



# GROUP SAFETY STANDARD 4 MOBILE PLANT MANAGEMENT

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05/07/2019	By working group comprising site, exploration and corporate representatives	<p>Comprehensive rewrite and consolidation of the following IGO standards:</p> <ul style="list-style-type: none"><li>• GSS 4 - Elevated Work Platforms</li><li>• GSS 21 – Mobile Plant &amp; Equipment</li></ul>	ELT	2



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## 1. INTENT

This standard details IGO's minimum requirements for the selection, safe operations and maintenance for mobile plant.

## 2. APPLICATION

This standard shall apply to all IGO sites and exploration, construction and development projects (hereafter referred to collectively as 'sites') and to all IGO employees and contractors. All IGO sites shall comply with the provisions of this standard, and all relevant legislative requirements for the location.

Where the contractor has an existing process that meets or exceeds the requirements of this standard, the contractor may request authorisation from IGO to use their process in lieu of those outlined in this standard.

Where this standard identifies design standards, codes of practice, and Australian and New Zealand Standards, IGO's international sites shall ensure recognised industry standards relevant to their location meet or exceed the minimum requirements established through this standard and applicable legislation for their jurisdiction.

Hereafter, light vehicles, heavy vehicles, mobile plant and equipment, Elevated Work Platforms (EWPs), Integrated Tool Carrier (ITC) mounted work platforms and similar devices (i.e. any equipment combination that is functionally equivalent with the definition of an EWP as defined in Australian Standard Australian Standard AS 1418 Cranes, hoists and winches) are collectively referred to as 'mobile plant'.

**Note:** For information on cranes and lifting equipment, refer to **IGO GSS 6 – Cranes and Lifting Operations**.

**Note:** For information on Traffic management, refer to **IGO GSS 9 – Traffic Management**.

## 3. MOBILE PLANT ON IGO SITES

### 3.1 Responsibility for Managing Site Access

It is the responsibility of the IGO employee hiring, buying or otherwise bringing mobile plant (e.g. as part of a service contract) to an IGO site to take reasonable steps to confirm that the mobile plant; a) conforms with the law and applicable Australian Standards (or equivalent), b) conforms with this standard, c) is fit for its intended purpose and d) is captured in the site's register of mobile plant. In making this assessment, the employee shall consult with the site's 'designated competent person' for mobile plant (section 3.3) if they are in doubt. This assessment must be completed before the mobile plant enters site.

### 3.2 Register of Mobile Plant

Sites shall maintain a register of all mobile plant on site. The register shall also capture relevant management and maintenance data such as certification expiry dates, maintenance schedules, etcetera, as applicable. The register shall specifically denote those items of plant that are defined as 'registered plant' in law. Copies of statutory authority registration shall be readily retrievable upon request (see Section 7).

### 3.3 Designated Competent Person

Given the significant risks posed by mobile plant, it is the responsibility of the Site Manger<sup>1</sup> to nominate a designated competent person(s) for mobile plant. It is recommended that competent persons be formally appointed and that their responsibilities arising from this standard be captured in the Position Description.

The designated competent person is responsible for ensuring that they:

- are familiar conforms with the law and Australian Standards (or equivalent) as applicable to mobile plant, and the requirements of this standard
- are familiar with and have ready access to the site's Register of Mobile Plant register
- coordinate or otherwise ensure the completion of periodic compliance audits and or inspections of mobile plant on site.

### 3.4 Fit for Purpose Assessments

All mobile plant utilised on IGO managed sites shall be 'fit for purpose'. This assessment shall be made by the IGO employee hiring, buying or otherwise bringing mobile plant (e.g. as part of a service contract) to an IGO site. In making this assessment, in addition to consulting with the Designated Competent Person', consideration must be given to the following:

- the intended use of the mobile plant
- reasonably foreseeable uses of the mobile plant
- the environmental conditions in which the mobile plant will be used
- the purpose for which the Original Equipment Manufacturer (OEM) intended the mobile plant to be used
- the mobile plant's operational limitations and constraints as defined by the OEM.

A written record of the Fit for Purpose Assessment shall be prepared and record (section 7).

### 3.5 Mobile Plant Management

Sites shall ensure that all mobile plant on site is operated and maintained, as a minimum, in accord with OEM instructions or suitably risk assessed and evaluated practices, applicable Australian standards (or equivalent) and the Model Code of Practice: Managing risks of plant in the workplace (2018). The operation of mobile plant is addressed in **IGO GSS 9 - Traffic and Road Travel Management**. The maintenance of mobile plant is addressed in section 4.

