



PLANT AND EQUIPMENT MANAGEMENT

Core Operating Procedure

Business Management Systems (BMS) Group

Document No.: HEQ-PCE-00934

**POWERING FUTURES,
CREATING LEGACIES.**

DOCUMENT VERSION CONTROL

Note: Most recent change to this document is highlighted in grey.

Rev. No.	Rev. Date	Details of Revision	Approved by
23	15/08/2025	Update to Sections 4, 5.1, 5.2.1, 5.2.2, 7.2, 8, 8.1, 11.1, 11.4, 12, 14, 15, 15.1, 17, 19, 21, and 22. Added Section 16. Cutting of Kerbs, Slabs, Asphalt etc. Removed Section 17. Management of Respiratory Crystalline Silica.	Zach Humphrey
22	29/01/2025	Update to Section 6.1, 6.3, 7.1, and 7.3.	Zach Humphrey
21	17/10/2024	Update to Section 9.	Tanya Winter
20	17/05/2024	Update to Section 4, 5.1, 7.2, 7.3, 9, 10.1, 19, 22, 23.	Brian Olsen
19	05/12/2023	Amendments to Sections 4, 5.1, 7.3 and addition of Section 17 Management of Respiratory Crystalline Silica.	Brian Olsen
18	18/10/2021	Addition of Section 5.2 – Purchase of Quick-Cut Saw and Grinder.	Brian Olsen
17	11/12/2020	Inclusion of Section 18 and update to Section 21 References.	Brian Olsen
16	25/06/2020	Amendments to Sections 4, 5.1, 6.3, 7.1, 7.3, 8, 13, 14, 15, 15.1, 17.1 and 21.	Brian Olsen
15	18/04/2018	Amendments to Sections 7.1, 7.2, 10, 15, 15.1.	Brian Olsen
14	17/02/2017	Amendments to Sections 10.4, 12, 13, 14, 15, 16.	Brian Olsen
13	28/01/2016	Amendments to Sections: 7.1 Inspection of Plant and Equipment, 7.2 Daily Pre-start Inspection, 8 People – Plant Interaction, 9 General Mobile Plant Requirements, 10.1 Use of Quick Hitch Devices, 10.4 Loading and Unloading of Material Deliveries, 13 Star Pickets, 14 Quick Cut Saws, 15 Fixed Blade Knives, 16 Chain of Responsibility.	Brian Olsen
12	04/05/2015	Inclusion of Document Version Control table and update to document permissions.	Brian Olsen
11	13/02/2015	Change to Controller (Spotter) PPE from pink vest to pink hard hat.	Brian Olsen
10	08/01/2015	Formatting changes.	Brian Olsen
9	09/09/2014	Inclusion of section regarding controllers (spotters) and format changes.	Brian Olsen
8	10/06/2014	'Note' paragraph removed from the end of Section 7.2.	Brian Olsen
7	02/06/2014	Content edits to Section 10.1. Wording around the crowning of attachment to check they are secure (quick hitch and safety pins).	Brian Olsen
6	27/05/2014	Edit to the note in Section 10.1 inclusion of Subcontractor Safety and Environment Infringement Notice	Brian Olsen

Rev. No.	Rev. Date	Details of Revision	Approved by
5	19/05/2014	Content inclusions around SOPs, training and the use and implantation of 2-way radios, formatting edits.	Brian Olsen
4	31/10/2013	Content amendments to Section 4 Roles and Responsibilities, 6.1 Risks, Section 7 Inspection and Maintenance and Repair, Section 9 General Plant Requirement and Section 12 Instruction and Training.	Brian Olsen
3	01/10/2013	Section 7.4 Falls from Heights, Section 8 People/Plant Interaction and Section 9 General Plant Requirements were added to the document.	Brian Olsen
2	17/06/2013	Added an additional note under Section 9 – Refuelling of Petrol Driven Engines.	Brian Olsen
1	16/04/2013	Inclusion into the BMS.	Brian Olsen

TABLE OF CONTENTS

1. Purpose	6
2. Scope	6
3. Introduction	6
4. Roles and responsibilities	6
5. Purchase, hire, leasing & use	7
5.1. Acceptance for purchase or use	7
5.2. Purchasing of quick-cut and grinders.....	7
5.3. Identification and traceability.....	8
6. Risk assessment and control	8
6.1. Risks	8
6.2. Controls	9
6.3. Safe Operating Procedure (SOP)	9
7. Inspection, maintenance and repair.....	9
7.1. Inspection of plant and equipment	9
7.2. Daily pre-start inspections.....	10
7.3. Maintenance and repair	10
7.4. Falls from heights.....	11
8. People - plant interaction	12
8.1. Controller (spotter)	12
9. General mobile plant requirements.....	13
10. Recovery of bogged vehicles and mobile plant.....	13
10.1. Recovery process	13
11. Earthmoving equipment.....	14
11.1. Use of quick hitch devices	14
11.2. Burst protection	15
11.3. Roll Over Protection System (ROPS)/Falling Object Protection System (FOPS)	16
11.4. Loading and unloading of material deliveries	16
12. Refuelling of petrol driven engines	16
13. Electrical equipment.....	17

14.	Star picket drivers.....	17
15.	Quick cut saw.....	18
15.1.	Cutting of concrete pipes	19
16.	Cutting of kerbs, slabs, asphalt etc.....	20
17.	Fixed-blade knives.....	21
18.	Chain of Responsibility - Delivery/heavy haulage/cartage vehicles.....	21
18.1.	Overview	21
18.2.	Controlling and/or influencing a CoR breach	22
18.3.	Roles and responsibilities	23
19.	Temporary fencing and hoarding.....	24
20.	Instruction and training.....	25
21.	Definitions	25
22.	References	26

1. PURPOSE

The purpose of this Core Operating Procedure (COP) is to outline and detail the processes to ensure the safe and controlled operation of plant and equipment on BMD controlled sites. These operations include, but are not limited to, the use of earthmoving equipment and High-Risk Plant (including concrete pumps and cranes).

2. SCOPE

This document encompasses all BMD Group subsidiaries including BMD Constructions, BMD Urban, BMD Consulting, JMac Constructions, Urbex and Joint Ventures (JVs) where no other procedures or processes are specified. For ease of reference, the term BMD is used throughout this document to reference the BMD Group and its subsidiaries.

This COP covers all BMD owned, hired or contracted plant and equipment inclusive of vehicles / mobile plant (registered or unregistered), cranes, engines, generators, tools (hand or powered), appliances, machinery, and/or components or attachments specifically designed or implemented for use.

3. INTRODUCTION

All tasks involving use or implementation of all or any of the items determined to be plant or equipment are required to be identified and assessed in accordance with pre-assessment, risk and change management principles. The risk management process is applied to identify the necessary systems, level of risk control and other key considerations specific to the activity. The systems of work will incorporate and take into account relevant requirements identified in the project's [Risk Register](#).

