Mobile Plant and Equipment

OHS Standard: 2.04

Scope of Application: OTML Operation

Document Number: OTML-OHS-STD-2.04

Revision: 3.1

Issued: November 2018

Document Owner: Manager Occupational Health & Safety

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1. PURPOSE

This safety standard provides clear direction for the safe use and operation of Mobile Plant and Equipment that operate on OTML sites.

2. SCOPE

This standard applies to OTML and its Subsidiaries (OTDF, OTPL) managed facilities and includes all Mobile Plant and Equipment with a GVM of more than 4.5 tonnes and includes trailers.

This standard shall apply to all OTML sites and projects (exploration, construction and development) and to all OTML employees, contractors (including sub-contractors) and visitors to OTML sites and projects. All OTML sites and projects shall comply with the provisions of this standard.

Where this standard identifies Australian and New Zealand Standards, OTML's Papua New Guinea sites and projects shall ensure any other procedures relevant to the location meet the minimum requirements established through this standard.

3. SUMMARY OF REQUIREMENTS

The objectives of the **OTML standard OTML–OHS–STD–2.04 Mobile Plant and Equipment** are to ensure that:

- People are authorised to drive on site
- People, the environment and facilities are protected whilst work is performed
- Prior to work taking place: the location and scope of work is defined, hazards identified and assessed, controls identified and implemented
- Where work is not completed facilities and equipment are left in a condition that will not cause harm
- Workplaces are left in a safe, clean and tidy condition upon the completion of work
- *Traffic Management Plans* are developed and maintained based upon the outcomes of a risk assessment
- Selection, procurement, use and maintenance requirements are defined, including all components such as tyres, rims, towing practices and roll over protection
- Safety considerations such as roll over protection, fire, recovery operations and tyre safety are documented
- Competent and authorised persons are responsible for road design and approval
- *Site Road Design and Maintenance Plans* are developed and maintained

- Road designs are consistent with specification and incorporate site traffic management requirements.

4. REQUIREMENTS

4.1 Traffic Management and Road Rules

4.1.1 Traffic Management Plan

Based on the outcomes of the OHS Bow Tie Risk Assessments each operational area/section shall develop and implement a *Traffic Management Plan* and keep this up to date throughout the life of the mine / project.

The minimum requirements for a *Traffic Management Plan* shall be adopted at each site and project.

Site and project inductions shall include information regarding road safety and the hazards associated with traffic management, mobile equipment, motor vehicle and road safety and pedestrian safety.

Refer: *Traffic Management Plan*

Traffic Management Plan	Criteria
Plan Inclusions	• Site maximum speed limits and the area of the site those limitations apply • Road rules (including areas of site to which they apply) • Separation requirements for heavy and light vehicle operations • Park-up rules including go-line, dead-line and operational requirements • Site maps Traffic management criteria shall be consistent with the design specifications of roads.
Plan Management	Where a site *Traffic Management Plan* includes divisions of responsibility with respect to the management of traffic, the *Traffic Management Plan* shall identify those areas and include the title of the nominated Responsible OTML General Manager. Any change to the site *Traffic Management Plan* shall include consultation with the Responsible OTML General Manager(s) identified through the plan.
Specific Work	• Included in site specific Safe Work Procedures or a Job

Practices	Safety Analysis for that work • Shall comply with the requirements of the site *Traffic Management Plan*
Compliance Monitoring	Practices to monitor compliance with the requirements of the site *Traffic Management Plan* e.g. speed testing and Supervisor workplace inspections.

4.1.2 Road Rules

The *Traffic Management Plan* shall identify the site road rules for:

- Maximum speed limits
- Give-way
- Over-taking
- U-Turns
- Horn signals
- Minimum separation distances for tramming / travelling
- Minimum approach distances including approved practices for authorisation to approach.

4.1.2.1 Maximum Speed Limits

The *Traffic Management Plan* shall identify the maximum speed limits for all traffic and include consideration of the following:

Speed Limit Assessment Criteria	Example
Road grade and surface type	• Super-elevations • Graded roads • Tracks • Sealed surfaces • Road cambers / crossfalls • Drainage capabilities / impact during wet weather • Likelihood of dust generation during dry conditions, fog, etc
Plant manoeuvrability	• OEMs recommended operations • Bends, curves and corners in road ways and work areas • Accessibility to mine areas, workshops etc.

Proximity between plant operations	• Work shops • Emergency services facilities • Go-lines • Park-up bays • Pre-start inspection bays
Proximity to mine services, structures and processes	• Overhead conveyor supports • Explosives magazines • Overhead services • Stockpiles
Plant load types	• Explosives • Ore trucks • Trailer lengths • Load heights • Load widths
Limitations on visibility	• Buildings • Corners • Pillars • Windrows • Vegetation • Angle of road intersections and approach distances • Wet weather / fog / night-time activities
Windrow and similar structure capability	The ability of a constructed windrow to successfully contain / inhibit unintended vehicle movement.
Pedestrian movement around plant	• Administration buildings • Workshops • Go-lines • Dead-lines • Emergency services facilities • Mine site operational areas

4.1.2.2 Site Traffic Safety Rule and Regulation Enforcement Procedures

Formal systems shall be implemented by the APD Department for the monitoring and enforcement of compliance to site traffic safety rules.

The system of compliance enforcement shall be monitored through regular reports and the reports shall be provided to respective management.

All persons operating Mobile Plant and Equipment are to be included in the monitoring and enforcement programme. This includes all OTML employees, contractors and visitors including government officials and regulators.

Where a speed violation breach is reported the Mobile Plant and Equipment owner shall be notified and submit a summary report reporting the status of action taken to address the breach with the driver of the vehicle.

4.1.2.3 Right of Way

The following shall apply for Right of Way rules:

Surface & Mining Operations	Right of Way Rules
Motor Vehicles	Unless otherwise indicated by a sign, light vehicles shall: • Give way obeying local road rules • Give way to all heavy vehicles and mobile equipment • Give way to all emergency response vehicles or explosives vehicles displaying warning sirens and / or warning beacons indicating they are operational • Give way to items of plant travelling up a grade
Mobile Plant and Equipment	Unless otherwise indicated by a sign mobile plant and equipment shall: • Give way to all oncoming heavy vehicles and mobile equipment • Give way to all emergency response vehicles or explosives vehicles displaying warning sirens and/or warning beacons indicating they are operational • Give way to items of plant travelling down a grade

4.1.2.4 Overtaking

Overtaking	Criteria
Overtaking / passing another item of plant during normal driving operations:	The driver shall not overtake / pass another item of plant during normal driving operations unless: • The manoeuvre may be performed safely and only on the right hand side of the vehicle being overtaken. Overtaking on the left of a moving vehicle is prohibited • When operating in the pit the operator must comply with the pit permit driving requirements • Haul trucks and water trucks shall not overtake any moving item of plant unless specifically controlled by a SWP

Overtaking	Criteria
Overtaking shall be prohibited where the plant in front is:	• An emergency vehicle (e.g. ambulance / fire truck) • A water spray truck with its water sprays in operation • An explosives vehicle • A haul truck • A convoy • In the vicinity of a Woppa Stopa

4.1.2.5 U-Turns

U-turns shall not be permitted on ramps in open cut operations.

4.1.2.6 Horn Signals

Horn signals shall be performed and a minimum delay of ten seconds shall apply prior to the performance of the intended operation for that horn signal.

The following horn signals shall apply for heavy vehicles and mobile equipment:

Horn Signal	Intended Operation
1 short blast	About to start engine or stopping a loader in the pit
2 short blasts	About to move forward
3 short blasts	About to reverse
1 long blast	Indicating intention to turn right
Continuous short blasts	Indicating danger or attention required

4.1.2.7 Separation Distances

Plant separation distances shall be set and maintained with consideration to the following:

- Road grade and surface type (e.g. each vehicle's capable stopping distances dependant on load size, road grade and surface type, weather conditions etc.)
- Load types (e.g. explosives, load width - oversize, extended length – oversize, load weights etc.)
- Operation type
- Park-up separation distances (e.g. go-line/dead-line separation distances, work-shop park-up etc.)

Operation	Separation Requirements
General Driving/ Tramming	All plant shall maintain a minimum 50m separation distance from the item of plant in front when travelling/tramming as detailed in the site traffic management plan. Additionally, processes shall be in place for each department where operating conditions (e.g. weather conditions or state of road surfaces) require this separation distance to be increased.
Approach Distances: Operations (other than during normal driving/tramming operations)	
Item of plant required to approach no closer than 20m to another item of plant	Operator of the approaching plant shall positively communicate with the operator of the item of plant to be approached and receive confirmation and permission by 2-way radio
Item of plant required to approach closer than 10m to another item of plant	Operator of the approaching plant shall positively with the operator of the item of plant to be approached and receive confirmation and permission communicate by 2-way radio. The operator of the item of plant being approached shall cease operations and lower all attachments/devices which may adversely affect the approach (e.g. slew zones, raised loads etc.).

4.1.2.8 Park-Up

The following park-up requirements shall be implemented at all OTML sites.

Park-Up	Requirements
General	All items of plant shall be shut down and parked-up in accordance with the manufacturer's recommendations. Do not park at the front, rear or side of any equipment where the vehicle cannot be seen by the operator of that equipment. All organised car parks should be set up for reverse parking, unless it has been considered through a formal risk assessment unsafe to do so. Wheel chocks should be used to ensure vehicles are parked in a fundamentally stable manner where rollaway can't be guaranteed. All vehicles will be required to carry at least one pair of wheel chocks with them at all times. The chocks carried on the vehicles shall be the appropriate size and rating.

	Vehicles with more than two axles requires more than one pair of wheel chocks. Unattended vehicles shall be made safe by: • switching off the engine; • removing the ignition key; • engaging the hand brake; • placing the vehicle in first or reverse gear or park; • All attachments/implements lowered or otherwise engaged with the ground to prevent unintended movement; and • locking all doors (unless an area is exempted in writing by the responsible General Manager) Heavy vehicles/mobile plant and equipment shall be parked up separately to motor vehicles.
Go-Lines and Deadlines	All go-lines and dead-lines and other forms of dedicated park-up areas shall be designed and managed to ensure: • Adequate room for all heavy vehicles and mobile equipment to maintain a minimum 3m separation distance • The operator access/egress point does not compromise the safety of the operator. Where practicable, go-lines and dead-lines shall incorporate v-drains or similar approved structures to retain the plant's wheels.
Park-up in Operational Areas	Where an item of plant is required to be parked-up in an operational area: • The item of plant shall be wherever possible park on safe-level ground • All attachments/implements lowered or otherwise engaged with the ground or installed rest plates on the vehicle to prevent unintended movement • The engine shall be turned off • Braking systems applied • Automatic transmission: 'Park' position • Manual gear boxes: in forward gear • Rotating beacon left on • The front wheels of the machine turned into a berm wherever possible

Refer: Appendix H: Vehicle and Mobile Equipment Parking

4.1.2.9 Pedestrian Safety

The *Traffic Management Plan* shall specify the requirements for Mobile Plant and Equipment interactions with pedestrians including:

- The separation requirements for pedestrian movement (e.g. rules for driving past pedestrians, bollard protected walkways, installation of pedestrian crossings and appropriate signage etc. around administration buildings / workshops).
- Park-up and / or park-up / shutdown processes during hot seat changeovers
- Park-up and / or park-up / shutdown processes during machine maintenance (e.g. refuelling)

4.1.3 Communications

4.1.3.1 Two-way Radio Communications

Each site shall have in place approved two-way radio communications to manage Mobile Plant and Equipment operations. All Mobile Plant shall be equipped with a two way (UHF or VHF) radio compatible to the site two-way radio system.

Drivers who use the 2-way radio while driving must ensure that safety is not compromised as a result.

4.1.3.2 Mobile Phones

Hand-held mobile phone use by an operator is prohibited in any mobile plant or equipment that is in motion.
Drivers who receive a call or wish to make a phone call must first pull off the road and stop in a safe place.

Hands free mobile phones shall only be used by the operator of Mobile Plant and Equipment where the vehicle is fitted with a ‘hands-free’ system for mobile phone use, that use complies with local regulatory requirements and the operator has determined that it is safe to do so.

Mobile phones are not permitted for use in the mining fleet.

4.1.3.3 Vehicle Tracking Device

All OTML and Contractor Motor Vehicles shall have tracking devices fitted and monitored for access and operation in OTML areas as listed below.

Trakpro is the system that is required to be fitted to all OTML and contractor vehicles.

In addition vehicles entering or operating in the mine shall be fitted with the SAFEmine Collision Avoidance System.

Drivers and operators of Mobile Plant and Equipment shall be informed about the features of the Trakpro Tracking Device and SAFEmine Collision Avoidance System and made aware of consequences of violations.

4.1.4 Wearing Seat Belts

All personnel in Mobile Plant and Equipment shall wear a seat belt at all times the Mobile Plant or Equipment is moving in operation.

Mobile Plant and Equipment must not be operated if the seatbelts required for use are damaged.
The maximum number of people in the cab of a vehicle shall be limited to the number of seat belts.

Drivers shall not allow people in the back of open-back mobile plant or equipment.

4.1.5 Emergency Response

Emergency Management Plans shall specify the requirements for responding to an emergency with respect to traffic management including:

- The management of all traffic during an emergency response to an accident or incident (e.g. the freezing of benches, park-up / shutdown requirements etc.)
- The method by which the response is declared and effectively communicated to all other road and work area operators
- The method by which the cessation of the emergency response and return to normal road and work area operations is declared and effectively communicated to all other road and work area operators

The design and construction of workshops, work areas and roads shall be suitable to accommodate emergency response vehicles.