**Note:** No item of mobile plant shall be used as a crane or load lifting device unless it is registered as such.

### 3.6 IGO Mobile Plant Specifications

The following items of mobile plant are subject to an IGO specification:

- underground vehicles (see Appendix 1)
- surface mine site vehicles & mobile plant (see Appendix 2)
- Elevated Work Platforms and functional equivalents (see Appendix 3)
- lifting equipment (Refer to **IGO GSS 6 – Lifting Operations**)
- vehicles used in remote areas (refer to **IGO GSS 15 - Lone & Isolated Workers**)

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<sup>1</sup> Registered Manager or General Manager

- utility task vehicles (Including All Terrain Vehicles [ATVs] and similar) (see Appendix 1).

Where an item of plant is found not to conform with a relevant IGO Mobile Plant Specification, it must not be used on an IGO site.

#### 4. MAINTENANCE AND MANAGEMENT REQUIREMENTS

All mobile plant and equipment must be maintained to ensure it remains fit for purpose. Site's shall establish and maintain a formal preventive maintenance, inspection and testing program. This program shall detail the requirements for, but not be limited to:

- inspection types, frequencies and the requirements for maintaining records of inspections (see section 7) e.g. pre-start inspections, statutory maintenance inspections etc.
- requirements for certification and statutory inspections
- process to be used to identify, mark or colour code items of equipment that are subject to wear and frequent replacement
- ensuring that the servicing of equipment is undertaken in accordance with manufacturer specifications and in compliance with legal and other requirements
- standardised practices to be implemented for pre-use testing following major repairs or modification to the equipment, e.g.
  - to ensure that the vehicle, plant or equipment cannot be started or inadvertently moved through stored energy during servicing
  - waste, leak and spill management
- providing details of information that is to be included in the mobile plant register, lifting equipment register etc
- maintenance record keeping (see section 7).

Tyres and rims of heavy mobile plant, and quick hitches, pose significant workplace risks if mismanaged. All sites shall adhere to IGO requirements for a) quick hitches as specified in Appendix 4 and b) heavy vehicle tyre selection and heavy vehicle tyre and rim maintenance as specified in Appendix 5.

**Note: Sites shall ensure that mobile plant is not materially modified in the absence of consultation with the OEM or otherwise prohibited in law.**

#### 5. DEFECTIVE MOBILE PLANT

Where mobile plant is found to be defective, they shall be placed "Out of Service" in accordance with the site or project specific Isolation Management System. For more information refer to **IGO GSG 1 – Isolation Overview**.

#### 6. TRAINING AND COMPETENCY

General requirements for training and competency assessment for the use of mobile plant is addressed in the **IGO GSS 9 -Traffic Management**.

Additional competency requirements for specific mobile plant management include:

- dedicated spotters for EWP operation must hold the relevant High-Risk Work license and competency for the equipment being attended in order to operate the ground controls in an emergency

- heavy tyre selection and rim maintenance (see Appendix 5).

## 7. RECORDS

A documented electronic record of all 'fitness for purpose' assessments and maintenance records of Mobile Plant shall be kept and readily retrievable upon request.

Sites and projects (and the person designated as responsible for exploration fleet management) must retain hard copies or have access to electronic copies of the following documents:

- manufacturers operating manuals
- manufacturers maintenance manuals
- manufacturers parts books
- specifications and data obtained from testing of the plant
- statutory plant registration numbers
- records as required for registered plant as a piece of plant, including those relating to modifications
- retention test certificates e.g. lifting gear
- information regarding damage and repairs
- maintenance and availability of routine, annual and major inspections and test reports
- documentation stating that the mobile plant has been inspected by a competent person, is in a safe and satisfactory condition i.e. 'fit for purpose'.

## 8. RELATED DOCUMENTS

### 8.1 Common Management System Standards

- CMSS 3 - Risk Management
- CMSS 6 - Training & Competency
- CMSS 12 - Management of Change

### 8.2 HSES Standards and Guidelines

- IGO GSG 1 - Isolation Overview
- IGO GSS 3 – Safety Risk Management
- IGO GSS 6 - Cranes and Lifting Operations
- IGO GSS 14 - Defined Hazardous Work and Permit to Work
- IGO GSS 19 - Electrical Safety

### 8.3 External Standards

- AS 1418: Set 2103 Cranes, hoists and winches set
- AS 2294: Earth-moving machinery – Protective structures.
- AS 2664: Earthmoving machinery – seat belts and seat belt anchorages
- AS 2958.1: Earth-moving machinery - Safety - Wheeled machines - Brakes
- AS 5062: Fire protection for mobile and transportable equipment
- ISO 10263-1 to ISO 10263-6: Earth-moving machinery – Operator Enclosure Environment
- ISO 11112: Earth-moving machinery - Operator's seat
- ISO 13459: Earth-moving machinery – Trainer seat

- ISO 6405: Earth-Moving Machinery— Instrumentation and Operator’s Controls
- Model Code of Practice: Managing risks of plant in the workplace (2018)

# APPENDIX 1: UNDERGROUND MOBILE PLANT

Beyond conforming to Australian Standards and the local regulatory requirements, all underground vehicles must conform to the following standards.

