



# LIFTING EQUIPMENT MANAGEMENT

Core Operating Procedure

Business Management Systems (BMS) Group

Document No.: HEQ-PCE-00101

**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
20	26/02/2026	Update to Section 4, 6, 7, 8.7, 9.1, 11, 14.2, and 16. Removed Table from Appendix B and published as a separate document.	Zach Humphrey
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12	14/12/2020	Updates to Sections 12, 13.5, 16 and 17.	Brian Olsen
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4	12/05/2014	Inclusion of the Mobile Crane Inspection Checklist and Project Training and Competency Register.	Brian Olsen
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## 1. PURPOSE

The purpose of this Core Operating Procedure is to eliminate injuries or potential fatalities associated with lifting activities, defining minimum requirements for the selection and safe use of lifting equipment at BMD operations.

## 2. SCOPE

This document encompasses all BMD Group subsidiaries including BMD Constructions, Empower, BMD Urban, JMac Constructions and Urbex. For ease of reference, the term BMD is used throughout this document to reference the 'group'.

It applies to BMD owned, hired or contracted cranes and lifting equipment including slings, chains, wire ropes, shackles, pad-eyes, containers, baskets, winches, jib attachments, work baskets, and ancillary equipment in accordance with AS1418 and AS2550.

## 3. INTRODUCTION

All tasks involving lifting operations 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, equipment, level of risk control, and other key considerations specific to the activity. The systems of work shall incorporate and take into account relevant requirements identified in the [Risk Register](#).

## 4. ROLES AND RESPONSIBILITIES

Project Manager
<ul style="list-style-type: none"> <li>• Ensure Lifting Operations are risk assessed prior to project commencement and at task level and works are carried out as per the <a href="#">Lifting minimum standards</a></li> <li>• Ensure crane commissioning inspection has been completed and signed off by a competent person</li> <li>• Ensure all workers involved in lifting operations are competent and understand the requirements of any related Work Method Statement (WMS) or lifting plan (where required).</li> <li>• Ensure all Lift Plans have been reviewed and approved by the authorised person (refer <a href="#">Lift Planning Matrix</a>).</li> <li>• Ensure any defective equipment is withdrawn and quarantined immediately.</li> <li>• Ensure preventative maintenance and periodic inspection of all lifting equipment is conducted and recorded in the Lifting Equipment Register.</li> <li>• Ensure all workers involved in lifting operations are inducted in Underground &amp; Overhead Services Induction.</li> <li>• Ensure all competent workers involved in lifting operations are recorded in the <a href="#">Project Training and Competency Register</a>.</li> </ul>
Supervision
<ul style="list-style-type: none"> <li>• Ensure all lifting operations conform to all legislative requirements (including any required commissioning inspections), lift plans and WMSs.</li> <li>• Ensure any defective equipment is withdrawn and quarantined immediately.</li> <li>• Ensure preventative maintenance and periodic inspection of all lifting equipment is conducted and recorded in the Lifting Equipment Register.</li> <li>• Ensure all personnel performing lifting operation activities hold the appropriate High-Risk Licence or RTO certificate and ATO for EPC equipment</li> </ul>

### Crane Operator

Before lifting any load, the Crane Operator shall ensure the following:

- Communications are established and checked with the Rigger/Dogger controlling the load;
- The crane is fully functional, and all inspections and maintenance have been completed;
- Readings from the electronic load indicators are cross-checked with the crane load chart;
- They have physically inspected the set-up of the crane (360° walk-around) and checked other operations around the crane (including barricading) to ensure that it is safe to complete the lift;
- They have checked the prevailing and expected weather conditions, such as wind strength and directions;
- They have checked for visibility and glare issues for the expected duration of the lifting operation.
- They have checked and ensured that the crane configuration used for the lift matches the lift plan.

### Rigger/Dogger

Before lifting any load, the Rigger/Dogger shall ensure the following:

- The slings and lifting equipment are fit for purpose and are correctly applied to the load and the crane hook;
- No part of the load is loose, and the load is free and ready for hoisting;
- When hoisted, the load will not foul on any object or cause a hazard to any personnel or plant;
- The load/boom travel route is clear, and the landing area is clear and ready to receive the load safely;
- They are competent in lifting operations and have appropriate High-Risk Work Licences, certificates and ATO for EPC equipment.

### Workers

- Must be competent in lifting operations and have appropriate licences and certificates where appropriate.
- Be involved in risk assessment of lifting operations they are likely to be involved in.
- Complete mobile plant, vehicle and equipment risk assessments and checklists as required.
- Understand, sign off and follow any related WMS or lift plan.
- Ensure understanding and adherence to radio procedures and communication
- 

## 5. LIFTING OPERATIONS



Refer to [Appendix A: Lifting Operations Flowchart](#).

### 5.1. Implementing lifting operations

A safe system of work shall be established and followed for:

- single lifts
- group lifts
- non-routine lifts
- repetitive lifts

- routine operation lifts.

Planning, selection and consideration of lifting equipment limitations, the Safe Working Loads, duties, responsibilities and risks shall be understood and communicated to all workers involved in lifting operations. Lifting Operations safe systems of work should include the following:

- Planning of the operation
- Selection, provision and use of suitable lifting equipment
- Maintenance, examination and testing of lifting equipment and review lifting checklist before each lift
- Provision of suitably trained and competent workers involved in the lifting operations and defined responsibilities
- Emergency procedures are in place in respect of damage or impairment to the lifting equipment during lifting operations
- Consideration for safety of workers or others not involved in the lifting operation
- WMS, JHA Card and lift plan debriefing of workers involved in the lift, including appropriate signalling and communications for the lift
- Completion of the BMD [Mobile Crane Inspection Checklist](#) to a satisfactory standard prior to crane operation
- Contractors are to be competent to carry out lifting operations on site in accordance with statutory requirements and an audit review shall ensure the capabilities of contractors and recorded in the [Project Training and Competency Register](#).

