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CS ENERGY PROCEDURE

CRANES AND LIFTING
CS-OHS-79

Responsible Officer: Principal Health and Safety Specialist
Responsible Manager: Head of Health and Safety
Responsible Executive: Chief Operating Officer

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1 PURPOSE

This procedure defines the minimum performance requirements for crane and lifting activities. It outlines the processes, responsibilities, and controls required to manage risks associated with lifting activities involving cranes, earthmoving equipment, and forklifts. CS Energy will ensure lifting activities are planned and conducted in accordance with applicable Work Health and Safety legislation, Standards, and Codes to protect workers, contractors, visitors, stakeholders, and the environment.

2 SCOPE

This procedure applies to all CS Energy sites and all lifting activities involving cranes, vehicle loading cranes, overhead cranes, equipment used as cranes, hoists, forklifts, excavator quick hitches, side loaders, and other lifting devices. It outlines the requirements for managing lifting activities to prevent injury, property damage, and environmental harm. This procedure forms part of CS Energy's Permit to Work (PTW) Management System and must be read in conjunction with the CS-PTW-01 Permit to Work (PTW) Procedure and relevant site-specific procedures.

3 RESPONSIBILITIES AND ACCOUNTABILITIES

3.1 PTW Administrator

- PTW Administrator is responsible for ensuring that:
- This procedure is complied with during normal business conditions; and
- An audit of this process is completed annually as a part of the annual PTW site review.
- This procedure is reviewed every 2 years.

3.2 Site General Manager

Site General Manager is responsible for ensuring that:

- Systems are in place to ensure appropriate lifting devices are readily available for workers; and
- Systems are in place to ensure lifting device are certified, inspected and fit for purpose.
- Provision of appropriate training.

3.3 Managers and Supervisors

Managers and Supervisors are responsible for ensuring that:

- They monitor compliance with this procedure and the risk control measures being implemented by the work party members;
- They provide appropriate training and other support to all personnel in application of this procedure;
- They conduct and/or assist personnel with SWMS/JSEAs; and
- Managers/Supervisors or their delegates verify and authorise lifting operations SWMS or JSEAs

3.4 Officer in Charge (OIC)

The OIC must ensure safe assessment, control implementation and overall safe lifting practices in accordance with this procedure ensuring that:

- Appropriate control checklists and lift plans are completed, and controls are in place prior to complex lifts; and

- Appropriate approved SWMS/JSEAs and/or risk assessments identifying the risks relative to the type of lift are completed and controls in place prior to all lifts.

3.5 Person in Charge of Work (PICW)

The PICW is responsible for ensuring that;

- Workers comply with the safe assessment, control implementation as detailed in the approved SWMS/JSEA and overall safe lifting practices in accordance with legislation and where relevant the contractor JSEA/SWMS or lift plan for the job.

3.6 Work Party

Employees and contractors are responsible for ensuring :

- They utilise the appropriate equipment provided for crane, hoists and lifts;
- They perform visual inspections on equipment before use;
- They ensure working at height requirements are followed when work is being performed where there is the potential to fall causing injury;
- They ensure that all lifting devices used are not defective by completing pre-start checks;
- They report and tag as “out of service” any faulty or defective equipment;
- They ensure personnel using lifting devices are licensed in the relevant equipment/plant and have been approved to use a device; and
- They notify their manager / supervisor in the event defects are identified and equipment/plant is tagged ‘out of service’ until cleared safe for use.

4 CONSULTATION AND COMMUNICATION

Consultation must occur at key stages of crane and lifting work, including:

- Planning lifting operations and lift studies
- Identifying hazards (e.g. load stability, exclusion zones, wind, ground conditions)
- Selecting cranes, lifting equipment and attachments
- Developing or reviewing SWMS and lift plans
- Changes to plant, equipment, load characteristics, or work methods
- Following incidents, near misses, or unsafe conditions

5 TRAINING AND AUTHORISATION

Personnel who are to conduct lifting operations must be trained in the task they are performing. A record of training and details of the competency assessment must be maintained for each worker. All training requirements for cranes and lifting activities are included in CS-OHS-69 Minimum Training Requirements for High Risk Work, including Verification of Competency (VOC) requirements.