Note: For specific information on EWPS, integrated tool carriers with mounted work platforms or similar devices, refer to Appendix 3.

## General Requirements for Underground Mobile Plant

Item	Requirement	Requirement Notes
Noise: - Mobile Plant / vehicles - Operators' exposure (Laeq.8h)	Noise Exposure	<ul style="list-style-type: none"> <li>Mandatory compliance to <b>IGO Noise Control Policy</b>.</li> </ul>
	Assessment	<ul style="list-style-type: none"> <li>assessed for a cycle of operating conditions in accordance with <b>AS 1269: Occupational Noise Management</b></li> <li>measurements shall be taken with the doors and windows closed and the air conditioning system operating at maximum speed.</li> </ul>
	Documented records	<ul style="list-style-type: none"> <li>Supplier to provide all information related to noise testing on the completion of commissioning procedures.</li> </ul>
Fire Control	All units of diesel engine mining equipment	<ul style="list-style-type: none"> <li>fitted with an AFFF<sup>2</sup> or equivalently effective fire suppression system:                             <ul style="list-style-type: none"> <li>In engine compartments</li> <li>Other likely combustion compartments or surfaces</li> </ul> </li> <li>AFFF system include a detection tube allowing for automatic activation</li> <li>fitted with at least two (2) manually operated fire suppression system actuators:                             <ul style="list-style-type: none"> <li>one in the cabin</li> <li>the other(s) at an external position(s) readily accessible from ground level</li> </ul> </li> <li>comply with <b>AS 5062 Fire protection for mobile and transportable equipment</b>.</li> </ul>
	If system pressure falls below the manufacturer's recommended minimum pressure	<ul style="list-style-type: none"> <li>The system should not allow the engine to start, or to keep running.</li> </ul>
	In-built fire suppression system is actuated by any means	<ul style="list-style-type: none"> <li>the engine should automatically shut down</li> <li>installation for approximate 5-15 seconds delay (operator escape).</li> </ul> <p>Note (1) A fixed suppression system does not substitute the requirements for portable fire extinguishers.</p>
	Remote control operated equipment	<p>Fitted with fire suppression systems which may be actuated by any one (1) of three (3) mechanisms ALL of which should be installed:</p> <ol style="list-style-type: none"> <li>automatic actuation</li> <li>remote control actuation</li> <li>manual control actuation.</li> </ol>

<sup>2</sup> Aqueous Film Forming Foam (AFFF)



Item	Requirement	Requirement Notes
Fire Control (cont)	Visible indication	<ul style="list-style-type: none"> <li>provided to show the operational readiness of the system to Operator</li> <li>visible from normal operating positions</li> </ul> <p>Note (2) Does not apply to remote control panels.</p>
	If electrical power loss	<ul style="list-style-type: none"> <li>system should still be operational</li> <li>wiring system should be capable of maintaining adequate supply to the equipment when exposed to fire.</li> </ul>
	Fire suppression systems installations should be interlocked	<p>Interlocked so that the:</p> <ul style="list-style-type: none"> <li>equipment cannot be operated with disabled or faulty fire suppression system</li> <li>interlock may be able to be over ridden by an override switch that requires constant hand operation (e.g. to allow the plant to be moved to a safer location).</li> </ul>
	Adequate portable fire extinguishers	<ul style="list-style-type: none"> <li>comply with <b>AS 2444 Portable fire extinguishers – Selection and location</b></li> <li>should be fitted, thoroughly cleaned, inspected, serviced, and maintained on a regular basis not less than the OEM's recommendation.</li> </ul>
	Documented records	<ul style="list-style-type: none"> <li>testing and commissioning certificate is to be supplied for all fire control installations</li> <li>adequate maintenance and servicing documentation shall be provided by the Supplier and IGO maintenance department.</li> </ul>
Emission Control	Test Record of exhaust gas emissions for: <ul style="list-style-type: none"> <li>Carbon Monoxide</li> <li>Nitrous fumes</li> <li>Diesel Particulate Matter Emissions</li> </ul>	<ul style="list-style-type: none"> <li>Refer to <b>IGO GSS 8 – Workplace Ventilation</b></li> </ul>
	All underground heavy diesel equipment	Must be fitted with Mammoth Diesel Particulate Filter (or equivalently effective filter).
Operator Cabin	Internal dimensions	<ul style="list-style-type: none"> <li>shall comply with: <ul style="list-style-type: none"> <li><b>ISO 10263-1 to ISO 10263-6 Earth-moving machinery – Operator Enclosure Environment</b></li> <li><b>AS 2294 Earth-moving machinery – Protective structures</b></li> </ul> </li> <li>compartment designed to prevent injury to the operator from accidental contact with sidewalls or back</li> <li>air-conditioned.</li> </ul>
Operator Cabin (Cont.)	Suspension seat	<ul style="list-style-type: none"> <li>installed to reduce vibration to lowest practical level when measured in accordance with <b>ISO 11112 Earth – moving machinery – Operator seat</b></li> <li>must allow the operator to comfortably wear a self-rescuer and a cap lamp battery while restrained with the seat belt</li> <li>must be adjustable (or self-compensating) for Operator's body weight, height and depth.</li> </ul>