## 6. LIFT PLANNING AND AUTHORISATION<sup>1</sup>

Thorough planning by competent people is a mandatory requirement to eliminate or minimise risks arising from lifting operations.

The level of complexity of planning/lifting and the competency of the persons required to be involved in that planning/lifting will be commensurate with the risks involved.

The [Lift Planning Matrix](#) is a primary decision-making tool, and categorises the risks associated with the differing degrees of complexity and risk management of Routine Lifts, Non-routine Lifts or Critical Lifts. It also mandates the minimum actions required to be undertaken in planning and conducting lifting operations within each category.

### *Step 1 – Identify Lift Category*

All lifts shall be classified as Routine, Non-routine or Critical by a competent person – generally, the Superintendent/Foreman in charge of the works (or others as authorised by the Project Manager) – in accordance with the [Lift Planning Matrix](#). This will allow the prescribed levels of planning, checking, authorisation and supervision to be implemented according to the level of risk involved in the lifting operation.

### *Step 2 – Develop Lift Plan*

Lift Plans for Non-routine and Critical Category lifts shall be developed by the Project Engineer/Lift Designer, in consultation with the Superintendent or Supervisor of the works, and a subject matter expert (where appropriate). These Lift Plans shall be developed according to the Lift Plan process identified in the [Lift Planning Matrix](#).

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• <sup>1</sup> OFSC Audit Criteria H 16.5

### Step 3 – Authorise Lift Plan

Lift Plans shall be checked and authorised by persons listed in the [Lift Planning Matrix](#) who are independent of the person who developed the plan.

## 7. MINIMUM LIFTING OPERATION REQUIREMENTS<sup>2</sup>

- Risk assessments must be undertaken prior to lifting operations.
- Crane commissioning inspections completed (as required)
- Lift Plans for cranes must be developed (where required as per [Lift Planning Matrix](#)).
- All cranes and lifting equipment must comply with the requirements of the relevant approved design standards.
- Plant and Equipment risk assessments shall be completed to ensure site safety requirements, and any potential hazards associated with the equipment condition, are identified prior to initial use.
- [Work Zones](#) must be established around crane working areas and lifting activities as per the [Plant and Equipment Management](#) standard
- Lifting equipment is not allowed to work within 8 metres of power lines, unless a suitably trained Controller is appointed by the service provider and is present during the lift (in some states, permits are also required).
- All electrical cranes shall have power supply isolation points, capable of being positively locked.
- A crane without a physical locking system that disables and isolates its free-fall capability shall not be used.
- Load cells, load moment indicators and external rated capacity shall be available in accordance with the manufacturer's requirements.
- All cranes and lifting equipment must have manufacturer crane and lifting equipment operation manuals.
- Any modification shall be subject to the original manufacturer's approval with change management applied.
- Rated Capacity (RC) must be clearly identified and marked on all cranes and lifting equipment associated with Safe Working Loads (SWL) / Working Load Limits (WLL). The RC shall not be exceeded.
- Check all limit switches prior to starting works.
- Prior to use, the operators of lifting equipment and accessories should perform a pre-lift check in order to identify faulty equipment, and the frequency of checking should be determined in relevant Lift Plan.
- All crane hooks must be fitted with a positive locking safety catch.
- No side-loading of crane booms, or work under suspended loads, is permitted.
- No lifting shall be carried out without outriggers being deployed (except pick-and-carry operations).
- The lifting of personnel with cranes shall only be carried out with approved work cages or baskets.
- Crane operators and crew shall establish communication systems including use of correct signalling.
- Radios are to be used by crane crew on site.
- Risk assessment should occur to achieve the best and most efficient signalling method for the lifting operation being undertaken, which can include any of the accepted communication systems
- Only competent personnel shall perform crane or lifting equipment inspections.
- Vehicle Loading Cranes (VLC) shall have sufficient engineering controls to prevent the operator from being crushed during lifting operations. It is preferable to use a remote-control device. The operator must be competent and authorised.
- Crane Pad Certificate completed for Bearing pads out riggers
- Tag lines are to be used at all times. As a minimum, 16mm NFR rope is to be used, unless deemed otherwise through documented approach (e.g. Risk Assessment or WMS).
- No lifting of multiple objects at one time (Christmas treeing).

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• <sup>2</sup> OFSC Audit Criteria H 16.5 & 16.6

## 8. MINIMUM CRANE REQUIREMENTS<sup>3</sup>

- Crane must have a Rated Capacity 10% greater than the heaviest lifting requirement at the maximum required radius (due to vertical upward force with sudden load release – refer [AS1418.5-2013 sect. 4.1.2.6.2](#)).
- Crane must be able to access the work area and relocate with the existing ground conditions.
- Crane must be able to set up and operate safely in the available area.
- Crane must have a current annual plant registration for the State in which it is working.
- Crane must have had a structure inspection in accordance with the Australian Standard.
- Crane service history must be available on site.

### 8.1. Multiple crane operations

Multiple crane lifts present risks due to the potential for one crane to inadvertently transfer its share of the load to, or create excessive side loads on, the other crane. Multiple crane lifts may be classified as Medium Risk or Critical Risk and shall only be performed when it is not possible or practicable for the lift to be carried out by a single crane due to size, mass or shape of the load.

When selecting cranes for Multiple Crane lifts (except Designed Lifts), the minimum capacity of each crane shall be as follows:

- Two Cranes - 20% greater capacity than the calculated share of the load;
- Three Cranes - 33% greater capacity than the calculated share of the load;
- Four or more Cranes - 50% greater capacity than the calculated share of the load.

Further applicable requirements are as follows:

- Cranes should be moved in the same direction during multiple crane lifts to simplify the dynamics of the load movement and its effect on the cranes.
- Cranes of the same type shall be used for multiple crane lifts, or the lift shall be assessed as a Designed Lift in accordance with [Australian Standard AS 2550.1](#).
- One person (Intermediate Rigger) shall be designated as 'Rigger in Charge' of the lift and shall be in control of all movements with all cranes.

