1 PEOPLE

- Each project must have an appointed and appropriately qualified Underground Ventilation Officer.
- All personnel must be trained in ventilation systems relevant to any work they are to undertake.
- All personnel must be trained in the safe use of air monitoring devices required for work they are to undertake.
- All personnel must ensure ventilation is adequate in their work area prior to commencement of any task.
- Defects identified in the ventilation system must be rectified immediately or reported to the Underground Shift Supervisor if rectification is not possible.
- Ventilation control devices (door, regulator, brattice) must not be modified without authorisation from the Underground Shift Supervisor or Underground Ventilation Officer.
- The Underground Shift Supervisor must take and record ventilation readings at all active work areas for which they are responsible, each shift or as prescribed in the Project Management Plan.

3.2 SYSTEMS AND PROCEDUREs

- Risks associated with hazardous atmospheres together with the required controls, must be included in the project risk assessment for each project.
- Ventilation management must be included in the Project Management Plan for each project, prepared by a competent person, and must include as a minimum:
 - Ventilation requirement table;
 - Sufficient volume, velocity and quality of air required to prevent hazardous atmospheres in different operating environments;
 - A program for monitoring and testing of the ventilation system which includes but is not limited to:
 - “When” monitoring must be undertaken;
 - “What” must be monitored;
 - “Where” monitoring is to be undertaken;
 - “Who” is responsible to undertake the monitoring;
 - “How” the monitoring is to be performed.

- Specific airborne contaminants and airborne hazardous materials that exist on site with reference to:
 - Specific hazard management plans and Trigger Action Response Plans (TARPS);
 - Training programs for identification, response and control measures for hazardous materials that may be encountered (e.g. irrespirable atmospheres, or atmospheres which may contain concentrations of gas or dust within explosive limits).
- Working in hot and humid conditions procedure requirements;
- Procedures to enter or work in a confined space that are consistent with the requirements of the Perenti Confined Space Critical Risk Standard requirements.

3.3 PLANT AND EQUIPMENT

- Ventilation fans must be designed, constructed and installed to be fit for purpose and prevent recirculation.
- There must be a warning system in place to alert personnel when a primary ventilation failure has occurred.
- Appropriate instruments and equipment must be available to conduct gas detection and atmospheric monitoring.
- All measuring equipment must be maintained and calibrated to manufacturers’ specifications.
- Records of testing and calibration must be kept for each item of calibrated equipment.
- A register of all underground diesel units must be maintained on site and must include the ventilation requirements for each diesel unit.
- Where provided, enclosed cabins and cabin air conditioning must be maintained to OEM specification.
- Exhaust treatment devices must be fitted to underground diesel engines rated at 125kW or greater.
- All diesel equipment will be tested in accordance with the ISG Procedures for Diesel Particulate Testing, Filter Maintenance and Gas Testing.
- All ventilation ducting must be installed and maintained to minimise loss and ensure delivery of required air volumes.
- Flammable storage, fuel dispensing, workshops, sub-stations and explosive storage should, where practicable, be placed in exhaust airway locations.



CRITICAL RISK STANDARD

Mobile equipment operation and interaction



1. INTENT

This standard identifies the controls required to manage the risks associated with mobile equipment operation and interaction.

2. APPLICATION

This standard applies to all Perenti group personnel, including contractors, who operate or are working around mobile equipment at any Perenti group project. Mobile equipment covered by this standard includes underground and surface earthmoving equipment, light vehicles, flatbed trucks and ancillary equipment such as forklifts, IT's and telehandlers.