4.1.6 Spotters

The *Traffic Management Plan*:

- Identifies situations when spotters may be required to supervise and instruct the Mobile Plant or Equipment operator in workshops or other confined limited visibility workplace areas
- Establishes a method of communication to be used between the spotter and the Mobile Plant operator prior to operations.

A competent person shall be appointed as a ‘spotter’. Refer to reference in 6.3 definitions.

Where required, signage and barricades shall be installed to manage pedestrian and Mobile Plant and Equipment interaction and movements.

4.1.7 Traffic Management Signage and Mirrors

Unless otherwise approved by the General Manager or their delegate the design and construction of traffic management signs shall comply with the following requirements.

4.1.7.1 Sign Shape, Size, Colour and Erection Requirements

Refer: *AS 1743 Road sign specifications*

Signage	Requirements
General	• Be rigid enough to resist dead and wind loadings without undue deflection (larger signs may require horizontal or vertical braces or both to be affixed to the back of the sign to achieve adequate rigidity) • Be strong enough to minimize damage due to vandalism • Not be made of brittle material which will shatter when impacted by bullets, stones or other missiles • Provide a surface to which the sign face materials will adhere properly, and which will not produce an adverse chemical reaction with the sign face material in the short or long term • Be at least as weather and corrosion resistant as the sign face materials to be used on it • Shall be minimum of Class 1 reflective (as per Australian Standards)
Stop Signs	• Octagonal shape (600mm x 600mm / 750mm x 750mm) minimum • White retro-reflective lettering and border on a red retro-reflective background
Give Way Signs	• Inverted triangular shape (750mm x 750mm / 950mm x 900mm / 1200 x 1200mm) • Black lettering, red retro-reflective border on white retro-reflective background and edge strip
No Entry Signs	• Square shape (450mm x 450mm, 600mm x 600mm, 750mm x 750mm, 900mm x 900mm) • White retro-reflective letters, bar and background, red retro-reflective circle
Speed Limit Signs	• Rectangular shape (450mm x 600mm) • Black lettering, red retro-reflective circle on white retro-reflective background

4.1.7.2 Sign Positioning

All signs shall be positioned and fixed to a suitable pole or fixture such that they are clearly visible to all operators of mobile plant and equipment required to comply with their intention and provide adequate time for the operator to take the required action. This positioning shall be assessed according to the speed limit and general road conditions applicable to that area in which they are positioned.

4.1.7.3 Additional Signage

Additional signage shall be installed as required communicate further traffic management safety requirements including:

- The identification of structures (e.g. fuel stations)
- Parking bays
- Passing bays
- Woppa Stopas
- Steep Decent
- Areas delineated as go-lines and dead-lines
- General parking areas
- Pedestrian movement
- Overhead services (including clearance distances)
- Pre-operational inspection areas
- Fauna hazard signs
- General traffic awareness signs (e.g. ‘Haul Trucks Operating’).

Signs / markings painted on ground surfaces such as roads (e.g. loading zones, pedestrian / zebra crossings etc.) shall comply with relevant regulatory requirements and standards.

4.1.7.4 Traffic / Pedestrian Mirrors

Where practical and required ‘blind-spot’ mirrors shall be installed to manage traffic areas where operator and pedestrian visibility is limited.

4.1.8 Escort Vehicles

Any plant required to enter the site and that:

- Has not been issued a site permit
- Does not have an operator that has been assessed and deemed competent and is authorised to operate the plant in the particular part of the workplace shall require approval from the OTML General Manager to enter the site and shall be accompanied by an escort. The positioning and number of escorts shall be determined through assessment of the required operation.

4.1.9 Vehicle Beacons and Buggy Whips

Beacons fitted to OTML and contractors Mobile Plant and Equipment are AMBER and emergency response, safety, explosives vehicles and escort vehicles have additional beacons as listed in the table below.

Slow moving road maintenance mobile plant and equipment shall have blue flashing beacons.

Vehicle beacons shall be of rotating non-strobe type and comply with the following lens colour categories.

Vehicle Type	Beacon Colour	Vehicle Type	Beacon Colour
Vehicles carrying explosive	Red	Emergency and safety vehicles	Red
Road maintenance machines	Blue	Escort vehicles	Green

Light vehicles and light trucks shall have a front-mounted buggy whip in the “up” position (to reach at least 4.6 m but no more than 5.1 m off the ground and include a red light and luminous flag).

Motor vehicles travelling in all high-hazard areas from Helsinki past the Mill Concentrator Plant up to the Mine, Crusher Replacement Project, at Bige Operations, Kiunga Copper Shed shall have a front-mounted buggy whip in the “up” position and a roof-mounted orange flashing light turned on.

To increase visibility of vehicles to oncoming traffic, buggy whips shall be raised for the trip between Tabubil, Ok Menga, Bige and Kiunga.

4.1.10 Reversing Alarms

Vehicles shall be fitted with externally audible alarms that are automatically activated when reverse gear is selected.

4.1.11 Review of Traffic Management Plans

Traffic Management Plans shall be reviewed at least every three years and whenever material modifications / changes are made to the plant and equipment, design of the facility or scope of activities covered.

4.2 Site Road Design, Construction and Maintenance

4.2.1 Design and Construction of Site Roads

Minimum requirements for the specification, design, construction, inspection prior to first use and maintenance of roads shall be specified and adopted. These shall

include the requirement that roads be designed and verified by competent engineering personnel.

Road design shall take into account the outcomes of the risk assessments for the site.

Road designs, signage etc. shall be consistent with, and incorporate, site traffic management requirements.

Changes to the design of roads shall be only be made in accordance with the procedure for Management of Change.

4.2.2 Approvals

All road designs shall be approved by the responsible OTML General Manager.
Any change to existing roads that alters the intended design shall require approval by the responsible OTML General Manager.

A final inspection shall be performed of the constructed road by the responsible OTML General Manager prior to approval for use.

4.2.3 Site Road Design, Inspection and Maintenance Plan

Each site shall develop and maintain a Site Road Design, Inspection and Maintenance Plan. The plan shall address the following:

Plan Content	Criteria
Geometric Design	• Road width • Vertical and horizontal clearance to infrastructure • Intersections • Line of sight • Cross fall, crown and camber • Drainage to topographic contours and site environmental compliance • Road grade • Curvature (incorporating switchbacks and compound curves) • Berms / windrows and guarding
Structural Design	• Load capacity • Structural response to applied loads • Vertical strain • Wearing course and in situ material assessments
Functional Design	• Wearing course material type • Wearing course rolling resistance capabilities • Maintenance requirements according to wearing course selection • Dust generation

Plan Content	Criteria
	• Dust palliatives Rolling resistance capabilities shall include consideration of: • Deformation under tyre (incorporating structural design) • Penetration and tyre deformation (incorporating functional design) • Road deterioration (incorporating maintenance design)
Inspection	Road inspection schedules shall be established to identify areas of wear and potential failure.
Maintenance	Road maintenance types and interval schedules shall be established to maintain road surfaces consistent with intended geometric, structural and functional design. Each plan shall include consideration to practices to manage deformation of road surfaces and associated infrastructure management including: • Rutting • Corrugations • Potholes • Formation of fines and loose materials • Embedding of 'out of specification' materials in the road surface • Pavement material lift • Drain profile capacity and efficiency

4.3 Mobile Plant and Equipment Selection, Use and Management

4.3.1 Mobile Plant and Equipment Minimum Specifications

Minimum compulsory specifications for different types of mobile plant and equipment shall be adopted. Checklists reflecting these specifications and any operator requirements specific to the equipment (e.g. PPE) shall also be maintained. At a minimum specifications, checklists and operator requirements shall be developed for all mobile plant and equipment.

The minimum specifications shall be applied to all mobile plant and equipment used at Ok Tedi. All mobile plant and equipment shall be fitted with fixed seats, seatbelts for each occupant, speedometers, brakes, horn and lights.

4.3.2 Mobile Plant and Equipment Classification

The following categories and classification shall apply for mobile plant and equipment:

Category	Classification
General Access	Areas not included as open cut operations or surface operations e.g. employee car parks and general access roads to gain access to car park facilities.
Open Cut Operations	Surface mine operations including open pits, associated haul roads, ore and waste pads, tips, dumps, ROM pads, go-lines and deadlines.
Surface Operations	All areas of the surface operations not included in open cut or general access e.g. ore treatment, general workshops, administration areas, tailings etc.
Motor Vehicles	Any item of plant that may be registered and driven on a public road and of no greater than 4.5 tonne gross vehicle mass.
Heavy Vehicles	Any item of plant that may be registered and driven on a public road and greater than 4.5 tonne gross vehicle mass.
Mobile Equipment	Includes any mining equipment and earth moving equipment (e.g. scraper, bulldozer, excavator) or ancillary equipment (e.g. elevated work platform, lighting plant).
Plant	For the purpose of this standard includes any machinery, equipment or appliance classified as either a vehicle (light or heavy) or mobile equipment. Also referred to as ‘mobile plant and equipment’.

4.3.3 Use of Quad Bikes (ATVs)

Three wheeled ATVs shall not be used for any purpose. ATVs (Quad Bikes) may only be used:

- If fitted with approved rollover protection
- When there is no practicable alternative such as a motor bike or small 4 wheel drive
- When a risk assessment has been undertaken and all identified controls implemented
- Authorisation is provided by the General Manager.

ATV handling will be affected by rollover protection structure and this should be reflected in operating instructions clearly displayed on each vehicle.

4.3.4 Compliance – Documentation

All Mobile Plant and Equipment shall comply, as a minimum, with relevant regulatory requirements and Australian / New Zealand Standards. Plant documentation for the

'As Built' item shall be maintained and accessible for each item of mobile plant and equipment and shall include:

- A Statement of Compliance to relevant regulatory requirements (including operating limits and capacities, drawings, supplier component lists, operating and maintenance practices / instructions, safety devices, plant risk assessment, information relating to design registration)
- Identification of and reasons for variations to relevant regulatory requirements
- A risk assessment that identifies hazards and the controls that most effectively eliminate or, where this is not reasonably practicable, minimise, the risk associated with the operation and maintenance of the plant
- Vehicle and plant operating limits and capacities
- Detailed and general arrangement drawings
- Manufacturer / supplier components and re-order list
- After market supplier components
- Safety devices and roll over protection, including those provided with the plant and optional extras available
- Recommended maintenance practices
- Detailed parts lists of all components including re-order codes
- Operation and maintenance instructions
- Safety devices – including those provided with the plant and optional extras available
- Plant hazards associated with the operation of the plant
- Design registration certificates, where required
- Any additional information as identified by this standard or relevant regulatory requirements considered as appropriate to ensure the safe operation of plant.

4.3.5 Statement of Compliance – Manufacturer / Supplier

Documentation supporting compliance shall be provided by the manufacturer / supplier and maintained by the owner for non-standard Mobile Plant and Equipment.

4.3.5.1 Operating Limits and Capacities

Information with respect to Mobile Plant and Equipment operating limits, capacities and limits of application may include:

Requirement	Criteria
Maximum Working Grade (%)	• Loaded maximum gross vehicle mass (GVM) (as built) • Unloaded

Requirement	Criteria
	• Tipping • Fully loaded with park brake applied • Other variables where applicable
Maximum Cross Grade (%)	• Loaded maximum gross vehicle mass (GVM) (as built) • Unloaded • Tipping • Other variables where applicable
Maximum Load (tonnes)	• Level condition • On range of grades • Other variables where applicable
Maximum Speed (Km/h)	• On level conditions • On range of grades • Other variables where applicable
Brakes	• Park brake load / slope limits • Dynamic brake limits (speed / brake effect envelope) • Service brake limits

4.3.5.2 Detailed and General Arrangement Drawings

Detailed and general arrangement drawings shall include:

- The physical dimensions of the Vehicle or Plant including all extremities and all limits of application
- Schematic and logic drawings of power and control facilities
- Electrical (including termination details), hydraulic and pneumatic schematic diagrams, parts lists and major components ratings.

All hydraulic and pneumatic symbols shall comply with *AS 1101.1* or *ISO 1219.1 Graphic symbols for general engineering - Hydraulic and pneumatic systems*.

When alterations are made to ‘As Built’ specifications, diagrams shall be updated as soon as practicable by a competent and authorised person.

Refer:

- *Management of Change*
- *AS 1101.1 Graphic symbols for general engineering - Hydraulic and pneumatic systems*
- *ISO 1219.1 Graphic symbols for general engineering - Hydraulic and pneumatic systems*

4.3.5.3 After-Market Supplier Components

Documentation shall be provided on all after-market components installed by the supplier. All after-market components installed by the supplier shall comply with manufacturer recommendations and relevant regulatory requirements.

4.3.5.4 Manufacturer / Supplier Components and Re-order List

Documentation shall be provided by the manufacturer / supplier that identifies the item of plant components and re-order requirements for those components on non-standard plant.

4.3.5.5 Recommended Maintenance Practices

Documentation shall be provided by the manufacturer / supplier for recommended maintenance practices including:

Requirement	Criteria
Installation, Testing and Dismantling	• Identification of hazards and appropriate controls • Associated Procedures including the limits of travel of all moving elements • A copy of all associated results and procedures • Transport and lifting requirements for the vehicle and its major components including: - Component weights and dimensions - Jacking weights - Lifting, jacking and support stand locations
Maintenance Schedules	• Maintenance intervals • Maintenance type • Component replacement intervals • Critical safety systems management and maintenance
Towing Instructions	• Instructions for: - Towing the vehicle if inoperable - Towing a load - Maximum load to be towed, including tow point ratings - Direction of pull

4.3.5.6 Operation and Maintenance Instructions

Operation and maintenance instructions shall be provided by the manufacturer / supplier and shall include:

- Recommended preventative maintenance requirements to maintain the Mobile Plant and Equipment in a safe operating condition, including lubrication, ongoing adjustments, tests, setting of controls, etc.