4. ROLES AND RESPONSIBILITIES

Project Manager/Supervisor
• Ensure plant and equipment is risk assessed and entered into Plant Assessor (or alternative approved system) prior to project commencement and at task level (unless otherwise deemed acceptable through Pre-Award Evaluation); • Ensure all workers involved in the operation of plant and equipment are competent and understand the requirements of the task and what has been determined within the Work Method Statement (WMS) and Safe Operating Procedure (SOP); • Ensure any defective plant and equipment is withdrawn from service, tagged out and quarantined immediately; • Ensure preventative maintenance, certification and periodic inspection of all plant and equipment is conducted and recorded in Plant Assessor or alternative approved system; • Ensure all workers involved in plant and equipment operations have completed the Working Near Services (Fundamentals) BOLT Module, • Ensure all competent workers involved in the use of plant and equipment (High Risk Operations) are recorded in the Project Training and Competency Register.
HSE Personnel
• Ensure all plant and equipment and their use conform with any legislative requirements; and, • Ensure all defective plant and equipment is recorded and reported immediately.

Workers

- To be competent in the use of plant and equipment and their operations, where determined to be of High-Risk Works have appropriate licences and certificates where prescribed by law, Earthmoving or Particular Crane (EPC) have an RTO issued competency and a completed Operates Skills Assessment (OSA);
- Be involved in risk assessment regarding the operation or working within the vicinity of plant and equipment;
- Complete plant and equipment risk assessments and checklists as required;
- Understand, sign-off and follow any related WMSs, SOP's and Operation Manuals;
- Ensure understanding and conformance to works procedures; and,
- Have completed the Working Near Services (Fundamentals) BOLT Module.

5. PURCHASE, HIRE, LEASING & USE



5.1. Acceptance for purchase or use

- Prior to the acceptance (purchase, hire or leasing) of plant and equipment, the intended and practical use of such items shall be risk assessed (Plant Risk Assessment) to determine if it is fit for purpose (i.e., best tool for the job).
- All plant and equipment must comply with the requirements of relevant State and Federal approved design standards.
- Plant & Equipment Risk Assessments will be completed through the use of Plant Assessor (or alternative approved system), to ensure safety requirements are met, and any potential hazards associated with the purchase, use, maintenance, storage, dismantling/erection and/or disposal are identified and recorded.
- Plant and equipment shall not be purchased or operated before satisfying all BMD Group Commercial Management requirements.
- Plant and equipment shall be supplied with legible documentation written in English (purchase invoices, manufacturing or compliance plates/certificates, High Risk Plant registration, operational manuals, maintenance records, commissioning certification (where required), logbooks/service records, valid risk assessments and training material manuals or equivalent. Where an electronic system is not utilised, records must be uploaded into project SharePoint.
- Plant and equipment that requires installation/commissioning shall be carried out only by competent, licensed person(s) as per [Commissioning Isolation and Tagging Management](#) COP.

5.2. Purchasing of quick-cut and grinders

5.2.1. Quick-Cut Saw

BMD will only purchase or hire Quick Cut/Demolition Saw fitted with a kickback system, which automatically applies itself when it senses the unit kickback during the cut instantly stopping the blades. Where it is identified this type of machine is not suitable a formal risk assessment and application for dispensation will need to be approved by the Group Safety Manager on a case-by-case basis.

5.2.2. Handheld grinders

BMD will only purchase or hire Handheld Grinder fitted with a Rapid Stop Brake and Dead Man Paddle Switch. Where it is identified this type of machine is not suitable a formal risk assessment and application for dispensation will need to be approved by the Group Safety Manager on a case-by-case basis.

5.3. Identification and traceability

- Plant and equipment shall be traceable (recorded on a register) for the purpose of ensuring regular maintenance and or inspections are carried out in accordance with legislative and manufacturer's requirements.
- All BMD Group and project assets shall be tagged or inscribed with BMD identification details as determined by BMD's National Purchasing Manager.
- All records/documents shall be kept in accordance with the [Document and Records Management](#) standard.

6. RISK ASSESSMENT AND CONTROL

Plant and equipment that have been determined fit for purpose shall be risk assessed to identify and implement controls directly prior to use.

6.1. Risks¹

Typically, risks are assessed at two levels:

corporate/project level (usually performed at the start of the project and continuing through life of project); and, Plant specific with the risks and controls identified transferred into the plant-specific Safe Operating Procedure (SOP) or Work Method Statement (WMS)

The following factors must be considered and recorded ([Risk Register](#)) when assessing plant and equipment operations:

- changes to the nominated systems of work;
- the layout and physical conditional (environment) in which it is used;
- type of access required by personnel, plant and equipment;
- employee ability/experience, competency and licences;
- type of work activity;
- suitability of the plant and equipment (HIRAC);
- intended duration of use/exposure; and,
- public interface.

These assessments must be made:

- before its first use;
- prior to its use following repair or alteration;
- where or when new information becomes available in regard to potential new hazards; and
- following an incident.

Note: A plant risk assessment is to be conducted for each type of plant used on the project. This forms the safe operating instructions for that particular type of plant which must include the safe maintenance, servicing and inspection procedure for the type of plant.

¹ OFSC Audit Criteria H 16.1, 16.3 & 16.11

6.2. Controls

When developing/implementing plant and equipment risk control methods, the controls must be:

- easily identifiable;
- a type and/or method that prevents illegal access tampering;
- a suitable and approved method to eliminate (as far as is reasonably practicable) crushing, falling, electrocution, impalement, degloving, sprains and strain;
- clearly understood and legible;
- communicated and consulted with the designated working group;
- documented and recorded in WMSs, Job Hazard Analysis (JHA) Cards, operational manuals, management plans and training material; and,
- assigned for management, which is determined and accepted by the relevant persons involved.

6.3. Safe Operating Procedure (SOP)²

For all personnel operating under the BMD system, earthmoving or particular crane (EPC) plant-specific SOPs must be completed, understood and signed-off prior to commencing the operation of that particular plant. An SOP is to be completed per person for each piece of equipment being operated by that person. If a plant-specific SOP for a particular piece of plant/equipment is not available from the BMS, a WMS is to be developed as a short-term document. These SOP's must be readily available and stored in the machine or an easily accessible location on each project.

Operator acknowledgement for the review of the Plant Risk Assessment and Operators Manual will be undertaken through the completion of the SOP.

7. INSPECTION, MAINTENANCE AND REPAIR³

7.1. Inspection of plant and equipment

Pre-site inspections and approval will be conducted prior to any plant (including light vehicles) commencing work on site utilising BMD's [Pre-Site Acceptance Checklist](#) and is valid for one year. Through the completion of the pre-site acceptance checklist relevant State registrations/inspections will be reviewed and acknowledged. Any plant which does not meet the standard as described on the plant [Pre-Site Acceptance Checklist](#) will not be allowed to operate on site.

For any High Risk Plant (e.g. cranes, concrete pumps) that are used on a BMD controlled site, these specialist companies are to complete either their own "Site Set-up Documentation" (preferred option) or BMD's [Concrete Pump Set-Up Checklist \(Form A\)](#) and [Concrete Pump Operator's Checklist \(Form B\)](#) or [Mobile Crane Inspection Checklist](#) (not both). This pre-site inspection involves the completion of a Plant Risk Assessment and Commissioning Certification (where required) in their own system or through the use of [Plant Assessor](#) to identify any hazards and implement appropriate controls associated with the normal operation of the item of plant or equipment.

The [Pre-Site Acceptance Checklist](#) requires a comprehensive copy of the plant's service and maintenance logbook(s) or other equivalent document. The documentation is to be presented to the Project's Safety Representative or other competent person prior to the commencement of work and will be reviewed and compared against the manufacturer's service and maintenance standard. A "BMD Site Inspection Sticker" will be attached to all plant items that have successfully completed the [Pre-Site Acceptance Checklist](#).