6 PLANNING

Lifting operations are categorised into two lift types; ordinary lifts and complex lifts as described below. The most common hazards associated with the use of lifting equipment are;

- Failure of the equipment under load;
- Failure of the fixed plant caused by the application of excessive forces from lifting appliances;

- Falling objects;
- Overloading or incorrect usage; and
- Structural damage or instability.

6.1 Planning and risk assessment requirements

Before any mobile crane lift, plan the lift so hazards are identified and controlled. Planning must consider (as applicable):

- load details (weight, dimensions, centre of gravity, lift points)
- crane selection, configuration and capacity for the lift (including load charts)
- crane crew composition and competence
- crane siting and collision hazards (structures, other plant, simultaneous operations
- crane stability, ground conditions and bearing capacity
- wind impacts, boom height/extension and load surface area
- visibility of the load and need for additional controls (e.g., spotter, additional dogger, cameras, isolation)

6.2 Ordinary Lift

An initial lift assessment and planning must be completed prior to all lifting operations. Initial lift planning includes:

- a visual assessment of the operational area of the lift
- ground and environmental conditions of the planned area of operations
- potential hazards to lift crew or other personnel
- assessment of the lift type.

Risk management tools should be used before lifting operations. The use of one of or a combination of the below tools should be used;

- Job Safety Environment Analysis (JSEA)
- Standard Work instruction (SWI)
- Pre Lift Assessment Form (S2278 - booklet)
- Complex Lift Control Checklist (S2078)
- Lift Plan (S) (provided by Contractor)

If a lift is being performed either onto or off a vehicle, please refer to the Loading/Unloading Checklist S2272.

6.3 Complex Lift

Any lift that meets the complex lift criteria requires a Complex Lift Control Checklist and a Lift Plan to be completed. Complex lifts may require engineering approval. The engineer may be required to assess when the lift is outside basic rigging principles;

- the lift assembly that incorporates a pre-engineered lifting configuration or non-ordinary lift gear.
- analyse possible shifts to the components centre of gravity (i.e. rollers and counter weight spreaders).

- analyse where the centre of gravity of the lift is situated above the lift points.
- analyse if any component where the actual component cannot be readily determined
- assess lifts where the load is set down onto, or crane outriggers are placed over buried utilities, adjacent to overhead transmission lines or where outrigger pads exceed 70% of the allowable bearing capacity of the supporting soil.
- assess any situation deemed critical by the officer in charge, rigging supervisor, project engineer or manager.

A 'complex lift' can be determined by the type of lift, the equipment used and the inherent risk of the lift. The below matrix supports the determination of a complex lift:

Condition/Factor	Ordinary Lift	Complex Lift
Type of Lift	• Single crane lift • Gantry lift • Mobile crane lift • Hoist lift	• Tilt-up panel lifting tasks • Multiple crane lifts, where more than one crane is used to lift a load at any one time • Operating cranes <20 metres under live overhead powerlines Note: additional factors may constitute a complex lift under a risk assessment not listed here. It is suggested a work meeting is held discuss and identify a complex lift if there is doubt.
Heavy Lifting and Rigging	• Contains step by step detailed set of procedures and controls to determine dimensions, weight, Centre of Gravity. • Controlled methods, designed for the load, task and hazard • Use of special lifting fixtures is limited • Forklift, or crane work with trained personnel	• Lift is: a) 85% or more (mobile crane) not exceeding 100% MRC; or b) 90% or more (fixed crane) of the rated capacity not exceeding 100% MRC or c) gross weight is greater than 20 tonnes Lifts greater than 100% of MRC shall include requirements of Designed Lifts as per AS2550.1 Section 6.27
Plant Risk	• Not lifting over live plant/system required for operation	• **Lifting over live plant – lifting directly over plant that is energised, that is a steam pipe or vessel, high voltage electricityis deemeda Complex lift.**
Injury to People	• Probability low for lost time injury	• Significant risk that lift could result in serious bodily injury • Lifting using Workbox
Impact to Environment	• Low or moderate risk	Work has an environmental aspect that meets a significant criteria for major on-site or off-site releases not contained.