- Recommended inspection, examination and testing schemes to check if the equipment is safe to operate
- Identification of any hazards involved in maintaining and operating the equipment, including fire risk, etc.
- Energy isolation and control
- Procedures to carry out maintenance on the system, including setting of controls
- Personal protective equipment requirements
- Trouble shooting guide

4.3.5.7 4.3.2.7 Plant Hazards / Risk Assessment

The manufacturer/supplier shall provide a risk assessment that identifies hazards and the controls that most effectively eliminate or, where this is not reasonably practicable, minimise, the risk associated with the operation and maintenance of the plant.

Mobile plant and equipment hazards may include, but are not limited to:

- Noise and vibration
- Ergonomic issues
- Vehicle fire
- Tyre fire
- Vehicle rollover
- Vehicle interaction
- Confined spaces
- Pinch, crush points and guarding failure
- Loss of control of energy
- Loss of control of raised / suspended loads
- Interaction with overhead services
- Fall from Height
- Hot fluids, gases, vapours, steams etc.
- Contact with hazardous materials, fuels, oils etc
- Loss of vehicle control / unintended movement
- Loss of primary braking / steering systems
- Slips, trips or fall hazards.

4.3.5.8 4.3.2.8 Safety Devices

The manufacturer / supplier shall provide a comprehensive list of all safety devices and their function including those provided with the Vehicle or Plant, and those which are not provided with the Vehicle or Plant, but which are available as an option with the Vehicle or Plant.

4.3.6 Registrable / Classified Plant

Sites shall identify mobile plant and equipment that is registrable / classified in their area of operations. Registrable plant must be:

- Design registered before it is supplied
- Design registered if it is modified and the alterations may affect health and safety
- Item registered before it is used.

Sites shall implement processes to achieve compliance with the relevant legislative requirements for registrable / classified plant. This shall include:

- Inspection of the plant
- Verification of compliance to required Standards or Codes of Practice
- Notification to a regulatory authority, where required
- Development and implementation of ongoing inspection, maintenance and registration renewal.

A register of permanent registrable / classified plant shall be maintained at site.

Where an item of registrable / classified plant is brought to site by a Contractor:

- The Contractor shall supply written evidence of registration as part of the site access permitting process
- The plant shall comply with site access permit processes prior to accessing the site

No item of registrable / classified plant shall be permitted to be used at site prior to the relevant regulatory requirements for registration being achieved.

4.3.7 Roll Over Protection (ROP) and Fall on Protection (FOP)

Mobile plant and equipment shall be provided with rollover protection and fall on protection as specified in the tables below.

For the purpose of this guideline the term ‘vehicle rollover protection’ shall be taken to mean an approved structure designed to protect passengers in a vehicle in the event of a low speed vehicle rollover.

Where identified through this standard, rollover protection structure requirements shall be included in site Mobile Plant and Equipment Approvals.

Requirement	Criteria
Earth Moving Equipment	Earth moving equipment as identified through *AS2294 Earth-moving machinery - Protective structures - General* and *ISO3471 Earth-moving machinery - Rollover protection* shall comply with the rollover protection requirements in those standards. Earth moving equipment shall include: • Dozers (track and open wheeled) • Earth movers (scrapers, tractors with attachments used to move materials, prime mover towing a scoop, scraper or similar trailer, rubber-tyred off highway haul truck) • Graders • Loaders (track and open wheeled) • Off-highway wheeled dumper • Tractors • Wheeled prime movers.
Other Plant	All other mobile plant operating in high risk areas shall require an approved engineered roll over protection system to be installed in that vehicle. Examples of high risk areas shall include: • Steep or uneven grades • Uneven / unformed roads and tracks. The protection shall be of an approved certified and tested design, construction and installation to protect personnel within the vehicle in the event of a vehicle rollover.
All-Terrain Vehicles	ATV's (Quad Bikes) shall apply the following hierarchy of control: • Use an alternative vehicle (e.g. motor bike if not required to carry significant loads, small 4 wheel drive or All Terrain Utility [ATU] vehicle) • Fit a manufacturer approved rollover protection structure • Fit a rollover protection structure designed, manufactured and fitted at site and approved by a qualified mechanical engineer prior to use. ATV handling will be affected by rollover protection structure and should be reflected in operating instructions clearly displayed on each vehicle. Three wheeled ATV's shall not be used for any purpose.
Roll-over Structure	Rollover protection structures shall be inspected by a competent and authorised person:

Requirement	Criteria
Inspections	• Annually • Upon the machine in which it is installed being involved in an incident that could credibly compromise its integrity Pre-operational inspections performed by the machine operator as part of the general operation of the machine in which the rollover protection structure is installed shall include a visual inspection of the structure.

4.3.8 Selection and Approval of Mobile Plant and Equipment

4.3.8.1 OTML Representative

A competent person(s) shall be appointed by the General Manager for approving the selection of mobile plant and equipment. Refer to reference in 6.3 definitions

4.3.8.2 Selection Criteria

All mobile plant and equipment shall undergo a documented selection criteria process to ensure the plant:

- Meets the minimum safety specifications required by this standard
- Meets the required health and safety criteria
- Meets environmental and other life cycle requirements
- Provides clear visibility out from, into and through the vehicle cabin
- Meets the functional criteria for proposed practice e.g.:
  - Operational environment: physical dimensions
  - Compatibility with other existing fleet
  - Load shift / capacity or throughput
  - Operational efficiency.

4.3.8.3 Operational Risk Assessment

All plant shall undergo an operational risk assessment as part of the selection and approval process for site use. The risk assessment process shall include:

- OTML / industry accident reviews for same or similar items of plant and practices
- The identification of hazards and associated controls related to the plant
- The identification of hazards and associated controls related to the operation and maintenance of the plant with respect to the environments in which the plant is required to be operated in including:
  - Road type

- Overhead services
- Traffic levels
- Pedestrian movements
- Ground control
- Potential falling materials
- Weather conditions
- Open edges
- Load types and tonnage
- Visibility restrictions
- Operation / interaction with existing vehicle fleet
- Maintenance / serviceability
- Life cycle and environmental impacts.

4.3.8.4 Approval Process

The competent person for approving the acquisition of mobile plant and equipment shall make the final recommendation in respect to the acquisition to the general manager. A record of approval for the acquisition of mobile plant and equipment shall be maintained for the life-cycle of the mobile plant and equipment and shall include:

- All required manufacturer / supplier documentation
- Operational risk assessment documentation
- Selection criteria documentation.

4.3.8.5 Start Up / Commissioning

Documented start-up / commissioning procedures shall be defined and implemented.

4.3.9 Mobile Plant and Equipment Site Permits

4.3.9.1 Authorising Site Access for Mobile Plant and Equipment

Except as allowed by **Section 4.1.8 Escort Vehicles** mobile plant and equipment shall only be permitted to enter a site once it:

- Has a completed and authorised Mobile Plant and Equipment Permit Request Form
- Has been inspected to ensure that it is fit-for-use and purpose at the site and been issued with a *Motor Vehicle Safety Checklist* for each area of the operations that the mobile plant or equipment is permitted to be operated in
- Has been issued with, and displays, a Permit Label for each area of the operations that the vehicle is permitted to be operated in

- Is operated by an Operator who has been assessed and deemed competent and is authorised to operate that mobile plant or equipment in that particular part of the workplace.

Refer:

- Motor Vehicle Permit Request
- Appendix A: Authorisation Process and Motor Vehicle Site Permit Issue
- Appendix B: PNG Licence Classes and OTML Permit Type
- Appendix C: Motor Vehicle Driving Permit and Vehicle Compliance to Operate Sticker

4.3.9.2 Authorised OTML Representative/s & Competent Personnel

The OTML General Manager shall be responsible to appoint competent Authorised OTML Representative/s who shall be responsible for the processes of:

- Managing the OTML Mobile Plant and Equipment site access permitting process, safety checklists and the Mobile Plant and Equipment Site Permit Register
- Inspecting and authorising Mobile Plant and Equipment
- Ensuring that Mobile Plant and Equipment is identified and displays the required markings
- Issuing Mobile Plant and Equipment Site Permits
- Appointing competent personnel for the inspection of Mobile Plant and Equipment and the issuing of permits
- Managing escorts for Mobile Plant and Equipment that is required (and approved) to enter site without a Mobile Plant and Equipment Site Permit. Refer: Section 4.1.8 Escort Vehicles

Where required, several representatives may be appointed per site based on the relevant work areas and specific competencies applicable to site. Each site shall develop and maintain a register of Authorised OTML Representatives and competent personnel.

4.3.9.3 Applying for a Mobile Plant and Equipment Vehicle Permit

When Mobile Plant and Equipment are required to be brought to site a Mobile Plant and Equipment Permit Request form shall be completed. The request shall be authorised by the Responsible OTML General Manager. Mobile Plant and Equipment Request forms shall be uniquely numbered.

Refer: Mobile Plant and Equipment Permit Request

4.3.9.4 Assessing a Mobile Plant and Equipment Site Permit Application

Upon receiving a Mobile Plant and Equipment Permit Request, the Authorised OTML Representative or Competent Person shall:

- Inspect the plant for conformance with the requirements of the relevant *Mobile Plant and Equipment Safety Checklist*
- Check whether the required compliance information (including Motor Vehicle or Plant registration where applicable) has been supplied
- Inform the controller of the Mobile Plant and Equipment of non-conformance issues and rectification requirements
- Perform re-inspections as necessary to achieve conformance
- Upon conformance, issue the controller of the Mobile Plant and Equipment with a copy of the completed and signed OTML *Mobile Plant and Equipment Safety Checklist and Permit Label*
- Record the information in the *Mobile Plant and Equipment Site Permit Register* and *Registrable Plant Register* (if required)
- File and retain original copies of the OTML *Mobile Plant and Equipment Safety Checklist* and Mobile Plant and Equipment Permit Request through document control.

All relevant documentation (registrations, testing certificates, operator manuals etc.) shall be made available at the time of the inspection and a record retained by the controller of the Mobile Plant and Equipment.

Mobile Plant or Equipment Permit Safety Checklists shall be uniquely numbered by using the registration or plant identification number as the unique reference number.

4.3.9.5 Mobile Plant and Equipment Inspection Checklists and Permit Labels

Sites shall use the Mobile Plant and Equipment Inspection Checklist forms, which shall be uniquely numbered, and record the:

- Name of the controller of the Mobile Plant and Equipment
- Make, model and serial number of the Mobile Plant and Equipment
- Certificate / registration numbers
- Date of the approval
- Date of re-approval
- Site competency requirements for its operation
- Area of operations that the Mobile Plant and Equipment is permitted to be operated in.

Permit Labels shall be prominently displayed on the Mobile Plant and Equipment as per the associated approved Mobile Plant and Equipment Permit Request form(s).

The information on the label shall include:

- Site/area name
- Key Mobile Plant and Equipment identifier information
- Permitted operation area
- Mobile Plant and Equipment Permit unique reference number

Refer: Appendix C: Motor Vehicle Compliance to Operate Permit Label

4.3.9.6 Mobile Plant and Equipment Permit Register

Mobile Plant and Equipment Permits shall be uniquely numbered by using the registration number or plant identification number and recorded in a site *Mobile Plant and Equipment Permit Register* by the Authorised OTML Representative(s). The register shall be retained for a minimum duration according to legislated requirements.

4.3.9.7 Mobile Plant and Equipment Permit Review / Renewal and Revocation

A *Mobile Plant and Equipment P*ermit shall be revoked when modifications are made to a Mobile Plant and Equipment and shall only be reissued once that Mobile Plant and Equipment has been re-approved for site access.
Mobile Plant and Equipment suitability for continued use in an area that it is permitted to operate in shall be monitored during routine maintenance inspections and repairs.

A *Mobile Plant and Equipment Permit* shall be revoked when the area of access is to be modified and / or a Mobile Plant and Equipment is deemed no longer suitable for operation in the permitted area. The permit shall only be re-issued once that Mobile Plant and Equipment has been re-approved for site access for the newly designated access areas.

4.3.9.8 Site Access for Mobile Plant and Equipment without a Permit

Any Mobile Plant and Equipment that has not been issued a Motor Vehicle Permit and that is required to enter a site shall obtain approval for site access from the Responsible OTML General Manager. The approval shall include provision for vehicle escort and competency requirements. Refer: Section 4.1.8 Escort Vehicles.

4.3.10 Safe Work Procedures

Site / project specific safe work procedures and safe systems of work shall be developed and implemented for all relevant tasks and areas related to the operation and maintenance of the Motor Vehicles. Standard work procedures are to be developed:

- Taking into account the safe work procedures provided by the manufacturer / supplier

- To provide the controls as required for risks identified during the site / project risk assessment processes.

A direct link between safe work procedures and competency training and assessment materials shall be established.