Item	Requirement	Requirement Notes
	Retractable seat belt	<ul style="list-style-type: none"> <li>required for all persons in the mobile plant</li> <li>installed in accordance with <b>AS 2664 Earthmoving machinery – seat belts and seat belt anchorages.</b></li> </ul>
	Training seat	<ul style="list-style-type: none"> <li>Comply <b>ISO 13459 Earth-moving machinery – Trainer seat.</b></li> </ul>
	Equipment design	<p>The equipment shall be designed:</p> <ul style="list-style-type: none"> <li>so that it cannot be operated unless the operator is in the control position</li> <li>to prevent uncontrolled movement when the engine is started.</li> </ul>
FOPS & ROPS <sup>3</sup>	Manufacturer confirmation plate	<ul style="list-style-type: none"> <li>Plate attached by Manufacturer to the protective structure confirming it is the same as a prototype tested in accordance with <b>AS2294 Earth-Moving machinery – protective structures.</b></li> </ul>
	Documented Records	<ul style="list-style-type: none"> <li>test report certification supplied with each ROPS &amp; FOPS confirming test compliance in accordance with <b>AS 2294.2</b> or <b>AS 2294.3</b></li> <li>IGO requires the qualification and status of the testing officer a copy of each certificate shall be retained by the manufacturer</li> </ul>
Brake Speed	Brake System	<ul style="list-style-type: none"> <li>Mandatory compliance with the design and performance requirements of <b>AS 2958.1 Earth-moving machinery - Safety - Wheeled machines – Brakes.</b></li> </ul>
Electrical Systems	Wiring and cables	<ul style="list-style-type: none"> <li>triple insulation of wiring where wiring runs through bulk heads</li> <li>where cables pass through bulkheads, must be: <ul style="list-style-type: none"> <li>either protected from wear by rubber grommets</li> <li>have positive connection on either side of the bulkhead</li> </ul> </li> <li>where the cables are associated with electrical power generated by the engine system installation shall comply with <b>AS 4242 Earth-moving machinery and ancillary equipment for use in mines—Electrical wiring systems at extra-low voltage</b></li> <li>all other cable and electrical installations shall comply with the requirements of <b>AS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules).</b></li> </ul>
	Circuitry	<ul style="list-style-type: none"> <li>all electrical circuits shall be protected against over current by circuit breakers</li> <li>designed and installed so that the opening of the switch will stop the machine and isolate the electrical power</li> <li>a circuit breaker shall be provided between the battery and the starter motor to protect against overcurrent.</li> </ul>
	Hosing	<ul style="list-style-type: none"> <li>strapping of electrical harnesses to hydraulic and fuel lines is prohibited</li> <li>electrical wiring to be run independent of all hosing</li> </ul>
Electrical Systems (cont)	Battery	<ul style="list-style-type: none"> <li>shall be housed in a compartment that provides adequate clearance between the battery terminals and any lid</li> <li>an insulating cover shall be provided on the underside of any cover which is over battery terminals</li> <li>battery compartment shall be located so that it does not form part of an access pathway or platform during maintenance.</li> </ul>
	Jump start provisions	<ul style="list-style-type: none"> <li>Shall be provided in a location that encourages their use.</li> </ul>
	Isolations	<ul style="list-style-type: none"> <li>Mandatory requirement to utilise four pole lockable isolators.</li> </ul>
Explosive Carrying Vehicles	Identification	<ul style="list-style-type: none"> <li>Refer to jurisdictional legislated requirements.</li> </ul>