### 8.2. Crane standing

A competent person shall ensure the loads imposed by the crane whilst in and out of service, and during erection and dismantling, can be sustained by the ground or other supporting surface.

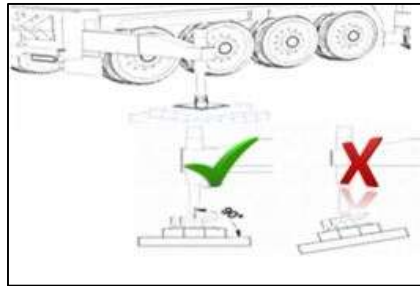
The ground on which a mobile lifting appliance stands shall be level (within the manufacturer's requirements), well-compacted and stable enough to support its weight and its load without collapse or subsidence.

For Critical and Non-routine lifts, outrigger pads shall be subject to documented bearing pressure assessments.

As part of the above assessment and the lift, consideration may be required to have the ground bearing area assessed and [Crane Pad Certificate](#) completed by a Geotechnical Engineer to ensure stable ground for the outriggers and crane pad.

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• <sup>3</sup> OFSC Audit Criteria H 16.5 & 16.6



### 8.3. Setting up outriggers for cranes

Where normal crane operation requires the use of stabilisers or outriggers, they should be fully extended at all times when lifting and set to have the carrier tyres clear of the ground. Where the outriggers cannot be fully extended, the crane shall be operated in accordance with the manufacturer's requirements.

Timber and/or mats should be used to support the lifting appliance outrigger pads. These blocks must be rigid and tightly spaced, completely support the pad, and be of sufficient area to support the calculated loads.

The cylinder and pad must meet at right-angles to prevent the pad collar from failing or the pad slipping along the blocking.

### 8.4. Lifting equipment inspections

BMD has deemed that all lifting equipment (including Crane Workboxes) shall be inspected periodically on a quarterly basis by Intermediate Rigger as a minimum. All inspections are to be recorded on the [Lifting Equipment Register](#) and all lifting equipment shall have a unique identifier that provides traceability to the register.

All lifting equipment shall be colour-tagged as a quick visual prompt of its status of inspection as per the table below. There will be a two-week changeover period between each period.

Quarter	Colour
Jan – Mar	Red
Apr – Jun	Green
Jul – Sept	Blue
Oct - Dec	Yellow

#### 8.4.1. In-service

Prior to each use, chain slings shall be visually inspected by a qualified dogger or rigger. The inspection shall determine whether slings are free of any damage or wear that exceeds the allowable discard criteria (see [AS 3775.2-2014 Chain Slings for Lifting purposes, Clause 9.3](#)) and that a WLL tag is fitted. If any defects are detected, the sling shall immediately be withdrawn from services.

#### 8.4.2. Periodic

The following requirements and recommendations apply:

1. Sling inspections shall be able to identify grade and specification of each component.
2. Sling inspections shall be undertaken in an adequately lit location.
3. Where necessary, the sling should be cleaned before it is inspected.

4. Every individual chain link shall be inspected for any signs of wear, nicks, cracks, gouging, twisting, weld spatter, corrosion, stretching or lack of articulation between the links. Particular attention shall be given to links that have been reeved, due to the possibility of bending or twisting of the engaged link. Pitch (internal length) may be measured to verify stretch of chain.

Equipment that requires load testing to be tested annually by certified provider.

### 8.5. Suspending personnel in workboxes

Workboxes should only be used when a risk assessment determines there are no other reasonably practicable methods available to work where a fall from one level to another is possible, such as working from a solid structure, scaffolding, or by using an elevating work platform. A workbox permit must be completed prior to commencement of the work.

Where a workbox is planned to be used near or within a structure, the risk assessment should include consideration of the selection of the type of workbox. Workboxes that feature a protective superstructure (roof) may, in some circumstances, reduce the risk of injury in the event of falling or projecting objects in the lift path. Alternatively, a roof on the workbox may hinder clear vision of projecting structures to the point where they are unseen and present a hazard when hoisting or luffing. When a workbox with a roof is utilised, the system of work associated with it must include alternative and complementary methods of identifying hazards in the hoisting or luffing path. It will also be necessary to provide a satisfactory method of checking attachment points given they would be obscured by the roof.

A crane used with a workbox shall comply with the following minimum requirements according to [Australian Standard AS 2550.1 – Section 6.18, AS 1418.17](#).

The crane shall be fitted with:

- A safety hook or moused accessory
- Self-centring controls that stop motion when released
- Powered lowering
- Positive free-fall lockout to prevent inadvertent disengagement of the lockout
- Upper limit switch on the hoist motion
- Down limit switch if the workbox is lowered below the crane supporting surface
- Workbox permit.

The crane shall be configured so that:

- At the maximum radius of the task to be performed, the crane has a minimum rated capacity of 1000kg, and
- When the jib or boom of the crane is at its maximum radius for the task to be performed, the rated capacity of the crane in this condition, when divided by 2, is equal or greater than the total load of the workbox and its contents.

A safe method of rescuing a person from a workbox in the event of a failure of the crane shall be identified and readied each time a person is suspended in a workbox.

Workboxes, and the design shall be registered with the Regulator by the designer of the plant, or a person who has management or control of an item of plant.

When personnel are suspended in a workbox the following requirements will apply;

- The rated capacity and maximum number of occupants of the workbox shall not be exceeded at any time.
- The workbox, lifting attachments and records shall be inspected by a competent person prior to use.
- Personnel and material shall be securely confined within the workbox.
- The crane shall not be used to simultaneously raise, lower or suspend any other load.
- An appropriate procedure shall be developed to transfer any materials from the workbox.