4.3.7.1 Load Security and Restraint

Requirement	Criteria
General	All loads, including load distribution and restraint methods shall be assessed by a competent and authorised person prior to the load being approved for transport. The total loaded mass of a vehicle must not exceed the manufacturer's rating (i.e. the Gross Vehicle Mass (GVM) for a rigid vehicle or the Gross Combination Mass (GCM) for combinations, including the mass rating on a tyre, wheel or axle). All loads shall be carried in dedicated cargo areas and not on a vehicle seat. All loads shall be positioned and restrained in a manner that does not affect through weight distribution or load shift, the vehicle balance or stability and adversely affect steering or braking performance. Only vehicle manufactured attachment points for load restraint shall be used for the anchorage of the load restraint devices and components. All transport load restraint devices shall be withdrawn from use and repaired by the manufacturer where the fittings or components are damaged. The method of load stability shall be independent of the restraint system such that the release of the system will not cause the load to move unsafely. Controls shall be in place (e.g. corner protection) to protect both the restraint medium and the load.
Roof Bars and Racks	All roof bars used to transport cargo comply with *AS1235 Road vehicles: Roof load carriers-roof bars.*
Occupant Protection	Occupant protection that complies with *AS4304 Cargo barriers for occupant protection* shall be installed in vehicles where loads are carried inside vehicles.
Load Positioning, Stability and Restraint Systems	Load restraint systems shall not exceed their rated load capacities or Nominal Lashing Capacity (NLC). The following shall apply for approved load restraint systems:

Restraint Method	Compliance
Transport webbing restraint devices and components	*AS4380*

Requirement	Criteria	
	Chains and components	*AS4344 or AS2321*
	Fibre ropes	*AS4345*
	Steel wire ropes	*AS3569*
	Steel tensioned strapping	*AS2400.13*
	Chain tensioners	*Load restraint guideline - 2018 National Transport Commission Australia*
Dangerous Goods	Dangerous goods shall be loaded and restrained in compliance with the *Australian Dangerous Goods Code Road and Rail (ADG Code).*	
Loaded Vehicles	Vehicles loaded onto another vehicle for the purpose of transportation shall be restrained in compliance with the manufacture's recommendations	

4.3.11 Journey Management Planning

Journey Management Plans shall be prepared when personnel are required to travel to isolated areas or multiple stops at local areas.

The *Journey Management Plan* shall be provided to the relevant supervisor prior to commencing the journey and shall include agreed call in or contact times and methods to confirm safe travel and arrival.

All Mobile Plant and Equipment operators, excluding convoy and Ok Menga Hydro Power services, shall have a written approval by their relevant Manager for travel to Kiunga-Bige or Tabubil and shall notify Security Base 1 (Tabubil) or Base 2 (Kiunga) on their departure and arrival at destination.

4.3.12 Ongoing Inspection and Maintenance

4.3.12.1 Inspection and Maintenance Schedules

Each item of mobile plant and equipment shall have in place an approved practice for safety, maintenance and operational inspections.

Inspections and maintenance shall be performed as a minimum to OEM recommendations and relevant regulatory requirements.

Inspection and maintenance records shall be retained in compliance with regulatory requirements and per statutory requirements.

4.3.12.2 Alterations / Modifications

Changes to mobile plant and equipment shall only be made in accordance with **Management of Change Standard**. Where a modification or alteration to plant is made, all approvals, relevant regulatory authority notifications shall be performed prior to that item of mobile plant and equipment being re-approved for use.

Any modification or alteration to mobile plant and equipment shall be inspected by the OTML representative to ensure continued compliance to the relevant *Mobile Plant and Equipment Safety Checklist*.

4.3.12.3 4.3.9.3 Pre-Operational Inspections

All Mobile Plant and Equipment shall undergo as a minimum a pre-operational inspection process at:

- The commencement of each shift by the vehicle operator
- Prior to the handover from any maintenance provider by the vehicle operator.

Pre-operational inspections shall include, as a minimum, the items listed on the specific vehicle pre-start checklist.

Pre-operational Inspection Log Books shall be retained with the vehicle.
All pre-operational inspection checklists are to be submitted to the department supervisor following the inspection and records shall be retained according to relevant statutory requirement.

Where a vehicle does not meet the requirements of the pre-operational inspection for items listed in category A of the pre-start or if category A is not referenced in the pre-start and the defective item is classified as a serious defect, the vehicle shall be tagged out of service and the fault reported for rectification and repair by an authorised and competent person prior to the vehicle being permitted to be used.

Refer: Appendix D: Mobile Plant and Equipment Pre-Start Checklists

4.4 Role and Responsibilities

The following responsibilities shall apply for the implementation and performance of the requirements of this OHS Standard.

Role	Responsibility
OTML Manager: OHS	The OTML Manager: OHS shall ensure this OHS Standard is reviewed at least biennially from the date of last issue.
General Manager	Ensure the implementation and monitoring of the requirements of this OHS Standard at site.
Responsible OTML Manager	Ensure compliance with the requirements of this standard within their area of the workplace. Ensure the development and maintenance of a *Site Road Design and Maintenance Plan* within their area of the workplace. Ensure the development and maintenance of a Site *Traffic Management Plan* within their area of the workplace. Appoint a competent Authorised OTML representative to inspect Motor Vehicles and plant for the management of vehicle permit issue. Develop and maintain a site register of Classified Registrable Plant within their area of the workplace.

Role	Responsibility
	Develop and maintain a site register of Mobile Plant and Equipment within their area of the workplace. Develop and maintain a site register of Mobile Plant and Equipment Vehicle Permits within their area of the workplace. Ensure preventative maintenance regimes are in place for all items of plant for their area of the workplace. Develop and maintain towing matrices within their area of the workplace. Develop and maintain jacking matrices within their area of the workplace.
Superintendent / Supervisor	Ensure compliance with the requirements of the OHS Standard within their area of the workplace. Ensure personnel within their area of the workplace comply with the requirements of the OHS Standard.
Authorised OTML Representative	Ensure the implementation and management of Mobile Plant and Equipment Safety Checklists and issuing of permits for plant to site. Ensure the ongoing management of required permit renewals.
Motor Vehicle Operators	Only operate vehicles where competent and authorised to do so. Perform pre-operational inspections of the item of plant they are using. Report all defects immediately they occur.
All Personnel	Comply with requirements of the OHS Standard. Only select, use and maintain Personnel Protective Equipment where competent and authorised to do so.

5. PERFORMANCE MEASURES

All corrective actions related to this OHS Standard shall be managed through the OTML Action Management System.

5.1 Action Management Criteria: Site OHS Compliance

The following actions criteria shall be managed at site through the OTML Action Management System:

Action Source	Action Title	Action Description	Action Frequency
OHS Compliance	Road Design and Maintenance	Develop and maintain Site Road Design and Maintenance Plan	Initial
OHS Compliance	Traffic Management	Develop and maintain Traffic Management Plan	Initial
OHS	MPE Authorised OTML	Develop and maintain site	Initial

Compliance	Representatives Register	register of Authorised OTML Representatives	
OHS Compliance	Mobile Plant and Equipment Permit	Develop site Mobile Plant and Equipment Permit Register	Initial
OHS Compliance	Mobile Plant and Equipment Permit	Review site Mobile Plant and Equipment Permit Register	Annual
OHS Compliance	Mobile Plant and Equipment Jacking	Develop and maintain vehicle jacking matrices	Initial
OHS Compliance	Mobile Plant and Equipment Towing	Develop and maintain towing matrices	Initial
OHS Compliance	Mobile Plant and Equipment Escort	Develop and maintain escort plan	Initial

5.2 Action Management Criteria: OHS Compliance Review

The Action Management System reports shall be performed by the OTML Manager: OHS on a minimum quarterly basis to monitor outstanding actions required at site to achieve compliance with the requirements of this OHS Standard.

Action Source	Action Title	Action Description	Action Frequency
OHS Compliance	STA-2.04 Mobile Plant and Equipment	Develop and maintain Site Road Design and Maintenance Plan	Initial
OHS Compliance	STA-2.04 Mobile Plant and Equipment	Develop and maintain Traffic Management Plan	Initial
OHS Compliance	STA-2.04 Mobile Plant and Equipment	Develop and maintain site register of Authorised Newcrest Representatives	Initial
OHS Compliance	STA-2.04 Mobile Plant and Equipment	Develop site register of Classified Registrable Plant	Initial
OHS Compliance	STA-2.04 Mobile Plant and Equipment	Develop site Mobile Plant and Equipment Permit Register	Initial

OHS Compliance	STA-2.04 Mobile Plant and Equipment	Review site Mobile Plant and Equipment Permit Register	Annual
OHS Compliance	STA-2.04 Mobile Plant and Equipment	Develop and maintain vehicle jacking matrices	Initial
OHS Compliance	STA-2.04 Mobile Plant and Equipment	Develop and maintain towing matrices	Initial

Each report shall be reviewed by the:

- OTML Manager: OHS
- Responsible OTML Executive General Manager.

5.3 Action Management Criteria: OHS Standard Review

The following OHS Standard Review actions criteria shall be managed through the OTML Action Management System:

Action Source	Action Title	Action Description	Action Frequency
OHS Compliance	Mobile Plant and Equipment	OTML Manager: OHS Standard	3 Years

6. OTHER INFORMATION

6.1 Related OTML OHS Documents

6.1.1 Standards

- Management of Change
- Traffic Management Plan
- Motor Vehicle and Road Safety

6.1.2 Procedures

- Job Safety Analysis
- OPMNME-SWP-6010 Safe Work Procedure

6.1.3 Forms and Templates

- Mobile Plant and Equipment Pre-Start - various
- Mobile Plant and Equipment Permit Request
- Inspection Checklist Mobile Plant and Equipment - various

6.1.4 Presentations

- OTML Vehicle and Mobile Equipment Park Up – Awareness Package

6.1.5 Audit Protocol

6.1.5.1 Mobile Plant and Equipment and Road Safety

Audits and inspections shall be carried out periodically against the requirements of all elements of this standard, the PNG Mines (Safety) Act/Regulation and the PNG Traffic Act and Regulation.

Key findings and actions identified in the audits/inspections shall be recorded and closed out in a timely manner to enable proactive management and reduction of significant safety and environmental risks.

6.1.6 OHS Bowtie Risk Management Reference

- RSK-PRO-KCD-022 Competent Personnel for Fitting Tyres to Rims
- RSK-PRO-KCD-035 Securing Items to Vehicles and Mobile Equipment
- RSK-PRO-KCD-037 Use of Split Rims on Mobile Equipment
- RSK-PRO-KCD-165 Maintaining of Vehicles and Mobile Equipment
- RSK-PRO-KCD-194 Operating Vehicles and Mobile Equipment On-site – Vehicle Requirements
- RSK-PRO-KCD-195 Operating Vehicles and Equipment – Vehicle Recovery
- RSK-PRO-KCD-196 Operating Vehicles and Mobile Equipment – Forklifts
- RSK-PRO-KCD-199 Vehicles, Mobile equipment – Tipping Vehicle Operation
- RSK-PRO-KCD-237 Preventing Fires on Vehicles and Mobile Equipment
- RSK-PRO-KCD-275 Preventing Loads Falling from Forklifts
- RSK-PRO-KCD-276 Securing and Restraining of Loads on Vehicles
- RSK-PRO-KCD-277 Securing of Hazardous Chemicals Loads on Vehicles Before Leaving the Site
- RSK-PRO-KCD-279 Selecting and Authorising Forklifts for Stability
- RSK-PRO-KCD-300 Engineering Safety Cage for Tyre Inflation
- RSK-PRO-KCD-303 Using a Forklift on Elevated Loading Docks or Platforms

- RSK-PRO-KCD-332 Operating Vehicles and Mobile Equipment On-site – Vehicle Requirements
- RSK-PRO-KCD-333 Operating Vehicles and Mobile Equipment On-site – Vehicle Requirements
- RSK-PRO-KCD-334 Operating Vehicles and Mobile Equipment On-site – Vehicle Requirements
- RSK-PRO-KCD-335 Manoeuvring On-Bench During Loading Operations
- RSK-PRO-KCD-350 Driving Over Underground Workings or Voids

6.2 Relevant External Standards and Codes

Australian Standards	
AS 1101.1	Graphic symbols for general engineering-hydraulic and pneumatic systems
AS 4177.3	Caravan and light trailer towing components–Coupling body for ball couplings
AS 1268	Equipment for checking pressure and inflation of tyres
AS 4177.4	Caravan and light trailer towing components- Safety chains up to 3500kg capacity
AS 1973	Pneumatic tyres - Passenger car, light truck and truck / bus - Retreading and repair process
AS 2321	Short-link chain for lifting purpose
AS 1554	Structural steel welding
AS 2693	Vehicle jacks
AS 2615	Hydraulic trolley jacks
AS 2538	Vehicle support stands
AS 1235	Road vehicles: Roof load carriers - Roof bars
AS 4304	Cargo barriers for occupant protection
AS 4380	Motor Vehicles - Cargo restraint systems - Transport webbing and components
AS 4344	Motor Vehicles - Cargo restraint systems - Transport chain and components
AS 4345	Motor Vehicles - Cargo restraint systems - Transport fibre rope
AS 3569	Steel wire ropes
AS 2400.13	Packaging - Tensional strapping
AS 1743	Road signs - specifications
Australian Design Rules	
ADR 23/00	Passenger car tyres
ADR 62/01	Mechanical connections between vehicles
ADR 42/03	General safety requirements
SAE	

SAE J348	Design, manufacture, and testing criteria for wheel chocks

ISO	
ISO 1219.1	Graphic symbols for general engineering - Hydraulic and pneumatic systems
ISO 3471	Earth-moving machinery - Rollover protection

Recognised Codes and Guidelines
Australian Dangerous Goods Code Road and Rail (ADG Code)
The European Tyre and Rim Technical organisation, Standards Manual
The Japan Automobile Tyre Manufacturer's Association Inc., Year Book.
The Tyre and Rim Association of Australia, Standards Manual
The Tyre and Rim Association Inc., Year Book
NFPA 1901-03 Wheel chocks (US National Fire Protection Association)
Load Restraint Guideline – 2018, National Transport Commission, Australia

6.3 Definitions

All terms and definitions used in this standard are referenced from the OTML OHS Terms and Definitions Register.