<sup>3</sup> Roll-Over Protective Structure (ROPS) or Falling-Object Protective Structure (FOPS)

Item	Requirement	Requirement Notes
UG Heavy Mine Vehicles <sup>4</sup> (weighing more than 2 tonne)	Build Specification	<ul style="list-style-type: none"> <li>• power to run solenoid on fuel pump</li> <li>• decals to define all lights, gauges and controls</li> <li>• all hydraulic hosing in engine compartment are to be shrouded</li> <li>• steel braided fuel lines to SAE 100R5 (Up to -12), refer to <b>AS 3791 Hydraulic hose</b></li> <li>• all fuel water separators of a non-flammable material and no glass bowls</li> <li>• standard fuel caps to be non-ventilated</li> <li>• canvas seat covers or the equivalent</li> <li>• IGO logo and asset numbers, (High vis asset # black on green background)</li> <li>• 50MM Scotch 3M yellow reflective striping fitted as per IGO specification</li> <li>• reversing camera</li> <li>• batteries to be dry cell type</li> <li>• transmission electronically locked to 3rd gear</li> <li>• jump start system</li> <li>• two-way radio</li> <li>• one amber strobe or flashing light on an independent light circuit such that the light can be left on when the machine is turn off</li> <li>• interlock to prevent tramming whilst high voltage is activated.</li> </ul>
	Isolators	<ul style="list-style-type: none"> <li>• lockable battery isolators which will independently shutdown the engine and isolate all electrical power</li> <li>• lockable starter motor isolator to prevent inadvertent engine start-up during live electrical testing and troubleshooting</li> <li>• AFFF isolators</li> <li>• tail lights to be illuminated at all times when lockable battery isolator is on.</li> </ul>
UG Heavy Mine Vehicles <sup>5</sup> (weighing more than 2 tonne)	Brakes	<ul style="list-style-type: none"> <li>• brake system to be fail safe, spring applied hydraulic release</li> <li>• a gauge that indicates residual braking pressure is to be fitted inside the operator's cabin.</li> <li>• park brake indicator light in cab</li> <li>• brake lights on the rear</li> <li>• brake system residual pressure indicators or gauges in operator's cab</li> <li>• ABA Brakes</li> <li>• when the park brake is applied, the rear brake lights will light up.</li> </ul>
	Filler	<ul style="list-style-type: none"> <li>• In addition to standard filler, Wiggins Fast Fill system.</li> </ul>

<sup>4</sup> This excludes light vehicles such as a Toyota Landcruiser which is ≥2 tonnes

<sup>5</sup> This excludes light vehicles such as a Toyota Landcruiser which is ≥2 tonnes

Item	Requirement	Requirement Notes
UG Heavy Mine Vehicles (weighing more than 2 tonne) (cont)	Guards/ Shields/ Covers/ protective coatings	<ul style="list-style-type: none"> <li>• should be fitted to prevent damage to components and personnel and comply to all relevant standards</li> <li>• guards, shields or protective coatings are to be fitted in the vicinity of the exhaust and turbocharger to prevent fuel or oil spraying on hot surfaces provided that they don't trap fuel or oil around the exhaust or turbocharger</li> <li>• shielding, exhaust lagging or ceramic coating to cover all turbo charger and exhaust systems (LVs exempt)</li> <li>• engine compartment should be effectively fire shielded from the operators compartment and from the means of operator egress</li> <li>• if not constructed from steel, covers, shields or guards shall be constructed from fire resistant material if the failure of the material may place an operator at risk</li> <li>• selection of guards that can only be removed with the use of tools. Wherever possible, movable guards should remain hinged to the vehicle when open.</li> </ul>
Emergency Response Vehicles		Specifications based on assessment of site-specific risks.

## APPENDIX 2: SURFACE MINE VEHICLES AND MOBILE PLANT

All surface mine vehicles and plant used on IGO mine sites must conform to the following requirements (unless otherwise approved by the Registered Manager):