² OFSC Audit Criteria H 16.1 & 16.3

³ OFSC Audit Criteria H 16.1, 16.3, 16.9 & 16.10

7.2. Daily pre-start inspections

Prior to the use of any plant or equipment (including High Risk) on a BMD controlled site, daily pre-start inspections are to be completed.

Non-high risk mobile plant or equipment require a "Plant Specific" daily pre-start inspection checklist or an electronic process such as [Plant Assessor](#) to be completed. Light vehicles are required to complete a [Driver Maintenance and Light Vehicle Checklist](#).

Prior to commencement, crane and/or lifting activities will require that a daily crane inspection be conducted (crane log kept in the crane) and appropriate lifting operations documentation (e.g. lift study) be completed in accordance with the [Lifting Equipment Management](#) COP.

All concrete placement activities require that either the specialist company "Site Set-up Documentation" (preferred option) or [Concrete Pump Set-Up Checklist \(Form A\)](#) and [Concrete Pump Operator's Checklist \(Form B\)](#) be completed prior to commencement of work. For concrete pumps that have been 'dry hired' or are an asset owned by BMD, the [Concrete Pump Mechanical Inspection Checklist](#) is to be completed by a competent mechanical maintenance personnel. Concrete line pumps must follow a similar process for set and operator checking prior to commencing work.

All owners and operators of plant used on site are required to conduct a daily prestart inspection. Where the electronic system is not utilised a copy of the inspection must be provided. This checklist will determine:

- the daily serviceability and longer-term maintenance requirements
- unsafe work practices associated with the operation of plant and equipment
- inadequate control measures implemented previously, and
- the negative effects of changes in processes or materials within the plant or equipment.

Any issues identified in the plant inspections must be rectified as soon as practicable. Any other defect that impairs the safe operation of the plant will result in the plant being removed from site.

Note: As part of the daily pre-start inspection the operator must ensure that all mobile plant is equipped with an operational 2-way radio.

7.3. Maintenance and repair

Plant and equipment shall be in a safe state of maintenance and repair according to the manufacturer's specification. In the absence of such specifications, the plant and equipment will be maintained in accordance with the requirement of a competent person's recommendations. Plant shall be isolated before any form of maintenance or repair is undertaken. Where isolation or shutdown is required, the plant shall be tagged out (refer to the [Isolation and Tagging Management](#) COP) and for more complex Mechanical/Electrical isolation (refer [Commissioning Isolation and Tagging Management](#) COP). During any maintenance or repair it will be the competent person's responsibility to identify and control any potential hazards that may be present as a result of these activities, including ensuring that:

- the isolation or shutdown will not interfere or hinder the operation of other safety controls;
- any maintenance or repair will not interfere or hinder the operators of other plant and equipment;
- there is no obstruction to access or egress from office or business in the case of an emergency; and,
- additional controls/guards are implemented where elimination of crushing, falling, electrocution or de-gloving is not possible (e.g., jacks/blocks, fall arrest systems, power isolators).

Upon commencement/completion of any inspection, maintenance or repair, the competent person(s) shall ensure that all key items are recorded and logged on the required documentation (e.g., checklists, registers, manuals, logbooks), with records of such being readily available on-site. These records shall include start and completion times, type of function or activity undertaken, serial or part numbers, number of replacement items, diagnostic data required to meet compliance requirements and other key findings.

Subcontractors are to be notified prior to work commencement that all Plant maintenance records are to be current and stored in plant assessor or equivalent or authorised system documented in Pre-award Evaluation. Maintenance records to be regularly reviewed during workplace inspections and audits to ensure maintenance is undertaken as required. Where a non-electronic system is in use a plant register is to be implemented, maintained with maintenance records reviewed.

7.4. Falls from heights

When required to conduct tasks on or around plant and equipment that have the potential for personnel to fall from heights, the hierarchy of controls (elimination through to Personal Protective Equipment (PPE)) must be used during the risk management process. These tasks may include, but not limited to:

- accessing service and inspection points
- refuelling
- scheduled maintenance and/or cleaning
- breakdown repairs
- removing or replacing protective cover (e.g., vandal proof covers etc.), and
- adjusting operator controls, roofs, mirrors and seating.

When purchasing or hiring plant and equipment, consideration should be given if protection from falls from height is required during refuelling, servicing, maintenance and repairs.



Photograph 1: Excavator



Photograph 2: Articulate Dump Truck

The engine bays of the excavator and articulate dump truck provided in [Photograph 1](#) and [Photograph 2](#) have integrated handrails (physical controls), which enable safe pre-start checks and maintenance on site.

If physical controls are not reasonably practicable, then work positioning controls (PPE and administration) may be used. When using this working position as a control the following must be in place (refer to [Working at Heights Management](#) COP):

- designated anchorage points (15kN capacity)
- approved and certified harness and lanyard
- training in the maintenance in use of working at heights PPE
- WMS for the task
- Supervision, and
- working at heights rescue / recovery plan.

8. PEOPLE - PLANT INTERACTION

Movement of mobile plant and the people – plant interaction is a high-risk construction activity which requires the use of risk management processes and implementation of control measures to remove or reduce the hazard of this operation. Control measures include, but are not limited to:

- developing and implementing a traffic management plan for any traffic control activities being undertaken;
- developing and implementing a WMS to identify any risks and implement control measures to prevent or minimise the risk for any construction work being undertaken;
- operators confirming that positive communication has been established between themselves and the surrounding workers/spotter prior to any movement of mobile plant on site:
 - confirmation can be established by means of radio communication (2-way – mandatory for Controllers) or positive line of sight; **and**
 - plant movement is **not to be undertaken** if the operator has not confirmed positive communication between themselves and the surrounding workers/spotter, stopping immediately when positive communication ceases.
- organising, coordinating and monitoring work processes to reduce interaction between workers and mobile plant by:
 - developing a site access system or WMS that manages the movement of personnel on the worksite and provides clear and concise communication processes with all work groups in relation to risks and control measures to be implemented;
 - using an on-site controller (spotter) to authorise and monitor the movement of mobile plant in all circumstances;
 - using a controller (spotter) to control all reversing operations. The controller must be in a position that does not place them at risk from contact with the reversing vehicle and the driver must always maintain sight of the spotter;
 - implementing measures where workers have a clear line of sight of operating mobile plant and the operator has a clear line of sight of the plant's direction of travel taking into consideration shadows of plant in the work associated with the works;
 - providing 2-way radios that allow for communication between mobile plant and ground crew;
 - establishing communication protocols relating to the location and direction of mobile plant and measures to manage issues with poor transmission and miscommunication;
 - conducting pre-start meetings prior to commencing work to discuss all specific work site hazards, risks and control measures, including the allocation of safety tasks and responsibilities;
 - thoroughly checking safety devices and audible working alarms of mobile plant prior to commencing any work;
 - ensuring people are fit for work; consideration must be given to fatigue, heat stress and cognitive ability to function effectively; and,
 - ensuring worker training, experience and competency is consistent with the nature and complexity of the tasks being undertaken.