- The Crane Operator shall remain at the controls of the crane at all times.
- All crane movement shall be under power (free-fall lockout applied).
- One of the occupants shall be a qualified Dogger with an effective means of communication with the crane operator.
- Mobile cranes shall not travel while persons are suspended in a workbox.
- The workbox shall not be secured to any structure except designated landings.
- Flammable substances shall be securely stored in a separate compartment at minimum quantities for the work and fire extinguishing equipment shall be carried.
- Welding from workboxes shall require that the workbox is either insulated from the structure and the crane (by using a rubber pad on the crane hook or rigging the workbox with a dry round synthetic sling) or alternatively, the workbox may be electrically bonded to the structure with an easily removed clamp or magnet to prevent inadvertent current flow to earth through the crane structure.
- All persons in the workbox shall wear general purpose safety harnesses and lanyard assemblies that comply with Australian Standard AS 1891.1 connected to safety harness anchorage points within the workbox.
- A safety sling shall be fitted between the workbox rigging and the crane rope or headache ball above the safety hook to prevent release of the workbox in the event of ring roll out.

**Note:** *Work boxes should not be used in winds in excess of 7m/s (25 km/h), electrical storms, snow, ice, sleet, or other adverse weather conditions that could affect the safety of personnel.*

## 8.6. Pick and carrying of loads

When picking and carrying loads, the following shall be implemented for the activity:

- Only lifting appliances designed to travel with a load shall be permitted to do so.
- Only travel on stable, level ground, or de-rate for side slope where permitted by the manufacturer
- Do not exceed the manufacturer's stated maximum travel speed or distance.
- Keep the load as close as possible to the ground and secure to the crane if appropriate.
- Operate at minimum radius and boom length.
- Travel at a speed to minimise swing of the load when braking.
- Ensure the crane capacity is configured for 66% of the cranes loading charts for pick and carry, unless the cranes have a loading chart which provides capacity when in a pick and carry configuration.
- Ensure tagline is utilised for management and control of the load.

## 8.7. Lifting loads around personnel

BMD personnel and subcontractors shall ensure that, when lifting operations are planned in tight work areas, the person in charge of the lift shall:

- Notify their own and other subcontractor supervision in the area of the lift including the load size and restricted zone.
- Receive confirmation from the subcontractor supervision that their personnel in the work area have been notified of the lift.
- Comply with the requirements defined by Workplace Health and Safety Regulatory Authorities for the relevant states or territories at all times.

A Supervisor who, if notified of a pending lift, shall immediately:

- Assess the impact of the lift on the crew's work area.
- Notify the crew of the appropriate action.
- Advise the lifting Contractor that the above have been complied.

Where multi-level structures separate the boom travel radius and/or the path of the load from personnel working in the area, a comprehensive risk assessment, approved by BMD, is required prior to lifting the load.

## 9. GENERAL REQUIREMENTS

In all cases, regardless of risk category, consideration must be given to:

1. Load characteristics, including:
  - Weight to be lifted including rigging gear
  - Physical dimensions of the load to be lifted
  - Centre of gravity
  - Stresses placed on the load to be lifted (adhere to manufacturer's recommendations)
  - Fixing condition and methodology.
2. Area available for lifting operations, including:
  - Outrigger spread and tail swing radius
  - Path of travel (crane/load) and turning room for relocation of crane
  - Ground conditions and levels, e.g. does a hard stand need to be created
  - Access and operating room
  - Proximity to excavations
  - Proximity to overhead and underground services (obtain asset location plans etc.)
  - Presence of slopes (the effective rating of the crane will be reduced)
  - Lifting safe zones (e.g. area of influence of load, consider failure of equipment and potential swing radius. Covers may also be secured over slinging points to prevent flying off
  - Existing operational structures such as conveyors, railway lines or roads.
  - Selection of crane(s) of suitable capacity depending on the job requirements and frequency of lifting – single or multiple crane lifting, mobility etc.
3. Boom length required
4. Lifting radius to uplift and set down points
5. Maximum lifting capacity of the radius
6. Double handling (e.g. set down, re-position and lift)
7. Lifting devices required (type and capacity)
8. Slinging technique

### 9.1. Weather

Loads shall be assessed taking into full consideration the wind loads likely to be experienced during the operation and their effect on the load intended to be lifted, including the likely effect of gusting on the crane's stability. Weather forecasts can be obtained from the Bureau of Meteorology at <https://www.bom.gov.au/>.

A means for measuring the wind speed should be available at the working site in a location that can provide an accurate wind load reading on the crane or load. Where wind speeds exceed manufacturer's operating recommendations, cranes shall be placed out of service, and where applicable, storm brakes applied.

Cranes should not be operated during a storm or when there are atmospheric conditions that increase the risk of lightning. Lightning detectors and/or observation methods including local knowledge should be utilised to predict potential lightning conditions.

***NOTE: The installation of signs on boom may increase wind loading, particularly on tower cranes. Therefore, they should only be used when approved in writing by the manufacturer.***

**NOTE: In the case of lightning strike, be aware this may cause damage to mechanical bearing to crane which results in failure of the lifting equipment, and with tyred crane this can cause internal tyre fires (crane should be isolation for a 24-hour period in case of tyre explosion).**

## 9.2. Proximity hazards

Wherever possible, the crane should be sighted so that the Crane Operator has maximum visibility of the crane working area. Consideration shall be given to the presence and of proximity hazards such as:

- Overhead power lines
- Underground services - to ensure the stability of the crane and the integrity of any services identified
- Nearby structures or other cranes including any temporary installations (e.g. tilt-up bracing)
- Excavations, embankments or uncompacted fill – to ensure the stability of the crane
- Crane Crew personnel working in the 'swing' area, in particular around potential crush zones
- Mobile equipment movement within the crane working area
- Public access areas including roadways, railways and rivers
- Electromagnetic radiation effects on radio, infra-red or electronic controls
- Other Cranes - where two or more cranes working on a site share the same airspace, procedures shall be established to prevent unplanned contact between parts of the cranes. Consideration should be given to fitting electronic control systems in each crane capable of automatic limiting to minimise the risk of collision
- Environmental factors affecting visibility (e.g. sun glare in the driver's line of sight).