Item	Requirement
All surface mine vehicles and plant	<p>Mandatory:</p> <ul style="list-style-type: none"> <li>• all LVs and HVs that are commonly used on public roads must meet a standard required to enable registration for use on a public road (even if it is not registered)</li> <li>• lockable battery isolators which will independently shutdown the engine and isolate all electrical power</li> <li>• dry powder fire extinguishers for manual use</li> <li>• IGO logo, asset numbers and call sign identifiers</li> <li>• two-way radio</li> <li>• one amber strobe or flashing light on an independent light circuit such that the light can be left on when the machine is turn off</li> <li>• air-conditioned operator cabins.</li> </ul>
Utility Task Vehicles (taken to include All Terrain Vehicles [ATVs] and similar)	<ul style="list-style-type: none"> <li>• the requirement for, selection and procurement of UTVs must be:               <ul style="list-style-type: none"> <li>– subject to a formal documented risk assessment, and</li> <li>– approved by the relevant IGO Registered / General Manager</li> </ul> </li> <li>• all UTVs used on IGO sites and as used by IGO’s exploration team (including contractors) must be fitted with:               <ul style="list-style-type: none"> <li>– a battery isolator to enable positive isolation of the engine</li> <li>– a jump-starting system (e.g. with Anderson plug or similar)</li> <li>– a dry powder fire extinguisher</li> <li>– leg guards and foot plates that minimize the risk of ‘staking-type’ injuries</li> <li>– a suitable roll-over crush protection device.</li> </ul> </li> </ul>
Emergency Response Vehicles	<ul style="list-style-type: none"> <li>• Specifications based on assessment of site-specific risks.</li> </ul>
Forklifts and Bobcats	<ul style="list-style-type: none"> <li>• all forklifts and bobcats shall be fitted with approved seat belts, which shall be worn by operators at all times when the equipment is being operated</li> <li>• all forklifts should be fitted with a neutral switch, which prevents the unit being started in gear.</li> </ul>

## APPENDIX 3: ELEVATED WORK PLATFORMS AND FUNCTIONAL EQUIVALENTS

On IGO managed sites, all EWPs and Functional Equivalents must conform to **AS 1418 Cranes, hoists and winches**. Specifically, all combinations of ITC and man cage or work platform must comply with Australian Standard **AS 1418.10 Cranes, hoists and winches – Mobile elevated work platforms**.

Requirement	Requirement Notes
Documented Records	<ul style="list-style-type: none"> <li>all EWPs and Functional Equivalents in Australia must be registered with Work Safe Australia (and display a work safe registration number (premobilisation requirement))</li> </ul> <p>Note (3) It should not just be the work platform that is registered — the complete assembled machine (when configured as an EWP) should comply with AS 1418.10 and be registered as a complete functional unit.</p> <ul style="list-style-type: none"> <li>where regulated, shall be recorded site Classified Plant Management Record Book</li> <li>EWPs and Functional Equivalents must be maintained in accord with OEM instructions</li> <li>all maintenance work must be recorded in the Maintenance Logbook affixed to the EWP or functional equivalent</li> <li>Operator be able to readily retrieve:               <ul style="list-style-type: none"> <li>An EWP Log Book (also known as a Grey Card)</li> <li>Operators Manual.</li> </ul> </li> </ul>
Controls	<ul style="list-style-type: none"> <li>Shall be dual controlled (enables lowering of the platform from both within the basket and from ground level).</li> </ul> <p>Note (4) Under normal operation the lowering and raising of the work platform is performed by the person within the basket.</p>
Safe Work Procedures	<ul style="list-style-type: none"> <li>should be consistent with OEM Operators Instructions Manual and address the following high risks associated with operating an EWP and functional equivalents:               <ul style="list-style-type: none"> <li>quick hitches (maintained and checked before use as per Appendix 4)</li> <li>restricted work areas - crushing</li> <li>tramming with personal</li> <li>fall protection system</li> <li>maintenance</li> <li>emergency procedures</li> </ul> </li> <li>mandatory pre-inspection completed by operator prior to use.</li> </ul>
Used underground	<ul style="list-style-type: none"> <li>fitted with devices to reduce the risk of individuals working in work platforms from being crushed against the backs (Mandatory)</li> <li>the crush zone for overhead protection shall be a minimum of 400mm, measured from the highest point of the work platforms hand railing or cage.</li> </ul>
Fall protection systems	<ul style="list-style-type: none"> <li>all personnel on the platform of an EWP shall utilise safety harness and lanyard incorporating a shock absorber that complies with <b>AS/NZS1891 Industrial fall-arrest systems and devices</b></li> <li>the lanyard shall be kept to a minimum practical length and secured to an approved anchor point at all times.</li> </ul> <p>Refer to <b>IGO GSS 14 – Defined Hazardous Works and Permit to Work</b> for working at heights personal protective equipment requirements.</p>

## APPENDIX 4: QUICK HITCHES

Quick hitch devices present particular compliance and duty of care issues for duty holders and regulators. These devices are commonly found on, integrated tool carriers, telescopic handlers and other multipurpose machines. This article reminds duty holders of their legislative obligations and outlines the WA Department of Mines and Petroleum's policy and approach to quick hitches.