Term	Definition
Competent Person	Has knowledge and a thorough understanding of the task to be performed through the process of training and verification of competency or profession.
Controller	The person responsible for the item of plant at the workplace.
Designated Park-up Area	An area designated for the parking of plant. This may include workshops, go-lines, dead-lines, parking bays and designated pre-operational inspection areas delineated as for that role.
Escort Vehicle	A site-approved item of plant positioned in front of, or behind (or both), of another item plant to manage its safe passage through an area of the workplace.
Give Way	For an operator or pedestrian, means: a) If the driver or pedestrian is stopped — remain stationary until it is safe to proceed b) In any other case — slow down and, if necessary, stop to avoid a collision.
Gross Vehicle Mass (GVM)	The total mass of a fully loaded item of plant, consisting of the tare mass (mass of the item of plant) plus the load (including passengers).
Gross Combined Mass (GCM)	The sum of a vehicles GVM and the maximum loaded mass of any trailer or vehicle it can tow.
Heavy Vehicle	Any item of plant that may be registered and driven on a public

Term	Definition
	road and greater than 4.5 tonne gross vehicle mass.
MineSAFE Collision Avoidance System	A system that alerts the operator of an item of plant and equipment where there is potential for collision with another item of plant or pedestrian traffic.
Motor Vehicle (Light Vehicle)	Any item of plant that may be registered and driven on a public road and of no greater than 4.5 tonne gross vehicle mass.
Mobile Equipment	Includes any mining equipment (e.g. loader), earth moving equipment (e.g. scraper, bulldozer, excavator) or ancillary equipment (e.g. elevated work platform, lighting plant).
OTML Representative	A competent and authorised person appointed by OTML to complete Mobile Plant and Equipment Safety Checklists and to assess that the 'plant is safe to operate' where: 1. That person has relevant qualifications and experience in the assessment of items of plant similar to that which is being assessed 2. Has knowledge and a thorough understanding of all: a) Risk controls b) Hazards c) Safety critical systems associated with the particular plant being assessed.
Nominal Lashing Capacity (NLC)	Capacity calculated to incorporate relevant loading, dynamic and other factors, to establish the number of lashing chains required to restrain a load. 50% of the minimum breaking strength the system is designed to sustain in a straight pull.
Oncoming Vehicle	For an operator, means an item of plant approaching the operator travelling in the opposite direction to the direction in which the operator is travelling.
Open Cut Operations	Surface mine operations including open pits, associated haul roads, ore and waste pads, tips, dumps, ROM pads, go-lines and deadlines.
Operator	The person operating the item of plant.
Overtake	For an operator, means the action of: a) Approaching from behind another item of plant travelling in the same direction of traffic b) Moving into an adjacent path c) Passing the other item of plant while travelling in the adjacent path.
Park-up / Shutdown	The act of bringing the item of plant to a stop and shutting down all systems and processes as required under the manufacturer's recommendations and to approved site practices.
Passing Bay	A dedicated area permitting for the overtaking of another item of plant.
Pedestrian	Any person not in an item of plant but within the vicinity of an item of plant.

Term	Definition
Plant	For the purpose of this OHS Standard includes any machinery, equipment or appliance classified as either a vehicle (light or heavy) or mobile equipment. Also referred to as 'mobile plant and equipment'.
Pre-Operational Inspection	An inspection of an item of mobile plant or equipment performed by a competent and authorised person prior to operation. Also referred to as 'Pre-Start Check'.
Pounds per square Inch (psi)	Common unit of measurement for pressure.
Recovery	To release an item of plant or equipment from a physical inhibitor e.g. a vehicle stuck in mud.
Registrable Classified Plant	An item of plant and equipment required to be registered by a regulatory authority prior to use. The registration process includes the practice of the item of plant undergoing inspection by a competent and authorised person to ensure it is fit-for-use in compliance with relevant standards and codes of practice.
Right of Way	For an operator or pedestrian, means to be able to proceed while other operators or pedestrians are required to give way.
Road	A designated travel way for mobile plant and equipment.
Speed Limit	The maximum ground speed of an item of plant permitted for a defined area of the roadway or workplace.
Stop	To bring an item of plant safely to a standstill.
Surface Operations	All areas of the surface operations not included in open cut or general access e.g. ore treatment, general workshops, administration areas, tailings etc.
Ton Kilometre per Hour (TPKH)	The TKPH (Tonne Kilometres per Hour) or TMPH (Tonne Miles per Hour) is an essential characteristic of the working capacity of tyres. For the same tyre size and tread pattern, there may be several types of rubber, each one associated with a different TKPH. The TKPH and TMPH values are part of the tyre characteristics. They depend on the load capacity specific to each tyre size, the number of kilometres permitted in an hour by type of tyre, and are given for a standardised ambient temperature of 38°C.
Towing	To pull or drag e.g. towing a trailer, skid or other vehicle. Refer 'Recovery'.
TrakPro Vehicle Tracking System	A system installed for tracking the location and speed of a vehicle.
Traffic Management Plan	A document detailing the requirements for the management of traffic in compliance with the requirements of the OHS Standard.
U-Turn	The act of the operator changing to the opposite direction of travel to that the item of plant was originally travelling through a single turn not at a corner or roundabout (also referred to a 'hook-turn').

6.4 Document Approval

No amendments to this document may be made without the approval of the document owner.

Rev.	Prepared	Reviewed	Approved	Date	Description
1.0			N Parker	16/04/2018	2014 Version
2.0			P Graham	30/01/2017	Amended Version
3.0	K Adey	M Thompson P Lewis B Covell	P Graham	30/11/2018	Compiled from OTML OH&S Standard 2.09 and Guideline 2.04 & 2.09

7. APPENDIX

7.1 Appendix A: Authorisation Process and Motor Vehicle Site Permit Issue

Authorisation to drive on site

All OTML employees and contractors require a permit to operate a Motor Vehicle and any Mobile Plant and equipment.

A driver's licence shall be required as a pre-requisite to operate all registered vehicles on public roads. Additional competency checking shall only occur after a driver's licence has been produced by the person requiring the permit.

Permit holders shall ensure the Drivers Licence they hold is maintained current for each licence and permit class that is approved.

All driving permits shall be issued by the Statutory Training Department or personnel authorised by the statutory training department to issue permits.

OTML personel shall not be authorised to attend License or Motor Vehicle Driving Permit Training unless there is a clearly demonstrated need to drive a vehicle in order to perform their official duties.

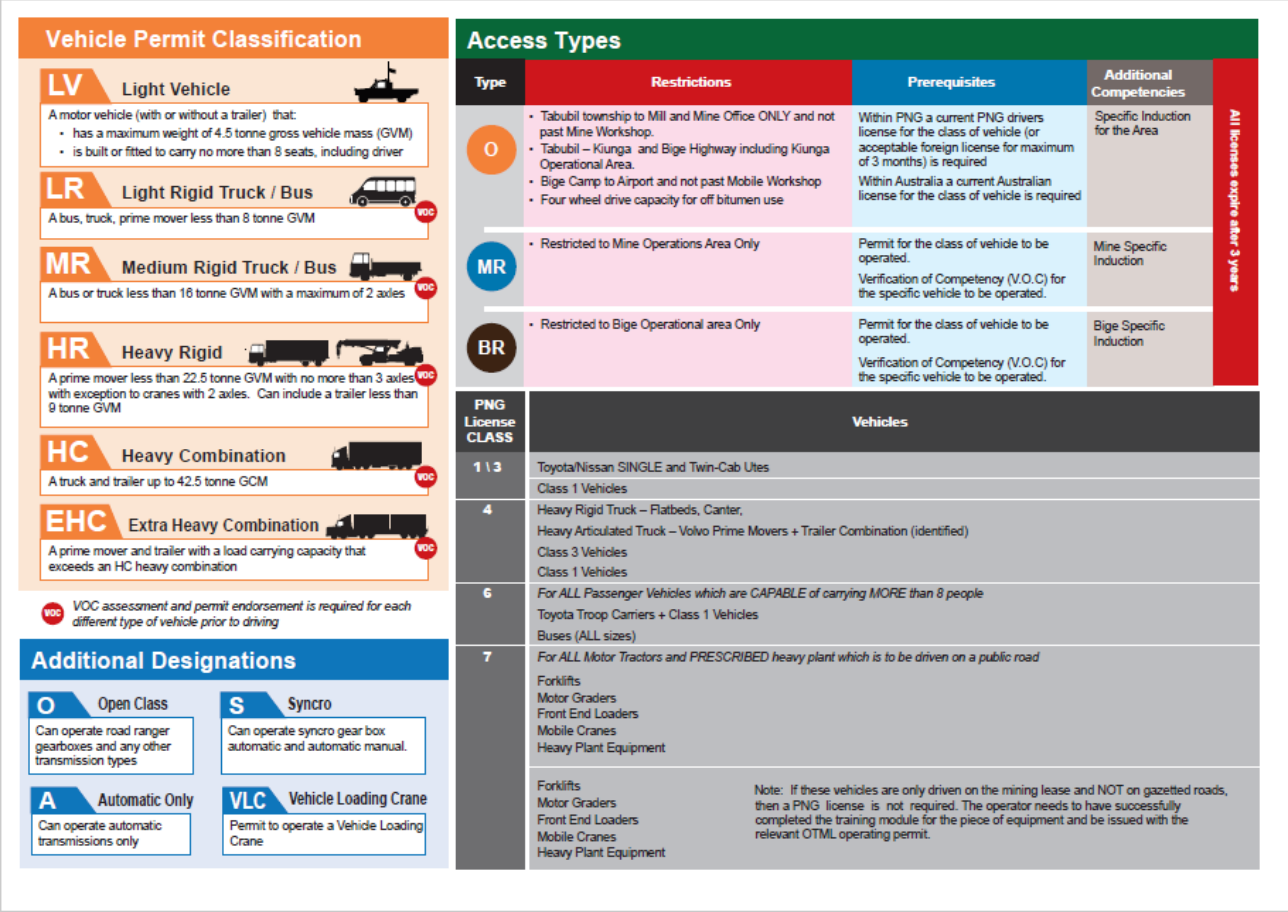
A person shall before obtaining a site driving permit undergo a medical examination which includes an eye sight assessment and shall be deemed fit to safely operate a Motor Vehicle.

Permit assessment in operational areas will be conducted by the responsible operational area.

Note: All renewals of permits require a re-application to be submitted in addition to a current medical clearance.

7.2 Appendix B: PNG Licence Classes and OTML Permit Type

Figure 1 OTML Vehicle Permit Classification, Access Type and PNG Licence Classes



The table above identifies the vehicle permit classification, permit class, licences in PNG (as per PNG Motor Traffic Act), access type and the type of plant/vehicles OTML uses and how it applies to each class of licence.

7.3 Appendix C: Motor Vehicle Driving Permit and Vehicle Compliance to Operate Sticker

Authorisation Card	
PNG Driving License	**Expiry Date**
Class 6	18-Jun-22
Title	**Expiry Date**
LVO - LV Permit	11-Sep-19
Forklift (<10t)	14-Jun-19
Elevated Work Platform (EWP)	29-May-19
Vehicle Loading Crane	10-Apr-19

Motor Vehicle Driving Permit

Motor Vehicle Compliance to Operate Sticker

7.4 Appendix D: Mobile Plant Pre-Start Checklist

Mobile Plant	Pre-start Safety Checklist
Mobile Plant Pre-start Checklist	*Inspection Checklist Heavy Vehicle*

Heavy Vehicle Pre-Start Checklist

EQUIPMENT PRE-START CHECKLIST

Heavy Vehicle

Competent and Authorised Operator's name		Form Number HV- 000001
Equipment Type / Make / Model / Shape		Shift
Company	Equipment ID	Odometer/Hourmeter

Start at the front right door and conduct a walkaround inspection. Check the following:	Pass	Fail	N/A
CATEGORY A FAULTS - DO NOT DRIVE			
Brakes – Foot / Engine / Exhaust / Park	○	○	○
Buggy Whip	○	○	○
Cabin Gauges / Warning Lights	○	○	○
Cargo Load / Restraints	○	○	○
Coolant Level	○	○	○
Fire Extinguisher	○	○	○
Fluid Leaks	○	○	○
Fluid Levels - Brake / Clutch / Engine / Steering	○	○	○
Horn / Reverse Alarm	○	○	○
Instrumentation and Switches	○	○	○
Lights/indicators and Beacon	○	○	○
Registration / Safety Sticker	○	○	○
Seats and Seat Belt	○	○	○
Speedometer	○	○	○
Steering System	○	○	○
Two-way Radio	○	○	○
Safemine Collision Avoidance System	○	○	○
Trakpro Vehicle Tracking System	○	○	○
Tyres – Cracks / Wear / Damage / Stones	○	○	○
Wheels - Rims / Nuts / Wheel Nut Indicators	○	○	○
CATEGORY B FAULTS - Authorisation Required			
Air Conditioner	○	○	○
Battery - Terminals / Condition / Mounting	○	○	○
Mirrors	○	○	○
Visibility of Asset ID	○	○	○
Windscreen, Windows and Doors	○	○	○
Wipers / Washers	○	○	○

AM I TRAINED, HAVE A CURRENT PERMIT AND FIT FOR WORK TO OPERATE THIS EQUIPMENT AND ATTACHMENTS	Yes	No
	○	○
		If no, do not proceed

Start at the front right door and conduct a walkaround inspection. Check the following:	Pass	Fail	N/A
CATEGORY C FAULTS - Report to Maintenance			
Air Tanks Drained	○	○	○
Body Condition	○	○	○
Cabin Condition	○	○	○
First Aid Kit in Vehicle and Fully Stocked	○	○	○
Fuel Level E ¼ - ½ - ¾ - F	○	○	○
Mud Guards / Flaps	○	○	○
Wheel Chocks and Safety Triangles	○	○	○
Tow Hitch (If Fitted)	○	○	○

COMMENTS/DEFECTS

Always follow manufacturer instructions and site procedures. Report anything that affects the safe operation of the equipment.

Is corrective action needed Yes ☐ No ☐

Comments or details of repairs needed: .....

Maintenance close out signature ...../...../..... Date

Signature (Operator) ...../...../.....