## 10. ASSESSING AND MANAGING RISK<sup>4</sup>

Lifting activities must not take place until risks have been assessed and adequate controls put in place.

Typically, risks are assessed at two levels:

- Project level (usually performed at the start of the project and covering all lifting activities and included in the Project Risk Register), and
- Task level WMS.

**The following factors must be** considered when assessing the risk of lifting operations:

- Type of access required by personnel and plant
- Employee ability / experience / Competency and licences
- Type of work activity
- Work environment (e.g. services in area, load types)
- Suitability of the plant (depend on the type of crane, reach required, etc.)
- Ground conditions
- Temporary or permanent structures in place
- Weather (Wind, Rain, Lightning, Heat)
- Lifting equipment required
- Public interface.

## 11. ROUTINE, NON-ROUTINE AND CRITIAL LIFTS

Refer to the [Appendix A Lifting Operation Flowchart](#) for reference.

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• <sup>4</sup> OFSC Audit Criteria H 16.5 & 16.6

### 11.1. Routine lifts

- Are generic, repetitive lifts covered by a previously prepared WMS, JHA or lift plan, (and reviewed by a competent person)
- Are undertaken by the lifting team trained in the use of the specific lifting equipment, familiar with its limitations; and competent to complete the entire operation
- Are performed frequently (under the same conditions) by workers involved with the risk assessment for the operation being conducted.
- All routine lifts require a [Routine Lift Assessment](#).

### 11.2. Non-routine lifts

- Are specialised lifts that require specific or additional risk assessment to identify and mitigate the risks associated with the lift
- Include engineered lifts or project specific lifts that may use equipment specifically designed or selected for the operation.
- Require [Crane Lift Studies](#). Lift studies are mechanical calculations performed to assess the safety of a lift and should be completed prior to any crane lift, to determine if there is a requirement for a lift study.
- Crane lift studies must be performed before:
  - Any lift greater than or equal to 75% of the crane's Rated Capacity Load Chart
  - Lift of 50 tonne or greater, any high-risk lift.
- Lift to be reviewed and signed off by one-up Manager.

### 11.3. Critical lift studies

Critical lift studies must:

- Be verified by an independent off-site competent person and signed off by a higher level of management.
- Include verification of the actual load weight and lifting points, a detailed risk assessment and be recorded in the [Lifting Equipment Register](#).

Critical Lift Studies must be performed for:

- Any lift greater than 90% of the crane's Rated Capacity Load Chart and lifts greater than 50 tonnes;
- Any multi-crane lift.

[Lifting Study Critical](#) are required for all non-routine lifts, and where there is:

- adverse weather conditions
- multiple cranes lifting operations
- live electrical conductors
- people working near/in the proximity
- any other hazards.

## 12. PERSONNEL COMPETENCY<sup>5</sup>

### 12.1. Training

It is a BMD requirement that all workers involved in plant operations are to complete appropriate levels of training. For plant operators, this requires the completion of a Registered Training Organisation (RTO) issued

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• <sup>5</sup> OSFC Audit Criteria 16.8

competency and a BMD Authority to Operate (ATO) for each plant they are qualified and experienced to operate.

## 12.2. Crane operators

Crane Operators shall:

- Hold a current High-Risk Work Licence appropriate to the classification of crane being operated
- Possess a full working understanding of the duties of a Rigger/Dogger and signals used in lifting operations.

## 12.3. Rigger and Dogman

Riggers and Dogman shall:

- Hold a current High-Risk Work Licence in the classification of Rigger/Dogger
- Be able to effectively assess a load to determine weight, mass and centre of gravity
- Assess the load destination and pathway the load will travel
- Intermediate and Advanced Riggers shall be capable of inspecting lifting equipment to determine its fitness for purpose including recognising typical evidence of wear and damage
- Be competent in the selection and use of slinging techniques including pre use inspections
- Know the signals used in lifting operations
- Be competent in reconfiguring booms, installing fly jibs and rooster sheaves as required
- Use tag lines to control the movement of suspended loads.

## 12.4. Licence to perform high risk work

Competency requirements for planning, slinging and directing lifts are illustrated in the Table 1.

**Table 1 - Rigging work**

License	Code	Comments / Applications
Dogging	DG	<p>Consists of the application of slinging techniques to:</p> <ul style="list-style-type: none"> <li>• Move a load (including selection and inspection of lifting gear) and/or</li> <li>• Directing a crane/hoist operator in the movement of a load when the load is out of view of the crane/hoist operator</li> </ul> <p><i>Note: This is the minimum requirement for slinging and providing direction to operators for a single lift.</i></p>
Basic Rigging	RB	<p>Consists of dogging &amp; rigging work including rigging work involving:</p> <ul style="list-style-type: none"> <li>• Movement of plant and equipment</li> <li>• Steel erection</li> <li>• Hoists (including mast climbing hoists)</li> <li>• Placement of precast concrete</li> <li>• Safety nets and static lines</li> <li>• Cantilevered crane-loading platforms, and</li> <li>• Perimeter safety screens and shutters</li> </ul>

License	Code	Comments / Applications
Intermediate Rigging	RI	<p>Consists of all basic rigging work including rigging work involving:</p> <ul style="list-style-type: none"> <li>• The rigging of cranes, conveyors, dredgers and excavators</li> <li>• Tilt slabs</li> <li>• Demolition, and</li> <li>• Dual lifts.</li> </ul> <p><i>Note: This is the minimum required for development of design lift study, slinging of load and providing direction to operators during 2, 3 and 4 lift operations.</i></p>
Advanced Rigging	RA	<p>Consists of all intermediate rigging work including rigging work involving:</p> <ul style="list-style-type: none"> <li>• Gin poles and shear legs</li> <li>• Flying foxes and cableways</li> <li>• Guyed derricks and structures</li> <li>• Suspended and fabricated hung scaffolds</li> </ul>

**Note: An engineer with relevant experience in lifting operations is required to assist in the development of a designed Lift Plan.**

Relevant competency requirements for the operation of powered mobile plant used for lifting operations are illustrated in Table 2 below.