Note: It is a BMD requirement that no one is to enter a 5-metre exclusion zone (as a minimum) of operating plant without positive communication hence verbal confirmation / acknowledgement by the operator, or the plant operation has ceased and is securely parked (e.g., excavator bucket or grader blade firmly on the ground). Any exception to this requirement is to be managed through the WMS which has been approved by the Project's Senior Management.

8.1. Controller (spotter)

Where it is deemed that a controller (spotter) is to be used, the requirements of the controller will include:

- wearing a pink or yellow controller hard hat or cover (Gobi) at all times while performing controller duties;

- being in a position that does not place the controller at risk from contact with reversing plant/equipment while supervising reversing operations;
- maintaining line-of-sight with operators/drivers of plant and equipment;
- not performing other duties/tasks during controller duties (can cause distractions);
- stopping works immediately if the controller is not present or needs to leave the particular work location for any reason;
- having 2-way radios for communication between plant/equipment and ground crew (mandatory); and,
- the prohibition of the use of any mobile phones, electronic games or media players while performing **controller** duties.

9. GENERAL MOBILE PLANT REQUIREMENTS

As a minimum, all vehicles, mobile plant and equipment used on site must be road worthy **and operational** and have the following fitted/equipped:

- amber flashing beacon (located on roof of vehicle), if magnetic, must be removed when on gazetted road
- adequate, manufacturer approved seating (**Note: Each person must have a seat**)
- seat belt for each person (**Note: Seat belts must be worn whilst the vehicle or mobile plant is in motion**)
- operational reversing alarm
- 2-way radio
- Roll Over Protection System (ROPS) and/or Falling Object Protection System (FOPS) (as required);
- fire extinguisher for any plant or vehicle of 4,500 kg GVM or above
- reversing cameras or other type of alarms are to be fitted to vehicles with identified high reversing risks (high frequency, blind spot etc.) using the HIRAC risk assessment process,
- all vehicles are to be reversed parked and fundamentally stable (e.g., flat level ground, engine off, in gear or park, hand brake applied) **and**;
- cargo must be securely stored during transit e.g. suitable load restraints, lashings, cargo nets.

10. RECOVERY OF BOGGED VEHICLES AND MOBILE PLANT

Where a vehicle or piece of mobile equipment becomes bogged the operator / driver shall call the nominated site supervisor for assistance using the project designated UHF Ch. Where possible, all effort should be made to first reduce the load of the vehicle (in the case of a tip truck/tandem or truck and trailer) by either tipping through the raising of the body or utilising onsite plant to retrieve the load from the vehicle. In some instances, this may assist the vehicle in driving out unassisted. All towing and recovery shall be under the supervision of the Site Supervisor.

Note: Care should be taken if tipping. When a truck becomes bogged it can often be at an angle, with one side of the truck lower than the other. Tipping on an angle could lead to a roll-over.

10.1. Recovery process

A "Vehicle Recovery" Work Method Statement (WMS) and Job Analysis Hazard (JHA) card is to be developed and signed onto by all parties involved in the task prior to commencing the task, taking into consideration and including the following:

- the resistance generated by the material that the vehicle/equipment is stuck in. In soft sand or mud, allow as much as 3 times the vehicle/equipment weight when selecting the appropriate recovery strap;
- only an approved recovery strap shall be used for towing bogged vehicles and machinery, unless otherwise authorised by the Project Manager;
- chains, wire ropes or lifting equipment must not be used;
- all towing strops and equipment shall be clearly and prominently marked as 'For Towing Only';

- wherever possible, recovery strap and devices shall be connected horizontally between the bogged vehicle and the recovery vehicle;
- towing activities must be co-ordinated by radio contact or hand signals visible to the drivers / operators of all vehicles / machinery involved;
- the front wheels of the bogged vehicle should be in line with the direction of tow;
- the bogged vehicle operator/driver should select the lowest gear, either forward or reverse and assist the recovery vehicle by applying moderate acceleration and;
- after recovering any bogged vehicle, the area should be marked as hazardous, until that area is rectified by grading, dozing out and / or boxing out and refilling;

There should be no attempt made to push a disabled or bogged vehicle or equipment with another, except when the bogged machine has a purpose designed push pad. Where this cannot be adhered to, expressed written permission from the plant/vehicle owner, site Project Manager and Site Supervisor must be gained.

11. EARTHMOVING EQUIPMENT⁴

11.1. Use of quick hitch devices

Quick hitch devices depend on positive hydraulic pressure and a securing mechanism (manual or automatic) to hold on to buckets and other attachments.

The below requirements must be followed when any mobile plant or equipment are using a quick hitch device (such as an excavator bucket – refer to Figure 11.1):

- prior to commencing any work on BMD controlled sites, all machines must be inspected by the operator to ensure compliance with Section 7 Inspection, Maintenance and Repair
- operators shall be competent to use the specific quick hitch on the plant they use, whether it is automatically secured or manually secured by inserting a pin (competence is required to be verified through assessment and regular reinforcement)
- quick hitches must be maintained and in proper working order and are to be marked with the model and serial number, manufacturer's name, quick hitch weight, maximum rated capacity with the capacity of each lifting point to comply
- where safety pins or other shaped securing devices are used, they must meet the quick hitch manufacturer's specifications and be retained on the plant when the quick hitch is in use
- substitutes such as structural bolts or a reinforcing bar must not be used
- if the plant is fitted with a quick hitch locking system (Essex or similar) a document is required from the manufacturer stating the locking system complies and meets Australian Standards, AS 1418.5 – 1995 and AS 4772-2008
- the compliant quick hitch manufacturer documentation is to be kept in the cab of that specific piece of plant at all times and the requirements of that document adhered to
- the area around the safety pin insertion holes and pins are to be sprayed with highly visible paint (surveyors pink or similar) so they can be identified at a distance
- for activities involving plant people interactions:
 - a five (5) metre minimum exclusion zone is to be maintained whilst the changing of attachments is being undertaken
 - for half and mechanical hitches, the Operator must get out of the cab, engage the manual pin then physically and visually inspect the locking mechanism to ensure it is secure
 - for semi-automatic and automatic hitches, a visual verification of the safety system from the cab as defined in AS 4772 (2008) Earth-moving machinery – Quick hitches for excavators and backhoes

⁴ OFSC Audit Criteria 16.3

must be undertaken. Further, the Operator is obligated to communicate to the Controller (Spotter) the specific safety system indicators on the hitch, so they are aware what to look for as well.

- the Operator must prove that the attachment is securely locked in place by bumping or forcing the attachment against a hard surface and away from the machine using hydraulics before any further movement and operating.

Note: Shaking the attachment alone is no longer sufficient.

- confirmation from the Operator is then to be given to the work crew via the designated Controller (Spotter) that it is secure under both cases
- the Controller (Spotter) is then to acknowledge that the Operator is right to proceed after verifying that the above testing of the quick hitch has been undertaken.

Note: The above-mentioned requirements of the Operator are their responsibility and cannot be delegated.