Signature (Supervisor) ...../...../.....

White copy to Supervisor - Yellow copy to stay in book

Mobile Plant and Equipment operators shall conduct pre-start safety checks prior to first use of a vehicle each shift.

Mobile Plant and Equipment operators are responsible for reporting defects to their Supervisor. Where a vehicle does not meet the requirements of the pre-operational inspection for items listed in category A of the pre-start or if category A is not referenced in the pre-start and the defective item is classified as a serious defect, the vehicle shall be tagged out of service and the fault reported for rectification and repair by an authorised and competent person prior to the vehicle being permitted to be used.

Supervisors shall conduct regular random condition inspections of Mobile Plant and Equipment in their areas to ensure pre-starts are completed properly and vehicles are in a safe working order.

7.5 Appendix E: Towing and Recovery

Each site shall adopt the towing practices specified in the following clauses.

7.5.1 Vehicle Towing Matrices

Each site shall develop and maintain towing matrices for items of plant that require towing.
Each matrix shall identify:

- Tow / hitch points for both tow vehicle and item being towed
- Towing medium
- Maximum tow capacity of tow vehicle.
-

All towing matrices shall be approved by a competent and authorised person prior to use.

7.5.2 Towing Assessment

Prior to each towing activity an assessment shall be undertaken to confirm that the following criteria are met:

Condition	Criteria
Loads within trailers	• Must not exceed the Gross Trailer Mass (GTM) specified by the manufacturer and must be verified where possible • Loads shall be kept as low as possible and positioned as close to the axle as possible with approximately 60% of the total load mass forward of the centre axle(s) • Approximately 10% of the total aggregate towed weight shall be borne by the tow vehicle hitch point • Secured to prevent movement during transit • Where the height of the load exceeds the tow vehicle height, a JSA shall be conducted with consideration given to overhead hazards • Shall not exceed 150mm beyond the side profile of the towing vehicle without an escort vehicle being required • Where hazardous materials or substances form part of the load, a competent person with experience in the handling of that material or substance shall be included in the assessment
Road conditions	Assessed per towing operation: • Axle and tow hitch point clearance • Compatible tyres: tyre pressure (when towing heavily laden trailers the tow vehicle tyre pressure should be increased by

Condition	Criteria
	approximately 15%), tread pattern and tread depth • Ball couplings are designed to accommodate up to 20% trailer tilt – exceeding this limit may cause damage to the couplings or result in dislodgement
Braking systems	• <750 kg: no requirement • >750kg - < 2000kg: brakes on at least one axle, over-run brakes acceptable • 2000kg - < 4500kg: brakes on all axles, brakes to actuate if trailer breaks free of tow vehicle • Brakes, other than over-run type, must be able to be operated from the driving position in the tow vehicle

7.5.3 Tow Vehicles

Condition	Criteria
General	• The tow vehicle shall be approved for site use • The driver / operator of the tow vehicle shall be authorised and competent to operate that item of vehicle or item of mobile equipment • Where possible, the tow vehicle shall be unladen. When the tow vehicle is laden, the height of the tow hitch shall be such that the drawbar, or sling, is aligned parallel with the ground • The selection of tyres on the tow vehicle shall be appropriate to the terrain and environment to be traversed • Emergency provisions and response shall be assessed prior to the towing operation being conducted • The combined trailer and load weight, vehicle to be towed or weight of skid mounted equipment shall not exceed the manufacturer's specified maximum towing capacity of the tow vehicle
Tow Hitch	Components shall be compatible with those of the trailer and the intended payload (couplings, safety chains and electrical connections).
Pintle Hook / Ring Coupling	Where a pintle hook and ring coupling is used as the method of coupling, the towing ring shall comply with ADR 62/01 - Mechanical connections between vehicles.
Tow Bar and Tow Balls	Towbars shall be fitted with 2 attachment lugs for safety chain attachment. Additionally, a retaining device shall be fitted to mechanically secure the chain to the lug (approved 'D' shackle or pin type arrangement). Shank-type tow balls shall be attached by use of a full thickness nut (M22 or equivalent) and a heavy duty spring washer under the nut. Where the tow ball forms part of a removable hitch pin, a retaining clip or pin, permanently attached to the vehicle, shall

Condition	Criteria
	be utilised to prevent dislodgement when being used as a conventional tow ball. Tow balls may be incorporated into pintle hook and ring-style hitches but should be used as for a conventional tow ball. Tow balls shall be one-piece , machined from steel material (Grade AS 1443, K1137) and stamped to indicate: • 3.5 t and 50 (on the top of the tow ball) • Manufacturer and batch code (on the flange)

7.5.4 Towing Attachments

Attachment Type	Criteria
Ball flanges (minimum size 50mm)	• Trailer ball flanges shall be stamped with the manufacturer's name, tow ball size, load rating and batch number • Loads < 3500 kg aggregate towing mass (trailer and payload) fitted with tow ball flange coupling *Table 1: Coupling Ratings - (AS4177.3) Caravan and light trailer towing components – Coupling body for ball couplings)* Ball Coupling / Aggregate Trailer Mass (kg) Type 750 / >750 Type 2000 / >2000 Type 3500 / >3500 • Ball coupling shall incorporate a self-locking mechanism, fitted with a security device to retain the mechanism in the locked position (i.e. spring wire clip). The security device shall be permanently attached to the coupling body.
Pintle Hook and Ring Couplings	Where pintle hook and ring couplings are to be used (usually on loads > 3000kg - < 10 tonne) as the coupling device, the coupling shall incorporate a positive locking mechanism, together with a permanently attached security device to retain the mechanism in the locked position.
Safety Chains	• All trailers with an aggregate trailer mass < 3500kg shall be permanently fitted with a safety chain attached each side of the draw bar and as near as practicable to the coupling device • For trailers less than 3500kg aggregate trailer mass, all chains shall be free from deformation and bear permanent markings showing "4177: - XX" (first two digits of the chain size designation) on every 4th link *Table 2: Safety Chain Sizes - (AS4177.4) Caravan and light trailer towing components – Safety chains up to 3500kg capacity)*

Attachment Type	Criteria

Aggregate Trailer Mass (kg)	Chain Size Designation (kg)	Nominal Chain Size (mm)	Material	Minimum Breaking Force (kN)
0 - 1000		1000	6.3	14.7
<1600		1600	8	23.6
<2500		2500	10	36.9
<3500		3500	13	51.6

- Safety chains shall be long enough to allow unrestricted movement without contacting the ground
- Safety chains shall be crossed to prevent the drawbar from contacting the ground if dislodged during towing
- Each chain shall be provided with a correctly rated ‘D’ shackle or approved pin type connection

Electrical Connections

- Trailers shall be equipped with an electrical connector compatible with the towing vehicle (both in physical connection and matching circuitry)
- The connector shall be independent of the trailer coupling
- The electrical connector and all wiring shall be protected from damage and the ingress of moisture
- Damage to electrical components (connectors, wiring, light fittings, lamps etc.), shall require the trailer to be tagged out and repaired as per site procedure

Table 3: Electrical Circuits and Identification (ADR 42/03 General safety requirements)

Contact No.	Circuit	Conductor Colour
1	Left-hand turn	Yellow
2	Reversing signal	Black
3	Earth return	White
4	Right-hand turn	Green
5	Service brakes	Blue
6	Stop lamps	Red
7	Rear lamps, clearance and side marker lamps	Brown
8	Battery charger / electric winch	Orange
9	Auxiliaries, etc. / battery feed	Pink
10	Earth return	White
11	Rear fog lamp	Grey

7.5.5 Tow Escort

A site approved escort vehicle, fitted with 2 green flashing light and a site compatible and approved two-way radio system shall be provided when:

- The trailer, vehicle or skid mounted equipment is not fitted with or has faulty operational lights (i.e. brake, indicator or rear lamps) – in this instance an escort vehicle would be required to escort the operation from the rear
- During inclement weather conditions or where lighting conditions may increase the likelihood of hazard with surrounding mine traffic, infrastructure or personnel (i.e. night time, rain, fog etc.)
- In any condition where the hazard assessment requires additional controls to be taken to separate the towing operation from general mine traffic or personnel
- When a vehicle has faulty lights or no lights at all an escort vehicle will be provided at the front and back of the vehicle.

7.5.6 Towing Communications and Spotters

Communication Requirement	Criteria
General	All vehicles and mobile plant equipment involved in a towing operation shall maintain contact through the same two-way radio channel. All persons involved in the operation shall agree on, document, and use an approved form of hand signals. Where effective communication cannot be maintained, the towing operation shall be ceased until such time as the methods of communication have been re-established.
Tow Escort	The escort vehicle operator shall remain on the same two-way radio channel as those conducting the towing operations. Additionally, the escort vehicle operator shall: • Update surrounding traffic on the towing operation progress • Maintain a vigilant observation of the towing operation being conducted and convey these observations to those effecting the towing operation.
Spotters	Wherever possible, a competent person shall be appointed as spotter. During attachment and uncoupling procedures, the spotter shall stand clear and coordinate tow vehicle movements. Prior to the towing operation being performed, the spotter and other personnel involved in the operation shall agree on, document, and use an approved form of hand signals. Spotters shall be in possession of, and use, a site approved compatible hand-held two-way radio to conduct spotter operations.

7.5.7 Pre-Towing Inspections

All trailers and skid mounted equipment, towing accessories (slings, pins / clips etc.), braking, electrical indicating devices and the towing vehicle shall undergo a pre-start check prior to towing operations.

Any defect shall require that piece of equipment to be tagged out according to site procedure and the defect immediately reported for rectification.

This inspection shall be completed prior to coupling and once coupling has been performed.

7.5.8 Trailers

The following information shall apply to trailers rated up to 3500kg aggregate trailer mass (including payload) unless specifically stated otherwise:

- Trailers shall be manufactured in accordance with the relevant Australian Standard and Australian Design Rule (ADR). Where not applicable, designs shall be prepared and construction undertaken by suitably qualified, experienced and competent personnel
- The selection or designs shall take into account the intended duty and operating environment of the trailer
- Where practicable, tyres and wheel sizes shall be similar to the tow vehicle tyres
- All trailers shall have adequate provision for the tying down of loads.

Trailers vary in design and application and may be box type, lighting plant, welding plant trailers or various other types and are referred to as items of plant.

7.5.9 Towing Skid Mounted Equipment

Equipment intended to be skid-towed shall be designed by suitably qualified and experienced personnel and be approved for site use.

The skid and associated payload shall be designed to minimise resistance to towing.

All couplings, points of attachment, safety chains and electrical components shall comply with applicable Australian Standards, Australian Design Rules and other regulations.

7.5.9.1 Attaching Trailers or Skid Mounted Equipment

Requirement	Criteria
General	Connecting trailers to tow vehicles presents several hazards that must be addressed as part of the towing operation: • Entrapment of personnel

Requirement	Criteria
	• Crush injuries • Equipment damage. These hazards generally occur as a result of limited visibility and the close proximity of the tow hitch point to points of attachment.
Tow ball Couplings	Where a tow-ball coupling is used, the following actions shall apply, the: • Tow-ball flange coupling is lowered onto the tow-ball and securely attached • Connection is proven by attempting to raise the drawbar using the jockey wheel (the tow-ball flange should not move relative to the tow-ball) • Correct security pin / clip is fitted to ensure the hitch coupling does not release under towing conditions.
Pin and Ring Couplings	Where a pin and ring coupling is used, the following actions shall apply, the correct: • Pin is inserted through the towbar clevis • Security pin / clip is fitted to prevent pin dislodgement under towing conditions.
Pintle-Style Couplings	Where a pintle-style coupling is used, the following actions shall be effected: • The latch is locked in the closed position • The correct security pin / clip is fitted to prevent dislodgement under towing conditions.
Slings	Slings shall only be used where it is not practicable to use a rigid draw bar or similar system. Only towing slings that do not store energy (will not whip / recoil) shall be used. Slings shall be: • Of the correct type and rating for that type of towing operation • Free of kinks, frays, damaged or frayed stitching or other deformities. All shackles shall be free of deformity and of an approved type All slings ropes, straps and shackles shall be regularly inspected and tagged. Any lifting sling used in a towing operation shall be immediately and permanently withdrawn from lifting service following its use.
Chains	Chains shall not be used in towing operations as the towing medium unless approved by the site General Manager or their delegate.
Skid-Mounted Equipment	Only the manufacturer's specified hitch points shall be used. The hitch point shall be free from deformity, and the point of attachment line through to tow vehicle attachment shall be such that no equipment may obstruct, or damage, the sling arrangement either during attachment or during the towing operation (i.e. during articulation).
Electrical	Where fitted, all electrical connections shall be coupled and the

Requirement	Criteria
Connections	following inspections undertaken: • Couplings shall match (housing and security clamps, number of pins etc.) • The connection shall be clean of mud and moisture • The connection shall be free from interaction with the two couplings and be positioned so as to not come into contact with any tow coupling device during articulation • All wiring shall be protected from pinching or dragging on the ground All electrical operations between the tow vehicle and the towed item shall be proven as operational. If this cannot be proven, an escort vehicle shall be required.
Brake Connections and Systems	Where required and fitted the braking systems of the item being towed shall be compatible with the tow vehicle. Towing of braked equipment shall not be undertaken unless the braking system is fully operational.
Safety Chains	Where required, and fitted, safety chains shall be: • Connected to purpose made attachment points • Crossed to provide a cradle support to prevent the drawbar touching the ground should the coupling fail • Secured to the tow vehicle using correctly rated ‘D’ shackles or approved pins • Attached independent of the method of hitch coupling selected. Safety chains shall never be looped through a hitch point or over a pintle jaw.
Jockey Wheels	All jockey wheels and support stands shall be retracted once a coupling has been achieved. Jockey wheel and stands shall be designed to be able to be folded up, retracted, or secured from contacting the ground during the towing operation.