**Table 1: Plant Operators**

License to Perform High Risk Work Class	Code	License to Perform High Risk Work Class	Code
Non-Slewing mobile cranes	CN (or C2, C6, C1 or C0)	Vehicle loading cranes	CV (or C2, C6, C1 or C0)
Slewing Mobile Cranes <20T	C2	Slewing mobile crane <60T	C6
Slewing mobile cranes <100T	C1	Slewing mobile crane >100T	C0
Tower Cranes	CT	Self-Erecting Tower Cranes	CS
Portal Boom Cranes	CP	Derrick Cranes	CD

## 13. LIFTING USING OTHER EQUIPMENT NOT PRIMARILY DESIGNED FOR LIFTING

### 13.1. General

Requirements previously stated in this procedure shall apply where applicable together with recommendations of the plant manufacturer and the requirements of [AS 1418.8 Cranes, Hoists and Winches – Special Purpose Appliances](#) when lifting freely suspended loads with other equipment.

Tele-handlers equipped with Jibs are not to be utilized in any lifting operations on the BMD sites unless certified to [AS 1418.19](#). This will usually result in the fitting of hydraulic locking systems, etc.

Forklifts utilising jib attachments shall be operated in accordance with the jib or forklift manufacturer's recommendations as per the placard on the plant.

Where machines require the use of stabilisers (e.g. backhoes, vehicle mounted crane), they must be used at all times when lifting.

Vehicle Loading Cranes (VLC) shall be primarily used for delivery only. VLCs shall only be used for precision placement similar to a mobile crane when fitted with a manufacturer or competent person verified proportional control system. A test record and placard shall be available as evidence of the test and verification.

Consideration should be made when earthmoving equipment is to be used for precision lifting tasks due to lack of creep control capability and the risk of 'hydraulic drift' or leakage.

**Notes:**

- ***Weight of loads and load radius shall be consistent with any instructions, information, conditions or restrictions provided by the plant manufacturer.***
- ***Operational speed shall be at a minimum and the plant shall be operated to minimize the risk of sideways tipping. Seat belts shall be worn at all times.***
- ***Suspended loads shall not be lifted over personnel under any circumstances.***

### **13.2. Rated capacity**

Equipment shall only lift loads that are within its rated capacity (the mass of the lifted load and the lifting attachments at maximum lift point radius).

The rated capacity of the plant shall be as marked by the manufacturer or as placarded (if modified in accordance with the Australian Standard). The rated capacity may also be expressed in terms of 'mass radiuses, the maximum mass in kilograms that may be handled at the maximum lift point radius (or reach) expressed in metres in the most adverse configuration.

A rated capacity chart shall also be fitted in the cabin of the plant.

### **13.3. Quick hitches**

Quick hitches fitted to earthmoving equipment used to lift freely suspended loads shall comply with [AS 4772](#) which requires:

- In addition to its primary retention system, all quick hitches shall be fitted with an additional safety system which ensures retention of the attachment to the quick hitch in the event the primary system fails. The additional safety system should be mechanically locked in an engaged position, requiring intentional disengagement for the attachment to be disconnected.
- Quick hitches only be used to support attachments for which they have been specifically designed; and
- Quick hitches shall be maintained in proper working order and marked with the model and serial number, manufacturer's name, quick hitch weight and maximum rated capacity, as well as the capacity of each lifting point.

### **13.4. Multiple equipment lifting**

When performing 2, 3, or 4 appliance lifting operations (such as sections of railway structure or pipeline), the following precautions shall be taken to ensure loads are distributed evenly between lifting appliances:

1. Lifting appliances must be kept aligned in the same direction;
2. Lifting Equipment must be kept plumb in both lateral and longitudinal planes at all times;
3. Motions are operated at low speeds and are coordinated;
4. The load and lifting appliances standing are monitored at all times during operation; and
5. The maximum capacity of each plant shall be in accordance with Clause 6.4 for multiple crane operations.

**Note: Multiple lifting operations will require an Intermediate Rigger in control of the lift who may require the assistance of others for observation of the lift.**

### 13.5. Operator competency and training<sup>6</sup>

Where earthmoving equipment is used for lifting loads the operator requires proof of competency and an ATO but does not require a high-risk license for crane operation unless the load exceeds a 3t capacity.

Where a jib attachment is attached to the earth moving or multi-tool carrier equipment, the operator must also have the required certificate of competence and an ATO and if the load exceeds a 3-tonne capacity additional training and high-risk licensing (e.g. Non-Slew Mobile Crane training).

The person slinging the load or directing the operator for EPC is Queensland must be a competent Dogger or Rigger, in other states this person must hold RTO certification in Lifting Operations as a minimum.

## 14. CONTROLS

For any controls, compliance checking systems are established to describe:

- Who does the checking;
- What items are being checked;
- How often checking occurs.

The frequency of compliance checking depends on the task, location and level of risk.

### 14.1. Low-risk activities

For low-risk activities, checks may be made visually by the person responsible for the activity.

### 14.2. High-risk activities

For high-risk activities, the person responsible for the activity must make formal checks. Some high-risk activities may require full-time monitoring. All formal checks and monitoring will need to be documented and filed with the activity

Other Control Measures:

- Planning for the specific lift requirements for hazard identification and risk assessment, to ensure safe systems of work are implemented as control measures for all lifting operations.
- Documented WMS and JHA including required lifting studies/ Lifting Plans; reviewed and authorised prior to lifting operations.
- Completion of the BMD [Mobile Crane Inspection Checklist](#) and Commissioning Inspection to a satisfactory standard prior to crane operation.
- Risk assessment for all new and modified lifting equipment; documented equipment integrity checks 36 hours prior to arrival on site. Must be undertaken annually.
- Lifting slings and accessories shall:
  - Be tested prior to arrival on site;
  - Be marked with the manufacturer's identification, SWL, Plant Number;
  - Have test certificates provided for their design and rating;
  - Be registered on BMD lifts register.
- Correct selection of cranes and lifting equipment for the lift and use of lifting checklist prior to lift to ensure load, equipment, environment and operator control requirements are in place.
- Defective equipment identified is immediately withdrawn from service and replaced.