### What are quick hitches?

A quick hitch or quick coupler is an engagement and latching device that allows attachments to be quickly connected to the boom of an integrated tool carrier (ITC), telescopic handler (telehandler) or other multipurpose mobile plant. Quick hitches are in common use throughout the construction and mining industries. The commonly used pin-system quick hitches connect to standard pivot pins (e.g. On bucket attachments), allowing for a wide range of attachments to be used. They may be categorised into three broad types:

- manual hitches -require the operator to leave the cab to manually latch and lock (with a pin or bar)
- semi-automatic hitches - have hydraulic latching with manual insertion of a safety locking pin by the operator
- fully automatic hitches-fully automatic or hydraulically operated latching and locking from the operator's cab.

### Associated Risks

When adequately designed, maintained and operated, quick hitches can be fit for purpose and safe to use. However, there is a history of incidents in Australia and overseas involving numerous types of quick hitch. The use of quick hitches on mobile plant, in particular, can be an issue when they are configured with:

- jibs for lifting suspended loads (i.e. functions as a crane)
- work platforms for lifting personnel above a support surface (i.e. functions as a mobile elevating work platform).

A missing or failed retaining pin or bar is a common theme of the incident reports. Operator competency and a lack of adequate inspection and maintenance are commonly identified as causal factors.

Quick hitches must be of the correct size, type and capacity for the machine and the attachment, and is otherwise fit for purpose and in serviceable condition.

The retaining or locking pin must always be available on the machine

All interlocks systems must be maintained and fully functional in accordance with OEM Specification.

**Note:** Loose pins or clips that may be easily misplaced should be attached to the quick hitch or otherwise retained in a suitable fashion.

**Note:** Avoid the ad hoc replacement of pins with substitutes (e.g. long bolts) and do not modify hitches and pins without the OEM's approval.

**Note:** The SWP or JSEA must describe the process for checking and ensuring that the attachment is correctly latched and locked before commencing work.

## APPENDIX 5: HEAVY TYRE SELECTION & RIM MAINTENANCE

Heavy vehicle tyres pose a significant safety risk, with the Australian Standards (as well as many jurisdictions) treating the assembled and inflated tyre and rim unit as a pressurised vessel.

Only competent personnel who have completed **The Goodyear Tyre and Rim Inspection and Fitting course (or equivalent certificate)** and have demonstrated all the skills and knowledge required to meet that standard may carry out duties that include the fitting, inspecting, maintaining of tyres and rims. Training records shall be maintained in InTuition.

The competent person shall consider the following matters when selecting heavy vehicle tyres:

- site conditions
- tyre duty
- machine or plant OEM guidance and tyre OEM guidance.