- for activities not involving plant people interactions:
 - when the whole activity does not involve plant people interaction, the Operator must first ensure that the attachment is securely locked in place by bumping or forcing the attachment against a hard surface and away from the machine using hydraulics
 - with all quick hitches, the Operator must get out and physically and visually check the attachment is securely engaged whilst it is grounded before operating.
- operators must not use the machine unless they are satisfied that the quick hitch is secured

Note: At any time, if anyone is concerned that these requirements have not been properly or adequately performed, the Operator is to be directed to physically and visually re-assess the quick hitch

- all attachments must have correct pin centres and pin diameters
- operators are required to intentionally disengage the quick hitch when attachments are to be disconnected
- safe systems of work should be implemented to ensure that people are not exposed to risks by working below or in the vicinity of the bucket, e.g., establishment of an exclusion zone when the plant is in use, and
- where it is found that a safety pin is not fitted to the bucket, or where the pin or locking assembly is defective, the operator is to cease work until the pin is replaced, fixed or the plant is removed from site.

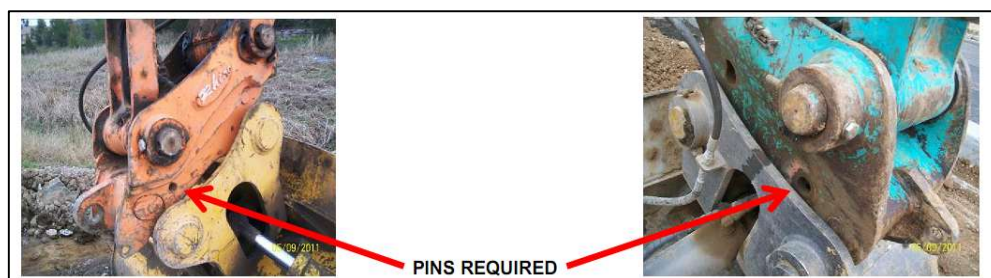


Figure 1: Location of pins for quick hitch devices

11.2. Burst protection

Burst protection is to be fitted on all earthmoving equipment that is used i.e., a crane where the rated capacity exceeds one (1) tonne. The burst protection is to be fitted to both the boom and dipper arm of the equipment and must comply with *ISO 8643: Earthmoving Equipment – Hydraulic excavator and backhoe loader boom-lowering control device – Requirements and tests*.

11.3. Roll Over Protection System (ROPS)/Falling Object Protection System (FOPS)

All earthmoving machinery working on a BMD controlled site which weighs more than 1,500 kilograms must ensure that it is not used unless it is securely fitted with an approved ROPS. Where equipment is operating in an area which creates a risk to the operator from falling objects, an approved FOPS must be fitted as per AS2294 Earth-moving machinery, Protective structure.

11.4. Loading and unloading of material deliveries

Most states in Australia have Working at Heights legislation when working at or above 1.8 or 2 metres. Although the tray of a truck is typically 1.4 metres from ground level, serious injuries or even death can result from falling off trucks or trailer beds. To minimise the risk of falls and to assist in legislation, the following requirements must be met when loading or unloading any material deliveries on a BMD site:

- Where possible, undertake work from ground level and avoid getting onto the truck or trailer bed (achieved with pre-slung loads).
- Access onto or working on trucks and trailer beds can only be undertaken when fall prevention device(s) compliant to Australian Standards are fitted to both edges of the truck or trailer bed (refer to photograph).



- Never climb onto the loads or tarps – work can only be undertaken whilst standing on the truck or trailer bed with fall prevention device(s) in place. And,
- Where fall prevention devices are not fitted to the truck or trailer, loads can only be slung via the use of a platform ladder or a ladder that is either secured to the truck or held by another person (footed) with three (3) points of contact maintained at all times.
- Exclusion zones to be established unless designated unloading/loading zones in place, and
- Truck operators must be in clear line of sight of the person(s) unloading/loading at all times, where the line of sight is lost all works must cease.

All delivery drivers must also:

- Carry out works under a current Work Method Statement (WMS)
- Have a regulatory license / authorisation (i.e., vehicle and Hiab).
- Be aware of and comply with all other BMD site requirements.

12. REFUELLING OF PETROL DRIVEN ENGINES

The use of petrol driven plant and equipment poses a potential fire risk during refuelling. When refuelling petrol driven engines such as pumps, flexi-drives or vibrating plates, the following requirements must be complied with:

- refuelling must take place in a well-ventilated area
- engine allowed to cool prior to commencement of refuelling
- check for static electricity before commencement of refuelling process
- correct fire extinguisher must be easily accessible
- no smoking when refuelling or in/near refuelling area;
- fit for purpose fuel storage container must be used
- fit for purpose funnel must be used
- funnel is required to be used during refuelling of all small engines
- all equipment is to be inspected for hydrocarbon spills or leaks and must be cleaned up prior to starting the engine, and
- if any fault or defect in the equipment has been identified, the equipment is to be made safe, removed from service and reported to the immediate Supervisor.

Note: *It is also a requirement to display the [Working with Small Petrol-Driven Engines Poster](#) in the crib room and to have it incorporated in the WMS that involves petrol engines.*

13. ELECTRICAL EQUIPMENT

The [Electrical Equipment Management](#) Core Operating Procedure (COP) sets out minimum requirements for the design, construction and testing of electrical installations supplying electricity to appliances and equipment on construction and demolition sites, and for the in-service testing and use of portable, transportable and fixed electrical equipment used on construction and demolition sites.

It does not cover working on energised electrical services. Refer to the [Working Near Services](#) Core Operating Procedure (COP) and [Commissioning Isolation and Tagging](#) Core Operating Procedure.

Note: *When using electrical cutting equipment (e.g., grinder or circular saw) double eye protection (including face shield) must be worn.*

Note: *Nine (9) Inch Grinders must not be used on a BMD site unless the exception is outlined in the Electrical Equipment COP.*

14. STAR PICKET DRIVERS

When installing steel pickets by using either a manual or pneumatic type the following requirements must be followed:

- For full length star pickets a driver must be used.
 - Where a manual driver cannot be utilised, the task needs to be assessed through a Job Hazard Analysis (JHA), to identify the safest method of driving the picket, i.e., through the use of petrol or pneumatic drivers.
- The requirement for hearing protection must be considered for petrol or pneumatic drivers.
- Gloves must be worn when using drivers.
- Only industrial strength Star Picket Drivers (minimum length of 1200mm) are to be used on BMD sites.
- Inspect star picket drivers and remove those damaged or non-industrial strength.
- The top of star picket to be driven is not to be lower than waist height of the operator.
- Hands are not to be raised higher than shoulder height during the driving of pickets and
- Steel hammers must not be used with steel pickets, preference is to use soft faced hammer eg smaller pickets around formwork.

Note: *This process addresses the variations of different heights of personnel versus the height of the star picket when the star picket drivers are at the required, minimum length.*



Photo 1
Example of Cracked Handle
Remove from use.



Photo 2
Non-Industrial &/or
Shallow Throat Star Picket Driver
Not to be used.

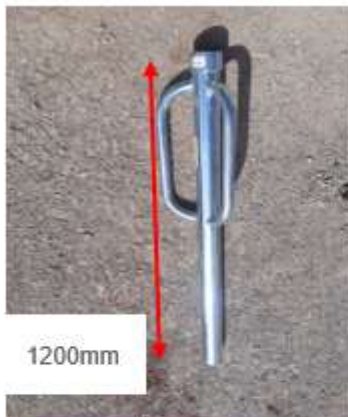


Photo 3
Industrial strength star picket drivers (minimum 1200mm long) are to be used on all BMD sites.