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• <sup>6</sup> OFSC Audit Criteria H 16.8

- Fall protection and physical locking systems to disable and isolate free-fall capabilities.
- Ensure all workers involved in the lifting operations are trained, competent and knowledgeable in the task and use of lifting equipment and operations and recorded in the [Project Training and Competency Register](#).
- Ensure cranes and lifting equipment are operated with safety and warning devices operable.
- Checks for correct design of cranes and lifting equipment prior to use are assessed by suitably competent engineer.
- Operators trained in the relevant equipment/OEM Manual and specifications for the crane being used.
- Controls clearly and permanently marked.
- Rated Capacity Safe Working Load (SWL) and Working Load Limits (WLL) clearly identified.
- Bump bars/guards installed around the controls to prevent inadvertent lever operation.
- Install, maintain and monitor barricading, warning signs, exclusion and restricted zones; including no access/signage restricting access to danger zones while Cranes are operating.
- Monitor Load Stability.
- Lift studies and verification of work planning and the inclusion of relevant engineering reports.
- Lift plans approved by next up Manager for non-routine lifts.
- Lifting equipment and associated records retained and equipment register kept updated.
- Registers for plant and equipment maintained to record inventory, systems in place to identify registration, licences, renewals and maintenance schedules.
- Project specific - general inductions and training is undertaken prior to commencement of any work, including communication of roles and responsibilities for all persons involved with crane and lifting operations.

## 15. DEFINITIONS








<b>Workers</b>	Workers, contractors, subcontractors, labour hire workers.
<b>Hazard</b>	Any situation with the potential to cause injury/illness to people or damage to equipment, property, the environment or community.
<b>Inspection</b>	The process of visually surveying the workplace with the intent of identifying, controlling and correcting hazards that may be present or have the potential to impact on the workplace.
<b>Inspection Checklist</b>	Pre-determined written criteria to assist the inspection team identify common hazards likely to be present in the workplace. Used by the team to record the findings of the inspection.
<b>Competent Person</b>	A person who has, through a combination of training, education and experience, acquired knowledge and skills, enabling that person to perform correctly a specified task.
<b>Lifting Team</b>	A team of workers who are trained, competent and knowledgeable in the task and use of lifting equipment and operations relevant to the lifting task at hand and assigned with defined responsibilities.
<b>High Risk Lift</b>	A high-risk lift is any mobile crane lifting operation involving one of the following: <ul style="list-style-type: none"> <li>• the load exceeds 75% of the rated capacity of the crane during the course of the lift</li> <li>• the load exceeds 50 tonnes</li> </ul>

	<ul style="list-style-type: none"> <li>• multiple crane lifts, where more than one crane is used to lift a load at any one time</li> <li>• any crane operation within the Rail Corridor where 50% of the crane's rated capacity is exceeded</li> <li>• lifting over the Rail Corridor</li> <li>• lifting over a public space</li> <li>• lifting and erection of tilt-up concrete panels</li> <li>• lifting large pressure vessels or tanks</li> <li>• lifting in the vicinity of live overhead powerlines or other live exposed electrical equipment</li> <li>• lifting persons in workboxes</li> <li>• lifting likely to be carried out in conditions where wind speed is 36km/h (10m/s) or more</li> <li>• using a crane on suspended ground or floor</li> <li>• using a mobile crane for tree lopping</li> <li>• using a mobile crane on a barge</li> <li>• using a crane above buried services</li> <li>• installing bridge beams during bridge installation work</li> <li>• where pick and carry, cranes are required to travel over sloping or uneven ground</li> <li>• the crane is standing on soft or previously disturbed (excavated) ground or fill.</li> </ul>
<b>JHA</b>	Job Hazard Analysis – potential incident and hazard identification and risk analysis assessment of construction work.
<b>WMS</b>	Work Method Statement – incorporating the elements identified in the JHA and providing a work method statement for conducting the identified task at hand.
<b>ATO</b>	Authority to Operate
<b>PPE</b>	Personal Protective Equipment.
<b>RC</b>	Rated Capacity is the load that the crane is designed to lift for a given operating condition (e.g. configuration, position of the load).
<b>SWL</b>	Safe Work Loads.
<b>WLL</b>	Working Load Limits.
<b>Lift Studies</b>	Mechanical calculations performed to provide information about and assess the safety of certain types of lift.