7.5.10 Vehicles to be Towed

Condition	Criteria
Slings, Ropes, Straps and Purpose-Made Drawbars	• Shall be designed to withstand 1.5 x gross weight of the towing vehicle • All slings ropes, straps shall be regularly inspected and tagged • Chains shall only be used as the primary towing attachment for any towing or recovery operation following an approved risk assessment and procedure and approved by the site General Manager or their delegate

Condition	Criteria
Tow Vehicle Tow Capacity	The vehicle to be towed shall not exceed the tow vehicle manufacturer's towing specifications.
Points of Attachment	All points of attachment shall be performed according to the vehicle manufacturer's recommendations.
Non-Reversible Loads	Towing of mobile plant and equipment or vehicles shall be classified as a 'non-reversible' load under mine traffic rules.
Assessment Inclusions	Towing of a vehicle shall include an assessment of: • The function of the braking and steering systems of the vehicle to be towed • Emergency provisions and responses in place should these systems not be functioning or fail during the towing operation
Competency	The driver / operator of the vehicle to be towed shall be site authorised and competent to operate that vehicle or item of mobile equipment.

7.5.10.1 Attaching another Vehicle

The following shall apply where a vehicle is to be towed:

- Prior to attachment, the vehicle or item of mobile equipment to be towed shall be immobilised by wheel chocks or berm while maintenance personnel perform tasks to prepare for the towing operation
- If maintenance is to be performed on the braking or driveline system of the vehicle to be towed, it shall be correctly isolated after it is attached to the tow vehicle
- Once the attachment has been conducted and approved the appointed spotter shall direct the tow vehicle to take up the sling slack and hold the load
- The spotter shall ensure no person or plant is located behind the vehicle to be towed, or may be potentially at harm should the connection fail
- When the connection is proven, the wheel chocks may be removed and the towing operation may commence

7.5.10.2 Disconnection

Requirement	Criteria
General	Disconnection of equipment involved in towing operations exposes personnel to manual handling hazards. Hazards may include: • Sudden release of load energies • Sudden towed item movement • Movement of loads during transit • Tensioning of couplings during transit A spotter shall be appointed during all disconnection operations

Requirement	Criteria
Trailer and Skid Mounted Equipment	• Trailers shall be immobilised prior to disconnection from a tow vehicle • Immobilisation shall be effected by the use of support legs, wheel chocks, parking brakes (where provided), wheel chocks or the building of a suitable parking rill • Where possible, towed plant, equipment or trailers shall be parked on a flat, level, and even surface away from general mine traffic thoroughfares • Transport of hazardous good or material during towing operations shall take into consideration OHS Standards for the conveyance of hazardous goods and materials. • Brake and electrical connections shall be disconnected prior to disconnection of the main coupling to prevent damage to brake and electrical connections should the towed item or tow vehicle move or settle • Brake and electrical connections shall be protected from dirt and moisture and mechanical damage present during coupling disconnection • Where possible, mechanical aids shall be employed to lift the drawbar from the hitch point • Upon disconnection, all coupling devices, attachments, safety chains and other equipment employed in the operation shall be inspected. Where any damage is observed, the equipment shall be tagged according to site procedure • All slings, hitch pins and security clips / pins shall be refitted or stored following disconnection. When storing coupling devices, or slings, care shall be taken to prevent damage
Towed Vehicles	• Towed vehicles shall be immobilised prior to disconnection from a tow vehicle. Immobilisation shall be effected by the use of support legs, wheel chocks, parking brakes (where provided or functioning), wheel chocks or the building of a suitable parking rill • Where possible, towed vehicles shall be parked on a flat, level, and even surface away from general mine traffic thoroughfares • Transport of hazardous good or material during towing operations shall take into consideration OHS Standards for the conveyance of hazardous goods and materials.

7.5.11 Maintenance of Towing Accessories

All slings, straps, winches and other accessories and equipment used in towing operations shall be entered into the site maintenance system and maintained as per regulations and standards.

7.5.12 Towing Safety

Requirement	Criteria
General	When towing, the tow vehicle driver shall: • Obey all speed limits • Maintain contact with escort vehicle operators and others involved in the towing operation • Allow for the extra width of the towing operation being performed • Apply the accelerator and braking systems smoothly and gently • Steer the tow vehicle in such a way as to prevent swaying • Allow for the effects caused by cross winds, passing traffic and uneven road surfaces • Allow for increased stopping lengths and maintain a minimum gap between traffic as per site rules • Engage lower gears when descending slopes • Never overtake another vehicle • Pull off the road where safe to do so to allow other traffic to pass. Where assessed and required, a lower speed limit shall be applied for that towing operation. Conditions where this may occur include: • Where the terrain or road condition would represent a potential hazard to the effectiveness and safety of the towing operation • Where pedestrian traffic may be affected • Where braking or steering systems on towed vehicles have been adjusted or their condition is unknown • Where the pay load would represent a hazard should an incident or accident occur (i.e. spillage of payload contents, instability of payload etc.)

7.5.13 Recovery Operations

Requirement	Criteria
Recovery Supervisor	An authorised and competent supervisor shall be appointed as Recovery Supervisor to oversee the recovery operation. Consideration for this appointment shall include: • Relevant experience in similar operations • Competency in this Standard • Technical knowledge and experience relative to the work area.
Recovery Assessment	All recovery operations shall require the performance and approval of a Job Safety Analysis Assessment prior to the operation being performed and shall include consideration to: • Poor ground stability • Rough terrain • Heights and slopes • Working at heights • Loss of control of equipment • Manual handling injuries • Exposure to chemicals • Exposure to elements.
Emergency Response	Consideration shall be given by the Recovery Supervisor to the attendance of site Emergency Response personnel should the recovery have the potential for the initiation of: • Fire, spillage of chemicals and hydrocarbons • Other hazard likely to present during the recovery operation.
Spotter	• A spotter shall be appointed to observe the recovery procedure • Prior to the operation being conducted, the spotter and other personnel involved in the operation shall agree on, document, and use an approved form of hand signals • Additionally, the spotter shall be in possession of, and use, a site approved and mine site compatible hand-held two-way radio to conduct spotter operations • The spotter shall be positioned 1.5 times the length of any pulling medium (e.g. tow rope) from the operation and where possible, located inside a vehicle or shielded by an appropriate structure.

Requirement	Criteria
Plant Inspections and Equipment Requirements	• Prior to the commencement of coupling operations, all vehicles, equipment and towing apparatus shall be inspected by an authorised and competent person • Wherever practicable rigid draw bars or similar equipment shall be used in preference to slings • Only towing slings that do not store energy (will not whip / recoil) shall be used • Slings, ropes, straps and purpose-made drawbars shall be designed to withstand 1.5 x the gross weight of the item of plant or equipment or vehicle to be recovered • Chain or wire rope slings shall not be used for recovery operations • Points of attachments shall be to the manufacturer's designated towing points • Connection to other points other than designated towing points shall require assessment through the Job Safety Analysis to assess load path and the resultant effects on the equipment being used
Winches	• Winches (manual, hydraulic or electric) shall only be operated by an authorised and competent person • Slings, ropes, straps and shackles shall be rated to suit the pull line of the winch or the loads imposed where snatch blocks or double-reeving are used
Disconnection	• Upon completion of coupling operations, the apparatus and method of attachment shall be inspected by an authorised and competent person • Any damaged item of equipment shall be tagged out and removed from service • Any lifting sling used in recovery operations shall be tagged and permanently removed from further use as a lifting sling.
Inspection and Maintenance of Equipment	• Vehicles, mobile equipment, trailers used in towing and recovery operations shall undergo scheduled inspections • Slings, straps, winches and other equipment used in towing and recovery operations shall be inspected as per regulation and this standard.

7.6 Appendix F: Vehicle Jacking

7.6.1 Vehicle Jacking

Requirement	Criteria
Approved Devices	The following recognised standards shall apply for devices at site to be approved for use in the lifting / raising of light vehicles: • *AS2693 Vehicle jacks* • *AS2615 Hydraulic trolley jacks* • *AS2538 Vehicle support stands* • *SAEJ348 Design, manufacture, and testing criteria for wheel chocks* • *NFPA 1901-03 Wheel chocks (US National Fire Protection Association) – localised Fire Protection Australia recognised standard*
High Lift Jacks	High lift jacks shall not be permitted to be used at site for changing wheels or to perform works under vehicles. A Job Safety Analysis shall be performed and approved where a high lift jack is used in vehicle recovery operations.
Airbag Jacks	Airbag jacks shall not be permitted to be used at site for the raising / lifting of a vehicle for the purpose of wheel change, or works to be performed under the vehicle other than actions taken during a response to an emergency involving a vehicle.

Requirement	Criteria
Device Markings: Vehicle Jacks	Vehicle jacks other than specific vehicle jacks shall be permanently and legibly marked with the following information: • Name and address of jack manufacturer, importer or other suppliers • 'Working Load Limit' (in kg) • Clear and adequate instructions regarding the operation of the jack • The manufacturing batch identification • 'WARNING: DO NOT GET UNDER A VEHICLE THAT IS SUPPORTED BY A JACK' Specific vehicle jacks shall be permanently and legibly marked with the following information: • The name or trademark of the vehicle manufacturer • The model or model designations of the vehicle with which the jack is intended to be used • Clear and adequate instructions regarding the operation of the jack • Advice to consult the vehicles owner manual for further instructions • 'WARNING: DO NOT GET UNDER A VEHICLE THAT IS SUPPORTED BY A JACK' Hydraulic jacks shall include additional information markings specifying the hydraulic fluid type and recommended level information for the fluid. High lift jacks shall be permanently and legibly marked with the following or of similar effect information: • WARNING: NOT FOR VEHICLE MAINTENANCE OR WHEEL REMOVAL. DO NOT GET UNDER A RAISED VEHICLE • THIS JACK MUST HAVE A MINIMUM LOAD OF '(manufacturer's nominated load)' ON IT TO LOWER STEP-BY-STEP, OTHERWISE THE LIFTING MECHANISM WILL SLIDE DOWN TO THE BASE PLATE DROPPING THE VEHICLE'
Device markings: Vehicle Support Stands	All vehicle support stands shall be permanently and legibly marked with the following information: • Name and address of the manufacturer, importer or other supplier of the vehicle stand • 'Working Load Limit' (in kg) • Maximum working height (in millimetres) • Clear and adequate operating instructions • 'WARNING: USE ONLY IN PAIRS AND ON HARD LEVEL GROUND (e.g. CONCRETE), ENSURING THE STAND IS POSITIONED UNDER A SOLID PORTION OF THE VEHICLE AND THE LOCKING MECHANISM IS FULLY ENGAGED' • The manufacturing batch number

Requirement	Criteria
Vehicle Jacking Matrices	Each site shall develop and maintain vehicle jacking matrices. The jacking matrices shall identify the: • Vehicle make and model • Vehicle manufacturer's maximum loaded mass rating • Approved jacking device for that vehicle • Approved vehicle support stands for that vehicle • Approved points for positioning and contact for vehicle support stands • Type, positioning and number of wheel chocks to be used for the jacking process
Jacking Safety: General	Vehicles shall only be jacked at approved jacking points. No person is permitted to remain in or enter a vehicle while it is in the raised position. Vehicles shall only be jacked where the: • Vehicle is positioned on level, firm ground • Vehicle jack is firmly footed on even ground • Jacking device in its raised position is no greater than 5 degrees from the vertical • Vehicle's parking brake has been applied and the transmission in Park (automatic transmission) or lowest gear (manual transmission) where the gear direction is opposite to any identified ground surface grade • Vehicle wheels retaining ground surface contact can be chocked such that the vehicle's wheels are prevented from moving in either direction (forward or backward) • Vehicle shall be positively isolated No person shall enter any part of the body under a raised vehicle unless the: • Vehicle is supported by a minimum two vehicle support stands • Vehicle wheels retaining ground surface contact have been chocked • Vehicle's parking brake has been applied and the transmission in Park (automatic transmission) or lowest gear (manual transmission) and the: - Vehicle support stands are on firm level ground - Vehicle support stands have been positioned such that the stability of the vehicle is not compromised - Vehicle support stand's locking arrangement has been engaged - Vehicle support stand is no greater than 5 degrees from the vertical No person shall be in a vehicle prior to being jacked or throughout the time it remains in the jacked position or resting on vehicle support stands.

Requirement	Criteria
Alternative Jacking Methods	A Job Safety Analysis shall be completed and approved prior to the works being performed for alternative jacking methods. Examples of where alternate jacking arrangements may be required include: • Where the stability of the vehicle is compromised by the ground surface level (e.g. on a slope or undulation) • The provided jacking equipment or support stands are not appropriate for the jacking requirements (e.g. lower load ratings, additional packing / support required beneath a vehicle jack or support stand) • Where the ground surface cannot support a jacking device and / or vehicle support stands (e.g. a forklift or crane may be required to raise the vehicle)

7.7 Appendix G: Tyre Safety

7.7.1 Procurement and Specification: Tyres, Rims and Rim Assemblies

Only approved tyres, rims and rim assemblies, manufactured to recognised standards and compliant to the item of mobile plant or equipment's manufacturer shall be used on mobile plant and equipment.