Photo 4
Correct method of using Star Picket Driver, position of hands to remain between waist and shoulder height.



Photo 5
Incorrect method of using Star Picket Driver. Hands must not be positioned about shoulder height.



Photo 6
Preferred method for the installation of star pickets, (motorised driver)



15. QUICK CUT SAW

Prior to using a Quick Cut Saw, a [Competency to Operate – Quick Cut Saw](#) and [Competency to Operate – Pipe Cutting \(Quick Cut Saw\)](#) are to be conducted verifying that the Operator of a Quick Cut Saw can demonstrate the knowledge and skill to safely operate the machinery. [Respirable Crystalline Silica \(RCS\) Exposure Management](#) COP must also have been read, understood and complied with at all time. A task specific Work Method Statement and Job Hazard Analysis card must be developed prior to use of the machinery. Double eye protection and P2 dust mask must be used at all times when using a Quick Cut Saw. Competency to Operate assessments for the use of Quick Cut Saw may only be performed by an operational supervisor (Leading Hand

and upward) with a minimum of three (3) years Civil Construction experience and who is competent in the operation of a Quick Cut Saw.

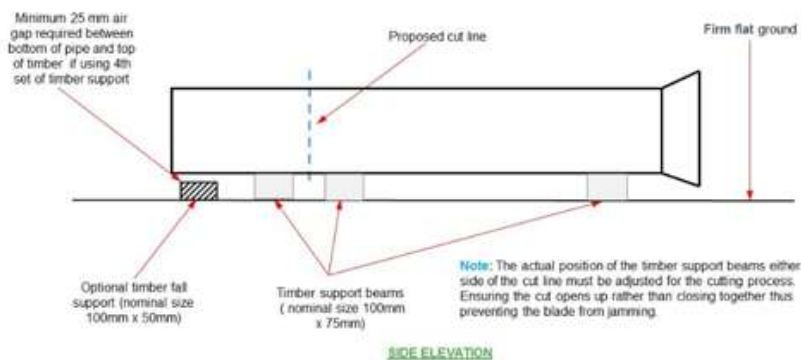
15.1. Cutting of concrete pipes

When cutting of concrete pipes (including Reinforced Concrete Pipe (RCP), Fibre Reinforced Concrete (FRC) and Ductile Iron Concrete Lined (DICL) Pipes) is undertaken using a quick cut saw, it is both the Operators and the Site Supervisor's responsibility to ensure the development and implementation of a WMS and a task specific JHA card for 'Cutting of Concrete Pipes with a Quick Cut Saw taking into consideration', [Respirable Crystalline Silica \(RCS\) Exposure Management](#) COP and which includes the following controls:

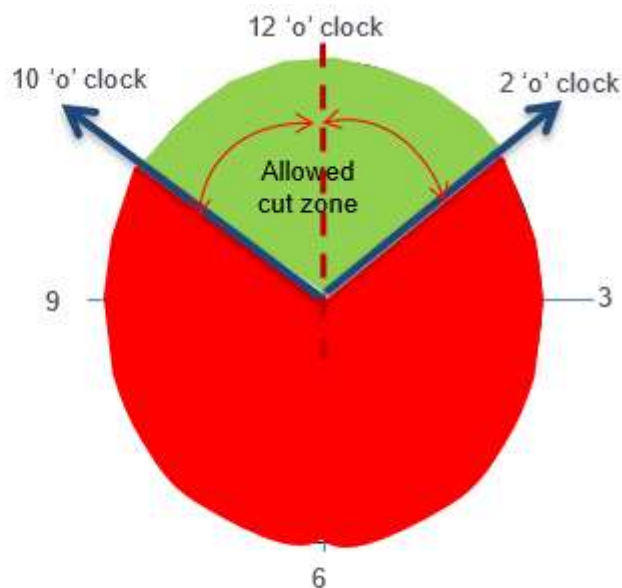
- A battery operated (preferred) saw with anti-kickback feature is to be used;
- No dry cutting is to be performed with a Quick Cut Saw;
- Engineering controls for dust suppression (no dry cutting) and P2 dust mask must be used at all times.
- At the daily pre-start, the site supervisor and the competent operator is to identify all pipe cutting activities, so they can be managed.
- The operator must be deemed competent by BMD in both the [Competency to Operate – Quick Cut Saw](#) and [Competency to Operate – Pipe Cutting \(Quick Cut Saw\)](#) with the record of competency completed for both Subcontractor personnel and BMD employees.
- All RCP, FRC and DICL pipes larger than 225mm in diameter must be supported by either a pipe cutting cradle (preferred option) or timber beams to mitigate the risk of the blade jamming and the saw kicking back in an un-controlled manner.
- Location for pipe cutting stations is to be established, which is to be inspected and approved daily by the nominated Site Supervisor appointed by the Project Manager prior to undertaking the process, with the location recorded on the JHA.
- Location used for cutting the pipe must be flat and on even ground, with timber set-up to accommodate pipe circumference plus an additional 1m.
- Timber set-up as below, three (3) sets (nominal size of 100 x 75 mm) of:
 - 1 x 3m length is suitable for up to 600mm dia. Pipe
 - 2 x 3m length with 500mm overlap suitable for up to 1400mm dia. Pipe
 - 3 x 3m length with 500mm overlap suitable for up to 2200mm dia. Pipe.
- Optionally, a fourth (4th) set of smaller timber (nominal size 100 x 50 mm) may be utilised 100mm from the far end of the cut section as fall support for the off-cut section of pipe.
- Wedges or sandbags are to be used to prevent uncontrolled rolling of the pipe.
- No timbers are required if using a cradle.
- Personnel must use a helmet, face shield and safety glasses as part of double eye protection, as well as appropriate hearing protection at all times;.
- Cutting of RCP/FRC/DICL pipes must only be undertaken above ground and prior to laying the pipe into the trench.
- The cutting operation must consist of a two-person team, with the spotter assisting in rotating the pipe during cutting. (**Note: Spotter is not to stand in the line of fire of the blade**).
- All cutting of RCP, FRC and DICL pipes must be undertaken with personnel standing on firm level ground in an unrestrictive environment.
- Cut with the lower half of the blade, as cutting with the upper quadrant of the blade can result in kickback (when the quick cut saw is suddenly thrown up and backwards in an uncontrolled arc towards the operator) and must be avoided at all times;
- The Quick Cut Saw's guard must operate in the fully extended position therefore only allowing the saw to cut from the top of the pipe downwards. Roll and chock pipe as required to enable a gradual and systematic cut within the safe zone (10' -12' o' clock & 12' - 2 'o' clock as shown below). Larger pipes will require more frequent rotation/adjustment during the cutting process to ensure cutting is only undertaken

with the saw above the operators' waist height and below the operators' shoulder height, whilst also ensuring only the lower half of the blade is used to cut the pipe.

- Do not use the upper quarter of the Quick Cut Saw blade.
- Personnel are to work from the side of the pipe in a standing position and the saw must not be used above the shoulder height at all times during the cutting process.
- Polyethylene pipes are not to be cut with a Quick Cut Saw; a Chainsaw is to be utilised as required.



Use of correct PPE



Maximum cut radius for $\leq 675\text{mm}$ pipes.

16. CUTTING OF KERBS, SLABS, ASPHALT ETC.

For the cutting of kerbs, slabs, asphalt etc., all Quick Cut Saws must be secured in a cutting trolley when hand-held saws are not suitable for use.