## 16. REFERENCES

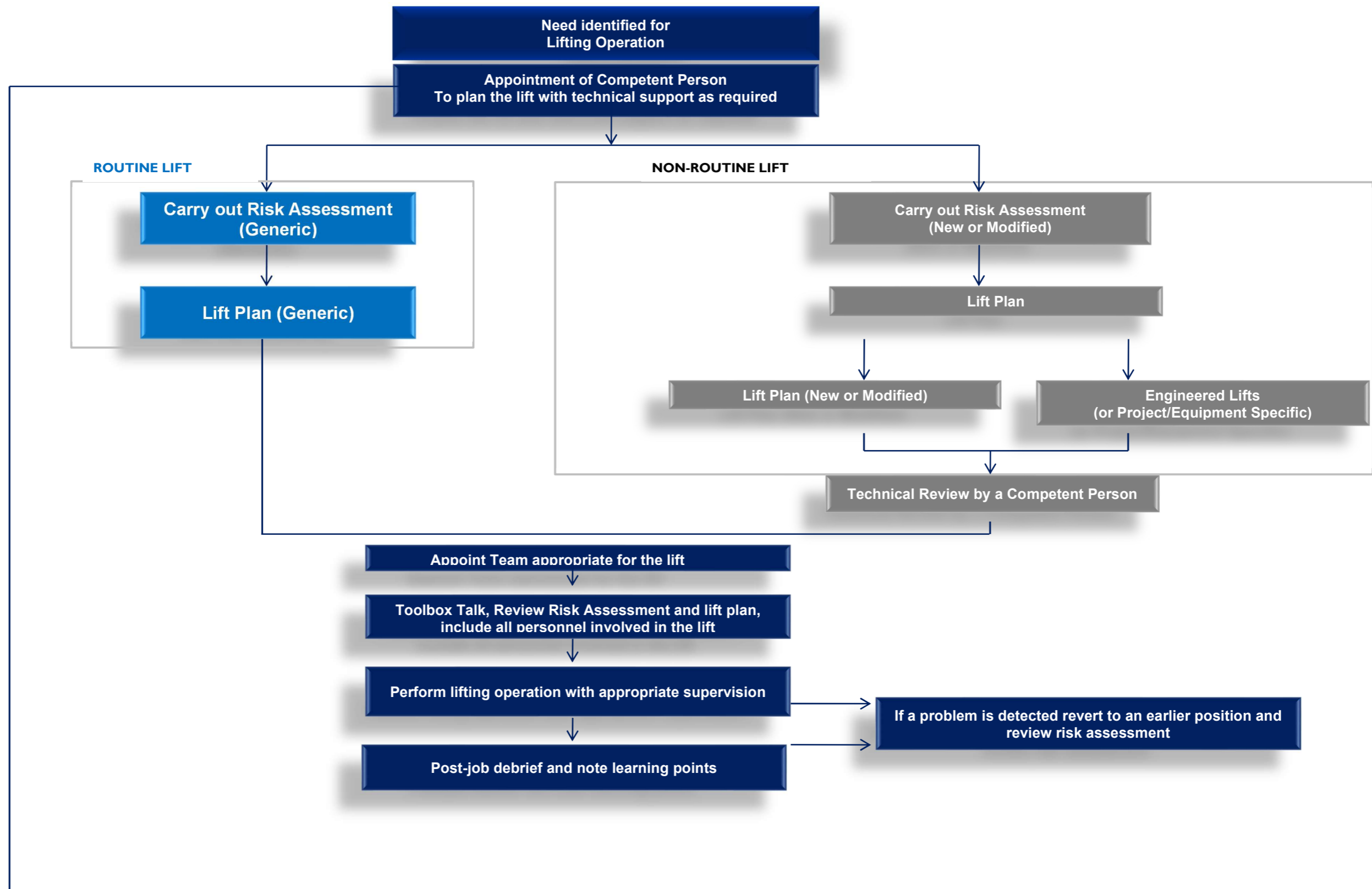
-  AS/NZS ISO 45001:2018 Occupational Health and Safety Management Systems
-  AS1418 Cranes, Hoists and Winches – General Requirements
-  AS2550 Cranes, Hoists and Winches - Safe Use
-  AS1138 Thimbles for Wire Rope
-  AS1353 Flat Synthetic Webbing Slings
-  AS1380 Fibre Rope Slings (Of Natural or Synthetic Rope)
-  AS1438 Wire Coil Flat Slings
-  AS1666 Wire Rope Slings
-  AS2076 Wire Rope Grips for Non-Lifting Applications
-  AS2089 Sheave Blocks for Lifting Purposes
-  AS2317 Collared Eyebolts
-  AS2318 Swivels for Lifting Applications
-  AS2319 Rigging Screws and Turnbuckles
-  AS2321 Short-Link Chain for Lifting Purposes
-  AS2740 Wedge-Type Sockets
-  AS2741 Shackles
-  AS2759 Steel-Wire Rope
-  AS2841 Galvanised Steel Wire Strand
-  AS3569 Steel-Wire Ropes
-  AS3585 End Fittings for Flat-Webbing and Round Slings
-  AS3775 Chain Slings–Grade T
-  AS3776 Lifting Components for Grade T Chain Slings
-  AS3777 Shank Hooks and Large-Eye Hooks–Max 60t
-  AS4991 Lifting Devices
-  AS4497 Round Slings, Synthetic Fibre: Care and Use
-  AS1418-17-1996 Cranes (including hoists and winches) - Design and construction of workboxes
-  ISO 4309:2010 Cranes - Wire ropes - Care and maintenance, inspection and discard
-  [Australian Government Building and Construction OHS Accreditation Scheme: FSC](#)
-  [National Standard for Construction Work \[NOHSC: 1016 \(2005\)\]](#)
-  [Environmental Protection Act 1994](#)
-  [Environmental Protection Regulation \(2008\)](#)
-  [Mobile Crane Inspection Checklist](#)
-  National Standard for Plant [NOHSC 1010 (1994)]
-  [SafeWork SA](#)
-  [NT WorkSafe](#)
-  [Safe Work Australia](#)
-  Work Health and Safety Act 2011
-  [Workplace Health and Safety Queensland](#)
-  [SafeWork NSW](#)
-  [WorkSafe Victoria](#)

### Associated Documents

-  [Crane Pad Certification](#)
-  Hazard and Aspect Identification Checklist (Environmental)
-  [Lifting Equipment Register](#)
-  [Lifting Minimum Standards](#)
-  [Lift Planning Matrix](#)
-  [Lift Study Critical](#)
-  [Lift Study Non-Routine](#)

-  [Risk Management Standard](#)
-  [Routine Lift Assessment](#)
-  [Plant and Equipment Register](#)
-  [Project Specific Risk Register](#)
-  [Project Training and Competency Register](#)

## APPENDIX A: LIFTING OPERATIONS FLOWCHART



## APPENDIX B: LIFT PLANNING MATRIX

Refer to the [Lift Planning Matrix](#).

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