Requirement	Criteria
Compliance	The physical dimension, alternative rim fitments and maximum load ratings for tyres, rims and rim assemblies shall comply with the requirements of one of the following recognised publications: • The Tyre and Rim Association of Australia, Standards Manual • The Tyre and Rim Association Inc., Year Book • The European Tyre and Rim Technical organisation, Standards Manual • The Japan Automobile Tyre Manufacturer's Association Inc., Year Book All tyres for passenger vehicles shall comply with *Australian Design Rule ADR 23/00 Passenger car tyres*
Light vehicles – Retreads	The use of retreads on light vehicles shall be permitted under the following conditions. The: • Light vehicle is for site use only and not used on public roads • Tyre use does not exceed the manufacturer's specifications • Retread manufacturing process complies with *AS1973 Pneumatic tyres – Passenger car, light truck and truck / bus – Retreading and repair process*
Heavy Vehicle Tyres	Heavy vehicle tyres shall be selected in accordance with the manufacturer's specifications and shall take into consideration the following: • Tyre load and speed • Ton kilometre per hour (TKPH) rating • Site conditions • Type of earth-moving machinery

Requirement	Criteria
Heavy Vehicle Rim Bases	All heavy vehicle rim bases shall be permanently and uniquely marked with markings clearly visible after the tyre has been fitted and inflated to the rim: • Rim size / type / style • Date of manufacture

7.7.2 Tyre and Wheel Maintenance Equipment

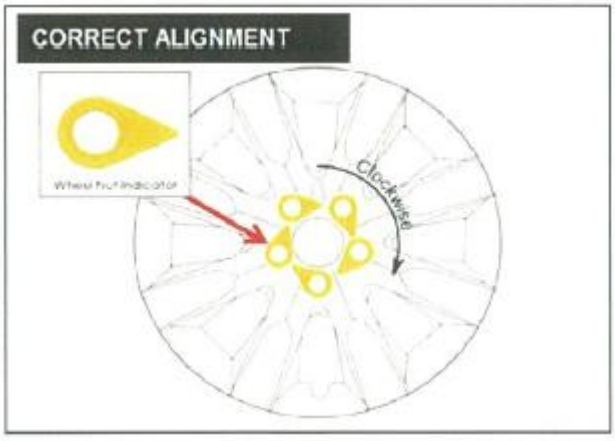
Requirement	Criteria
Tyre Pressure Gauging Equipment	All tyre pressure gauging equipment shall comply with *AS1268 Equipment for checking pressure and inflation of tyres.* Air supply quality: • For the inflation of pneumatic tyres shall be free from foreign matter and excessive quantities of oil and water • Fixed and airline equipment shall incorporate filters to remove solid materials (e.g. scale, dirt and airborne contaminants) prior to the air entering the compressor • Shall be capable of achieving set pressure requirements • The pressure delivered by the source of air or nitrogen shall not exceed 125% of the maximum value of the range of measurable pressures • The compressed air temperature at the chuck shall: - Be as close to ambient temperature as possible - Not exceed 65°C at the outlet for fixed and in-line equipment (type A and C)
Calibration and Maintenance of Tyre Fitting Equipment	All calibrations, servicing and maintenance shall be performed by competent and authorised personnel and providers. • Master gauges for tyre pressure gauging equipment shall be calibrated every six months • Individual pressure gauges shall be calibrated from the master gauge at the commencement of every shift • Air compressors (including all regulators, gauges, lines and relief valves) shall be serviced every six months • Torque multipliers shall be calibrated every six months
Wheel Assembly Maintenance Equipment	Equipment used in the management of tyres (e.g. tyre handlers, fork-lifts etc.) shall be: • Fit for purpose and site approved • Operated by competent and authorised personnel Padding, dunnage or other approved materials shall be installed to protect tyres and wheel assemblies from damage during wheel assembly removal, transport and fitting. Where an item of mobile plant (e.g. fork lift) or fixed plant (e.g. overhead fixed crane) is required to transport tyres, rims

Requirement	Criteria
	etc. the load shall be secured to prevent dislodgement or damage to the load. All slings, hand-winches or other equipment used in the compression of a tyre to a tyre rim during fitting shall be: • Site approved for use and fit for purpose with respect to safe work load • Attached and operated by competent and authorised personnel.

7.7.3 Tyres, Rims and Wheel Assemblies

Only authorised and competent personnel shall change, fit, repair, inflate or remove tyres from mobile plant and equipment or perform repairs to rims or wheel assemblies.

Requirement	Criteria
Tyre Storage	All tyres shall be stored in accordance with manufacturer's recommendations and free from oil and chemical contamination.
Tyre and Wheel Assemblies Disposal	The disposal of tyres and wheel assemblies shall comply with the provisions of the site *Environmental Management Plan*.
Inspection and Preventative Maintenance	Each site shall develop and maintain practices for: • Preventative maintenance regimes for tyres, wheels and rim assemblies detailing periodical inspection requirements by a competent and authorised person • Pre-operational inspections and ongoing operational monitoring performed by mobile plant and equipment operators as part of general operational practices Any damage or suspected damage to mobile plant and equipment tyres, wheel or rim assemblies that contravene the requirements of this standard shall require the item of plant or equipment to be immediately withdrawn from operation until the identified fault has been rectified. Periodical inspection and preventative maintenance practices shall include: • Wheel rim Non-Destructive Testing (NDT) including crack-test reports • Ton kilometre per hour (TKPH) monitoring studies • Payload-tyre / rim failure studies • General wheel / rim inspections • Inspection of wheel nut indicator positioning Wheel assembly wheel nuts shall be re-torqued to manufacturer recommendation within 12 hours of fitting to a vehicle.

Requirement	Criteria
	Wheel nut indicators shall be fitted to all wheel nuts for the purpose of providing a visual indication that the wheel nut has moved from original tensioning.  Where any tyre has undergone oil or chemical contamination the tyre shall be washed down to remove residual contaminants and inspected by a competent and authorised person prior to approval to return to service. All tyres on an item of mobile plant and equipment involved in a vehicle accident shall be inspected by a competent and authorised person prior to approval to return to service. Where lock rings are installed on a wheel assembly the tyre shall be inflated in the first instance to a set pressure of 10 psi (to prevent over-inflation). The lock ring alignment and seating shall be inspected by a competent and authorised person prior to further air-pressure being applied to the tyre. Split rims are prohibited for use on light vehicles.

7.7.4 Maintenance and Repair

Requirement	Criteria
Maintenance and Repair of Tyres, Rims and Rim Assemblies: General	Any tyre that has been run flat or in a severely under-inflated condition shall not be fitted or inflated until the integrity of the tyre has been established. Where the tyre is part of a dual assembly then both tyres shall not be inflated until the integrity of the tyre and rim or wheel assembly has been established. All repairs shall comply with the following recognised Standards: • Light Vehicle Tyres: *AS1973 Pneumatic tyres - Passenger car, light truck and truck / bus - Retreading and repair process* All vehicle jacks, stands and other equipment used in the maintenance of tyres, rims and wheel assemblies shall: • Be compatible with, and comply with, the item of mobile plant or equipment manufacturer's specifications

Requirement	Criteria
	• Comply with relevant recognised Standards
Light Vehicles	All repairs / retreading for light vehicles shall comply with *AS1973 Pneumatic tyres - Passenger car, light truck and truck / bus - Retreading and repair process* All tyres shall be inspected by a competent and authorised person prior to repair. Tyres shall be rejected as unsuitable for repair where: • The tyre is beyond the repair limits as defined in *AS1973 Pneumatic tyres - Passenger car, light truck and truck / bus - Retreading and repair process* • The tyre carcass has broken up, or there is evidence the tyre has been run in an underinflated condition • The tyre carcass has separated (except for separation restricted to a protective breaker) • The tyre has undergone oil or chemical attack • A broken, exposed or kinked bead wire bundle is evident • The tread groove has cracked, or there is evidence of age rubber cracking extending into the carcass • The tyre has been treated with a liquid puncture sealant and exhibits any penetration through the inner liner.
Heavy Vehicles	Rim Maintenance and Management • The management and maintenance of heavy vehicle wheel assemblies and rim assemblies shall comply with *AS4457.1Earth moving machinery – Off-the-road wheels, rims and tyres – Maintenance and repair – Wheel assemblies and rim assemblies* including: • Removal and installation • Examination of rim and wheel assemblies • Repair • Practices for the management of tyres deflated or running at >70% recommended cold inflation pressure All welding conducted on wheel rim and rim assemblies shall be performed in compliance with approved hot work practices. Welding or the application of heat shall not be applied to any fasteners, wheel rim or rim assembly that is mounted with a tyre regardless of whether the tyre is inflated or not. This shall also include final drive type wheels (e.g. scraper wheels). All welding shall be performed by authorised personnel competent and appropriately certified with respect to AS1554 Structural steel welding to carry out welding operations on

Requirement	Criteria
	pressure vessels. Where a wheel assembly or rim assembly has been repaired a marking shall be made close to the valve hole and shall include the following information: • Repairer's identification • Date of repair • Rim size and unique identification if removed during repair A report shall be completed detailing the location and extent of the wheel assembly or rim assembly repair.
Heavy Vehicles	Tyre Maintenance and Management The maintenance of all heavy vehicle tyres already in-service shall comply with *AS4457.2 (2008) Earth moving machinery – Off-the-road wheels, rims and tyres – Maintenance and repair - Tyres* including: • Maintenance of in-service tyres • Inspections to determine serviceability • Repair limits • Tyre repair • Retreading of tyres • Marking of repaired and retreaded tyres • Tyre maintenance • Periodic inspections Tyres that do not contain a serial number or unique identification number shall not be mounted until the history of the tyre can be verified. All tyres shall undergo a mounting inspection and a mounting inspection check sheet shall be completed for that tyre. All tyres shall be disposed of according to site environmental licence requirements. Retreaded tyres shall not be used in front wheel positions with the exception of motor graders, wheel dozers and wheel loaders. No heavy vehicle tyres that have undergone repair or have suffered oil damage may be installed in the Pos. 1 or Pos. 2 position of a heavy vehicle. All repaired tyres shall include the repairer's brand mark prior

Requirement	Criteria
	to the tyre being released for re-use. • Single 'X' marking: minor repair suitable for fitment in any position with no restrictions • Double 'X" marking: intermediate repair with damage not completely penetrating the tyre. Not fit for front wheel position with the exception of motor graders and wheel dozers • Triple 'X' marking: major repair indicating damage fully penetrating the tyre casing. Not suitable for front wheel positioning with the exception of motor graders and wheel dozers All heavy vehicle tyres and other tyres that have a large volume, or are inflated to high pressures shall be contained by a cage guard or other suitable restraining device when being inflated after being repaired or otherwise removed from the wheel.
Heavy Vehicle Records	Heavy vehicle tyre records shall include: • Tyre identifier • Tyre inflation pressures (recorded daily, weekly or monthly depending on operating severity) • Tyre movements by life (distance/hours), disposition, condition, repair/retread life and remaining tread depth. Service Records shall include details of maintenance performed (service, repair and retreads). The recorded history of a tyre (from first mounting to disposal or transfer to another user) shall include: • Date of mounting, tread depth, vehicle identification, wheel position, hour meter and / or odometer reading • Repairs and retreads including identification of processing plant and location and type of repair • Changes or alterations to tyre identifiers • Date, vehicle identification, tread depth and accumulated hours or kilometres when tyre is removed • Reason for removal

Requirement	Criteria
	Heavy vehicle wheel and rim assembly records shall include: • Rim base identifier • Rim type, style, size and date of manufacture • Record of inspection • Record of repair including date, type of repair, testing and approval

7.7.5 Tyre Fire and Explosion

Requirement	Criteria
General	The primary cause of tyre fire and explosion is the application of heat to the tyre or the development of heat within the tyre structure by one or more mechanisms including: • Electrical earthing through the tyre as a result of lightning strike or power-line contact • Wheel component heating through the over-use / misuse of brakes or electric-wheel motor fault • Hot work being performed on or around the tyre assembly • Internal tyre damage as a result of excessive speed, road camber deficiencies and ply separation A tyre explosion can occur even where no fire is visible. Therefore smoking tyres or brakes shall be treated as a potential tyre explosion.
Emergency Management	Each site shall include in its *Emergency Management Plan* a process for the management of suspected or actual tyre fire. Each site shall develop and maintain practices for the management of a tyre fire or suspected tyre fire and shall include the: • Location and minimum stand-off distance the motor vehicle or plant shall be positioned e.g.: - With the suspected tyre facing a wall or bunded structure or in an open area clear of personnel and mining infrastructure. • Time duration following the incident during which access within the stand-off area is prohibited: minimum 24 hours unless otherwise instructed by the General Manager or their delegate • Methods by which the stand-off area is barricaded and signed and the methods used to communicate the stand-off requirements to site personnel: minimum 400m unless otherwise instructed by the General Manager or their delegate • Potential for hazardous interaction with other site services, structures and personnel.

7.8 Appendix H: Vehicle and Mobile Equipment Parking

7.8.1 Park-up

Park-up is the act of bringing a vehicle or mobile equipment item to a stop, shutting down all systems as required under the manufacturer's recommendations and ensuring that the vehicle is fundamentally stable.

7.8.2 Fundamentally Stable

The term 'fundamentally stable' means that the vehicle / mobile equipment will not move when the transmission is neutralised and the park brake is off.

Once the vehicle / mobile equipment is fundamentally stable shift the transmission into the correct gear and apply park brake.

NOTE: All parked-up vehicles must be fundamentally stable before the operator leaves the vehicle.

7.8.3 General Principals for Park-up

Perform the following when parking in designated areas.

- Park-up equipment in accordance with manufacturer's recommendations.
- Light vehicles and items of heavy equipment must be parked-up separately.
- Park in a V-drain, over a hump or turn front wheels into the kerb, rill or embankment to stop uncontrolled movement.
- Chock wheels to prevent uncontrolled movement if other methods are not available.
- Where practical, vehicles should be parked on level ground, clear of traffic flow and visible to other road users.
- Try to park the vehicle so that you can go forward when leaving the parking space.

- Do not leave the vehicle / mobile equipment while there are passengers in it.
- If applicable, lower implements to the ground to ensure fundamentally stable parking.

DANGER: Never leave a running vehicle unattended