In special circumstances where these options are not suitable for a one-off task, a specific risk assessment and task-specific Work Method Statement (WMS) must be developed and approved by the Construction Manager.

17. FIXED-BLADE KNIVES

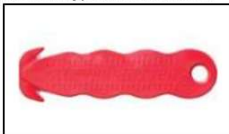
The use of fixed-blade knives is prohibited on BMD sites.



Alternative tools for activities such as cutting through plastic wrapping, cardboard, cutting cable ties, mesh and geofabrics must be adopted. Choice of the correct cutter is to be considered prior to commencing an activity, and a risk assessment is to be undertaken with higher rated hand protection to be considered along with tool maintenance and blade cleaning. This information is to be included in the WMS and Job Hazard Analysis (JHA) Card for these activities.

Alternative to typical box cutters:

Alternatives to typical box cutters:



General cutting and cutting geofabric

Cutter Safety Klever Cutter KK001 (part no. 0095 2416) – general cutting and cutting geofabric



Cutting of heavy-duty material and geofabric

Cutter Safety Heavy Duty JBS (part no. 0633 1130) – cutting of heavy duty material and geofabric



General cutting

Knife Auto Retractable Comfort Grip JBS (part no. 0657 5726) – general cutting

18. CHAIN OF RESPONSIBILITY - DELIVERY/HEAVY HAULAGE/CARTAGE VEHICLES

18.1. Overview

The Chain of Responsibility (CoR) is a concept used in Australian transport legislation that places legal obligations on all parties in the transport supply chain, rather than simply the Driver. In all states and territories, except Western Australia, Chain of Responsibility legislation is implemented through the Heavy Vehicle National Law 2012 (HVNL). The HVNL applies to all vehicles exceeding 4.5 tonnes in Gross Vehicle Mass (GVM), including delivery, heavy haulage and cartage vehicles. Hence, BMD is obligated to monitor deliveries with respect to the HVNL when both of the following conditions apply:

- The HVNL applies to the vehicle (i.e., it exceeds 4.5 tonnes in GVM); and,
- The delivery is of 'high risk' nature in relation to BMD's role in the Chain of Responsibility.

Note: A 'high risk' delivery occurs where there is risk of a Substantial Breach, Severe Breach or Critical Breach of the HVNL (see Table 1 for definitions).

CoR obligations are managed as a key part of BMD's overall approach to risk and construction methodology and where identified by the Principal or BMD's Construction Manager a Chain of Responsibility Management Plan will be developed.

BMD will facilitate the above by conducting random inspections on delivery, heavy haulage and cartage vehicles where the HVNL applies. These inspections will involve completing the [Heavy Vehicle Inspection Checklist](#) and will occur, at a minimum, on 5% of these vehicles per project, also all driver may be subjected to site specific Drug and Alcohol testing protocols.

In Western Australia, Chain of Responsibility obligations are implemented through the Road Traffic (Vehicles) Act 2012 (RTVA). Unlike the HVNL, the RTVA applies to all vehicles, regardless of GVM. This means that all delivery vehicles of 'high risk' nature in relation to BMD's role in the Chain of Responsibility are eligible for random inspection.

Table 1: Definitions of Heavy Vehicle National Law breaches

Term	Definition
Minor Breach	A minor breach in relation to the HVNL involves the risk of an offender obtaining a minor unfair commercial advantage over those who operate legally but does not involve any significant risk to safety or infrastructure.
Substantial Breach	A substantial breach in relation to the HVNL involves a risk of damage to infrastructure as well as unfair competition. It may also involve some risk to safety, though not a significant risk.
Severe Breach	A severe breach in relation to the HVNL involves a: • Significant risk to safety; • More severe risk to infrastructure; and/or, • Greater level of unfair competition.
Critical Breach	Specific to driver fatigue in relation to the HVNL, a critical breach involves a direct contravention of legislated work / rest times, which may adversely affect a driver's ability to drive safely.

18.2. Controlling and/or influencing a CoR breach

Influence

Action	Example
Demand delivery within unreasonable timeframe	Create purchase order which states delivery trucks are to be overloaded
Reward (financially or otherwise) behaviour which constitutes a breach	Promise repeat work if unreasonable delivery timeframes are met
Agree to receive deliveries which cause a breach	Dispatcher states they can meet the timeframe but only if the driver drives all night/speeds

Control

Action	Example
Instruct our plant to cause a breach	Instruct an excavator to overload a truck
Place unreasonable timeframes/requirements within contracts	Require 12 hours shifts with no breaks in contract conditions
Instruct hired trucks to ignore requirements	Tell hired trucks to not bother covering their load as it is only a short distance

18.3. Roles and responsibilities

As mentioned previously, the Chain of Responsibility concept places responsibilities on all parties in the transport supply chain. In general, any party may be liable for a breach of the law in the following areas:

- Exceeding vehicle mass and/or dimensions
- Incorrect restraining and/or securing of the load
- Exceeding speed limits
- Non-fatigue management.

The specific responsibilities of each supply chain party are listed in Table 2, with applicable actions also stipulated.

Table 2: Transport supply chain roles and responsibilities

Title	Role	NHVL Duties and Chain of Responsibility	Actions
Consignor /Dispatcher	Dispatches goods for delivery.	Ensure a delivery request does not require a truck driver to: • Transport goods that go beyond vehicle dimension or mass limits; • Inappropriately secure the load; • Exceed the permitted number of driving hours; • Fail to have minimum rest periods; • Exceed the speed limits.	• Identify workplace activities involving heavy vehicles and the parties involved during the project. • Utilise the Subcontractor Pre-Award Evaluation form to ensure contractor is compliant before engagement on site. • When setting project delivery hours and specific delivery times, make allowances for unexpected delay and driver rest periods that consider driver fatigue. • Ensure contractual arrangements do not provide any incentive / reward for breaching these requirements. • Adopt a system to intermittently monitor heavy vehicles and deliveries on site (use Heavy Vehicle Inspection Checklist).
Consignee /Receiver	Orders and/or accepts goods being delivered.	As above, with the addition of: • Ensure they are not knowingly encouraging or rewarding a breach of the mass, dimension, load restraint or driving hours laws.	
Loading / Unloading Manager	Responsible for the loading or unloading of goods.	Ensure the vehicle's load: • Does not exceed the dimension or mass limits; • Cannot become unstable, move or fall off the vehicle.	• Provide rest facilities to allow drivers the opportunity to rest if required (e.g., lunchrooms). • Notify drivers if delivery / loading / unloading times have changed. • Use documentation that requires persons responsible for packing / loading to verify the load's weight, mass and dimensions. • For more information, see the National Heavy Vehicle Regulator website.
Packer	Packs the goods to be loaded.	Ensure when the goods are packed: • Documentation of the load is accurate, not false or misleading; • Any goods packed in freight containers do not exceed the container's gross weight or safety approval rating.	
Employer	Engages someone else to drive	Take all reasonable steps to ensure their business practices do not cause a driver of a heavy vehicle to:	• Set realistic delivery timelines and make allowances for unexpected delays.