	Requirement	Requirement Notes																												
HV Tyre Selection	Site conditions	<ul style="list-style-type: none"> <li>• Should be selected to suit worst conditions likely to be encountered</li> <li>• Factors affecting the life, reliability and serviceability of tyre include:                             <table border="1"> <thead> <tr> <th>Factors</th> <th>Considerations</th> </tr> </thead> <tbody> <tr> <td rowspan="7">Where the vehicle will be operated</td> <td>• temperature / climate</td> </tr> <tr> <td>• type of surface</td> </tr> <tr> <td>• condition of surface</td> </tr> <tr> <td>• road gradient</td> </tr> <tr> <td>• road camber/profile</td> </tr> <tr> <td>• quarry or underground</td> </tr> <tr> <td>• type and condition of dumping.</td> </tr> <tr> <td rowspan="7">How the vehicle will be operated</td> <td>• loading areas</td> </tr> <tr> <td>• turn radii</td> </tr> <tr> <td>• remote control use</td> </tr> <tr> <td>• average and maximum speeds</td> </tr> <tr> <td>• maximum wheel load</td> </tr> <tr> <td>• average load</td> </tr> <tr> <td>• TKPH</td> </tr> <tr> <td>• weight distribution</td> </tr> <tr> <td rowspan="2">The type of machine</td> <td>• length of cycles empty/laden</td> </tr> <tr> <td>• shift duration</td> </tr> <tr> <td></td> <td></td> <td>• No. of cycles/shift.</td> </tr> <tr> <td></td> <td></td> <td> <ul style="list-style-type: none"> <li>• make or model</li> <li>• OEM recommended tyre size/ rating.</li> </ul> </td> </tr> </tbody> </table> </li></ul>	Factors	Considerations	Where the vehicle will be operated	• temperature / climate	• type of surface	• condition of surface	• road gradient	• road camber/profile	• quarry or underground	• type and condition of dumping.	How the vehicle will be operated	• loading areas	• turn radii	• remote control use	• average and maximum speeds	• maximum wheel load	• average load	• TKPH	• weight distribution	The type of machine	• length of cycles empty/laden	• shift duration			• No. of cycles/shift.			<ul style="list-style-type: none"> <li>• make or model</li> <li>• OEM recommended tyre size/ rating.</li> </ul>
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	Requirement	Requirement Notes
HV Tyre selection (cont)	Tyre duty (e.g. tyre construction, tread design, rubber compound, TKPH rating)	<p>Assess site conditions to select tyres. Assessment achieved by:</p> <ul style="list-style-type: none"> <li>investigating site maintenance records for tyres</li> <li>reviewing failed tyres</li> <li>interviewing experienced tyre maintenance personnel</li> <li>gathering data through monitoring and data logging technologies mounted on mobile plant (e.g. technologies that monitor and record tyre pressure, temperature, TKPH, load, speed and other parameters)</li> <li>simulation of proposed operations as used in min planning.</li> </ul>
	Plant and tyre OEM guidance	<ul style="list-style-type: none"> <li>must not be operated beyond the limits of tyre load rating, speed and TKPH</li> <li>optimising tyre selection and maximising the service of tyres can have significant consequences for safety.</li> </ul>
Maintenance	Heavy Vehicle Tyre & Rim Maintenance Safe Work Procedures	<p>Each IGO site must have a set of Safe Work Procedures that address the following:</p> <ul style="list-style-type: none"> <li>removal and deflation of tyre and rim assemblies</li> <li>chocking</li> <li>jacking</li> <li>deflation prior to loosening attachment bolts or nuts</li> <li>use of hydraulic bead breaking tools</li> <li>inflation and assembly</li> <li>pressure maintenance</li> <li>inspection of in-service tyres and rims</li> <li>tyre matching, alignment and rotation</li> <li>tyre handling &amp; forklift use</li> <li>tyre storage</li> <li>rim storage</li> <li>tyre re-use</li> <li>tyre disposal</li> <li>rim identification</li> <li>rim integrity and rim inspection periods.</li> </ul>
	JSEA shall be completed prior to any work carried out on Tyres & Rims where the task is not specifically addressed in a Safe Work Procedure	<p>In completing a JSEA, the following hazards should be considered:</p> <ul style="list-style-type: none"> <li>handling and working with tyres, wheels and rims</li> <li>tyre fires, bursts and explosions when tyres are in service</li> <li>loss of control of vehicle due to tyre failure.</li> <li>sudden release of stored pressure energy — leading to projectiles (e.g. rim components, rocks) and percussive shock</li> <li>compressed air or other gases (e.g. nitrogen)</li> <li>noise</li> <li>handling heavy objects</li> <li>working with or operating heavy equipment</li> <li>heat and fire</li> <li>fuels and chemicals</li> <li>pyrolysis or diffusion — leading to explosions.</li> </ul>

	Requirement	Requirement Notes
Maintenance	Tyre and Rim Repairs	<ul style="list-style-type: none"> <li>• tyre &amp; RIM repairs and regrooving shall only be completed by suitably qualified third-party service providers</li> <li>• where practicable, the warranties on repairs to all tyres and rims shall be unconditional and not to limit the service capability</li> <li>• where this is not practicable, and a conditional repair is undertaken, the conditions of use shall be specified</li> <li>• tyres shall be marked with a permanent “X” symbol on both sidewalls as <b>AS 4457.2 Earth-moving machinery - Off-the-road wheels, rims and tyres - Maintenance and repair - Tyres</b> the symbols shall have the following meaning: <ul style="list-style-type: none"> <li>- X = Minor Repair</li> <li>- XX = Intermediate Repair</li> <li>- XXX = Major Repair</li> </ul> </li> </ul> <p>Note (5) Repairs with the symbols XX and XXX are to be fitted to the rear only as a risk mitigation for the equipment operator. Sidewall repairs would be best positioned to face equipment chassis or the other tyre of a dual mounting</p>
	Regrooving	<ul style="list-style-type: none"> <li>• re-grooving is only permitted when authorised by the tyre manufacturer or re-treader and is carried out by an authorised re-groover</li> <li>• re-grooved tyres can be fitted to any position, except in the case of re-grooved retreads</li> <li>• retreads and re-lug retreads and re-lugs are not permitted on steering axles. This does not apply to graders</li> <li>• the retreaders brand is to be marked on both sides of the tyre followed by X markings used to indicate the number of times the tyre has been retreaded.</li> </ul>