3. REQUIREMENTS

3.1 PEOPLE

- A person must be authorised and certified as competent, possess the required statutory required licenses (e.g. High-Risk Work Licenses for forklifts and cranes etc) or be formally classified as 'in training' before operating any mobile equipment.
- A pre-start inspection must be conducted and recorded by the operator before operating mobile equipment.
- If a fault with a critical function is detected, the equipment must tagged out of service and not be operated until the fault is rectified.
- A seat belt must be worn by any person operating or travelling in any mobile equipment. It is the driver's responsibility to ensure all personnel are always wearing their seatbelt.
- Cargo must not be transported inside the cabin of a vehicle, except for small personal items which must be secured away from controls (e.g. crib bags, document folders, plod devices and water bottle).
- Cargo or loads transported on vehicles must be stowed or restrained to prevent movement or placed in an approved carrying device (e.g. rock bolts in a rack).
- Cargo or loads must be contained within the sides of designated cargo space on the vehicle; any load overhanging > 1 metre to the rear must have a red flag attached.
- When operating mobile equipment designed to be driven on public roads, such as light vehicles and flatbed trucks, the operator must hold a current state/jurisdictional drivers' licence for that class of vehicle.

3.2 SYSTEM AND PROCEDURES

- Each project must have a completed formal risk assessment in place that covers mobile equipment operation, maintenance and traffic management.
- A project-specific, risk-based Traffic Management Plan that is approved by the Project Manager (or equivalent) must be in place at every Perenti Group project.

- The traffic management plan, as a minimum, must include requirements for:
 - Road design, including layouts, construction, signage, speed limits, windrows and berms, right of way, traffic and pedestrian segregation, heavy and light vehicle segregation and intersection management;
 - Road maintenance, including dust mitigation/dust suppression;
 - Road rules including control of access to restricted traffic areas, standards for safe following distances, mobile equipment hierarchy/right of way, interaction management and overtaking;
 - Communication protocols and mechanisms to ensure positive communication;
 - Parking;
 - Standards and controls for berms and tip heads;
 - Change management process for traffic changes;
 - Extreme weather;
 - Emergencies and breakdowns; and,
 - Inspection regimes for operational areas, workshops, service bays and travel ways.
- A formal training program to ensure competency for each type of mobile equipment is achieved, verified and maintained must be provided.
- The pre-start system must distinguish between critical and non-critical items. Pre-start checklists for all mobile equipment must clearly identify the critical safety features for that specific item of mobile equipment. All features identified as critical must be in place and in good working order prior to and during operation.
- Spotters must be used when it is required to manoeuvre heavy mobile equipment in areas of high traffic volume/congestion and where pedestrian interface exists or is likely, such as in and out of workshops.
- Where spotters are utilised, they will only perform spotting tasks and communicate with the operator of the equipment using pre-planned and agreed communication protocols and equipment.
- All vehicles must be maintained in accordance with specified maintenance schedules, recommended OEM requirements and the Maintenance of Mobile Equipment Critical Risk Standard.
- Each project must have a risk-based journey management procedure that includes routes to be taken including departure and destination, scheduled calls at predetermined times or locations, contact phone numbers, vehicle details etc.



CRITICAL RISK STANDARD

Mobile equipment operation and interaction



- Prior to loading or unloading a load that is to be or has been transported to site or transported from site, a risk assessment must be completed to ensure the load:
 - Will not shift, roll, tip over, fall or move once unsecured;
 - Will be stable prior to unloading; and,
 - Will not inadvertently release hazardous substances or chemical energy.
- All transported loads must be restrained or secured with devices that allow the potential stored energy to be released in a controlled manner.

3.3 PLANT AND EQUIPMENT

- All new Perenti mobile equipment must conform to the current ISG Business Unit build specification at the time of delivery.
- Mobile equipment is only to be used for its intended purpose(s). The intended purpose(s) of each equipment type must be defined as a component of training manuals and procedures.
- Where mobile equipment is fitted with lifting devices, working load/ safe working limits must be clearly marked and adhered to.
- All mobile equipment must:
 - be fitted with lockable main battery isolation point;
 - be fitted with lockable start circuit isolation point.
- In addition, integrated tool carriers must have a hydraulic lockout for the attachment pins.
- Development jumbos must have a hydraulic control switch accessible from ground level.
- All mobile equipment must be fitted with the following means of communication and safe operation:
 - A two-way radio;
 - A horn;
 - Lighting to enable safe operation.
- Underground remote-controlled equipment must have a fail to safe system that shuts off equipment if personnel enter the controlled operating environment (e.g. laser barrier).

For further information go to
perentigroup.com/hsems



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