Title	Role	NHVL Duties and Chain of Responsibility	Actions
	a regulated heavy vehicle.	• Drive whilst fatigued or in breach of a work / rest requirement; • Exceed speed limits.	• Encourage workers to take regular breaks to manage fatigue.
Scheduler	Schedules the transport of goods by road.	Ensure transport schedule does not require a truck driver to: • Exceed the speed limit; • Exceed the permitted number of driving hours; • Fail to have minimum rest periods.	• Have a system in place to ensure: • All vehicles and associated equipment are kept in good condition; • All loads are properly restrained; • The mass of each vehicle is assessed and recorded for each trip.
Operator / Manager	Operates and/or manages the business dispatching the goods.	Be responsible for ensuring: • Rosters do not require truck drivers to exceed the permitted number of driving hours; • Accurate records are kept of drivers' activities, including driving, work and rest times; • Vehicle speed limiters are functioning; • Loads do not exceed dimension or mass limits and are properly restrained using appropriate restraint equipment.	• Monitor driver's activities to ensure fatigue and rest breaks are effectively managed. • Ensure delivery schedules allow for sufficient rest and sleep. • For more information, see the National Heavy Vehicle Regulator website.
Heavy Vehicle Driver	Transports the load, or otherwise operates the heavy vehicle.	Maintain current obligations to ensure: • The vehicle does not exceed dimension or mass limits; • The load is appropriately restrained; • All required equipment is properly fitted to the vehicle; • They remain fit for work, required rest breaks are taken, and driving time regulations and speed limits are observed; • Safe and responsible driving behaviour is demonstrated at all times.	• Ensure your behaviour does not inherently breach your responsibilities. • Be familiar with your vehicle mass. • Keep all receipts, dockets and other delivery documentation that identifies load weight, and ensure vehicle limits are not exceeded. • Check load to ensure it is correctly restrained, no matter who restrained it. • Check for signs of wear on restraining equipment used.

19. TEMPORARY FENCING AND HOARDING

All temporary fencing and hoarding must be installed as per AS 4687- 2007 Temporary fencing and hoarding which identifies the difference between temporary mesh and wire fencing, temporary **fencing** with shade cloth and solid metal or timber hoarding.

All temporary fencing or hoarding must only be erected or altered by a trained competent installer in accordance with the specific hirer's instruction or installation documentation. A hand over certificate must be obtained.

Temporary fencing and hoarding system must be designed taking into account wind loading, impact tests and stability, also the additional pressure applied when shade cloth has been added.

20. INSTRUCTION AND TRAINING⁵

Prior to the use of any plant or equipment within the workplace, management shall determine the level of instruction or training that is required to safely use any plant or equipment. Persons who operate this plant/equipment shall receive relevant instruction, training and supervision necessary to protect them from risk within the workplace.

Persons deemed qualified by a Registered Training Organisation (RTO) to operate plant and equipment will, when working on a BMD controlled site, be required to complete an operator skills assessment (OSA) prior to commencement of work. This training will be conducted in accordance with BMD's [HSEQ Training and Competency Management](#) standard.

Person(s) undertaking training for the operation of a particular piece of plant / equipment that requires the associated licenses/competencies, shall only be performed under the direct supervision of a person holding the required licenses/competency for that particular piece of plant/equipment.

Instruction and training may be conducted in various forms including hardcopy text; electronic; verbal; and visual assessment. The commencement of any high-risk task or work function will require all persons within the designated work group to complete, understand and implement the approved WMS, JHA Card and perform works in accordance **with** operational manuals, work instructions and toolbox talks.

The contents of the documents mentioned above may include the following items:

- planning, selection and consideration of lifting equipment limitations
- the correct use of controls or guards
- safe operation and access
- inspection, isolation, maintenance, repair and shutdown
- no-go zones, emergency procedures, hazard identification and risk assessment
- duties and responsibilities
- selection, provision and use of suitable plant and equipment
- maintenance, examination and testing
- provision of suitably trained and competent workers, and

WMS, JHA and Management Plan reviews to ensure the capabilities of persons. This is to be recorded in the [Project Training and Competency Register](#).

21. DEFINITIONS

Workers	Workers, contractors, subcontractors, labour hire workers.
Chain of Responsibility	A concept used in Australian transport legislation that places legal obligations on all parties in the transport supply chain, rather than simply the driver.
Hazard	Any situation with the potential to cause injury/illness to people or damage to equipment, property, the environment or community.
Heavy Vehicle National Law (HVNL)	The legislation that imposes Chain of Responsibility obligations. It applies to vehicles exceeding 4.5 tonnes in Gross Vehicle Mass and has been adopted nationally (except in Western Australia).
Inspection	The process of visually surveying the workplace or plant/equipment with the intent of identifying, controlling and correcting hazards that may be present or have the potential to impact on the workplace.

⁵ OFSC Audit Criteria H 16.8

Inspection Checklist	Pre-determined written criteria to assist the inspection team to identify common hazards likely to be present in the workplace. Used by the team to record the findings of the inspection.
Competent Person	A person who has, through a combination of training, education and experience, acquired knowledge and skills enabling them to perform a specified task correctly.
JHA	Job Hazard Analysis – potential incident and hazard identification and risk analysis assessment of construction work.
WMS	Work Method Statement – incorporating the elements identified in the JHA and outlines the steps, hazards and controls for conducting the identified task at hand.
PPE	Personal Protective Equipment.
Plant	Mobile or non-mobile, including all vehicles (light or otherwise).
OSA	Operator Skills Assessment

22. REFERENCES

-  [Australian Government Building and Construction OHS Accreditation Scheme: FSC](#)
-  [AS/NZS ISO 45001:2018 Occupational Health and Safety Management Systems](#)
-  [National Standard for Construction Work \[NOHSC: 1016 \(2005\)\]](#)
-  [National Standard for Plant \[NOHSC 1010 \(Updated 1994\)\]](#)
-  [NT WorkSafe](#)
-  [Plant Assessor](#)
-  [QLD Environmental Protection Act 1994](#)
-  [QLD Environmental Protection Regulation 2008](#)
-  [Safe Work Australia](#)
-  [SafeWork SA](#)
-  [Work Health and Safety Act 2011](#)
-  [Workplace Health and Safety Queensland](#)
-  [SafeWork NSW](#)
-  [WorkSafe Victoria](#)

Associated Documents

-  [Competency to Operate – Quick Cut Saw](#)
-  [Competency to Operate – Pipe Cutting \(Quick Cut Saw\)](#)
-  [Concrete Pump Operator's Checklist \(Form B\)](#)
-  [Concrete Pump Mechanical Inspection Checklist](#)
-  [Concrete Pump Set-Up Checklist \(Form A\)](#)
-  [Document and Records Management](#)
-  [Driver Maintenance and Light Vehicle Checklist](#)
-  [Electrical Equipment Management](#)
-  [Heavy Vehicle Inspection Checklist](#)
-  [HSEQ Training and Competency](#)
-  [Isolation and Tagging Management](#)
-  [Lifting Equipment Management](#)
-  [Mobile Crane Inspection Checklist](#)
-  [Pre-Site Acceptance Checklist](#)
-  [Project Plant and Equipment Register](#)
-  [Risk Management](#)
-  [Respirable Crystalline Silica \(RCS\) Exposure Management](#)

-  [Working at Heights Management](#)
-  [Working Near Services Management](#)
-  [Working with Small Petrol-Driven Engines Poster](#)

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