- The lift classification may be determined using the above chart. Any one condition will place the lift within the classification.

A Complex Lift Control Checklist and Lift Plan must be completed for all complex lifts, completed by a trained, competent and authorised person and must be supervised by a CS Energy person responsible for the task. Crane drivers and rigging crews involved in the complex lifts must have input into the lift plan and be consulted prior to the finalisation of the plan.

Complete lifts shall require the following documentation to be completed;

- Complex Lift Control Checklist (S2078)
- Competent person Approved Lift Plan
- Job Safety Environment Analysis (JSEA)
- Pre-Lift Assessment Form (S2278 - booklet)
- Pre-Approved documentation
- Standard Work instruction (SWI) shall be developed for repeat / reoccurring Complex Lifts. These can be pre-approved along with the above required documentation, however this shall still require a pre-lift review / familiarisation of the documentation by the team carrying out the lifts.

6.4 Designed lifts

AS2550.1 Defines Designed lifts as the following;

"An Extraordinary and temporary lifting operation requiring an assessment of the design of the crane, which may require a temporary re-classification or re-rating or a change in the intended use of the crane

NOTE: the following are examples of designed lifts;

a) Some multiple crane lifts

b) Lifts where the centre of gravity changes or is difficult to determine

c) Lifts for hazardous materials

d) Lifts where the load lifted exceeds the published rated capacity of the crane"

As per the standard, Designed lifts shall be preceded by thorough, documented risk assessment that will identify and hazards and the appropriate control methodologies.

- The person developing the designed lift shall be a competent person as per AS 1418.
- CS energy will use competent persons in all phases of development and approval of a Designed lift, including development, Engineering sign off, Complex Lift Control Checklist & SWI and or JSEA.

Designed lifts shall require the following documentation to be completed;

- Complex Lift Control Checklist (S2078)
- RPEQ Engineer approved Lift Plan
- RPEQ 3rd party review of crane characteristics and effect on life of crane.
- Standard Work instruction (SWI)
- Job Safety Environment Analysis (JSEA)
- Pre Lift Assessment Form (S2278 - booklet)

Note the rated capacity of a crane may be temporarily changed for the duration of a designed lift. The re-rating changes shall be indicated in writing to the operator.

Designed lift risk assessments and SWI shall be approved by the General Manager.

6.5 Contractor Management

The CS Energy Contractor Management procedures must be followed for contractors completing lifting activities on a CS Energy site. Contractors can be used for lifting tasks because of their expertise, experience and qualifications. Contractors are permitted to use their own Pre- Lift Assessment Forms and/or Lift Plans as well as relevant risk assessment tools e.g., JSEAs and SWMS for high risk construction work but will be supervised by a CS Energy person responsible for the task.

6.6 Ground Conditions

Ground conditions must be assessed for suitability for the lifting operation by the crane operator, including consideration of the following items:

- Surface conditions – consideration of weight of crane, placement and stability of outriggers and bearing support or shoring requirements (as applicable).
- Surface slope – uneven, unstable or sloping of ground, including that affected by crane slewing or movement.
- Underground/overhead services – placement of underground services, overhead powerlines, cavities or excavations that could affect stability.
- Weather conditions – wind speed, visibility, rain etc. (The manufacturer's instructions must be complied with in regard to wind velocities during erection, operation and dismantling activities. Cranes should not be operated in wind speeds exceeding 15 m/s (54 km/h. or 33 mph) unless the crane has been specifically designed for such use. For wind speeds above this, the boom must be retracted or lowered.
- Other operations – location of any adjacent operations or excavations in the vicinity of the planned lifting operation and possible disruptions.

Different ground types will have different ground bearing capacities. Where the ground consists of a combination of ground types, the poorer ground type should be used for determining maximum ground pressure that can be applied when the crane is set up on outriggers. Table 1 identifies the maximum permissible ground pressure according to the ground type.

Ground Type	Maximum permissible ground pressure Pmax *(Tonnes per m2)*
Hard rock	200
Shale rock and sandstone	80
Compacted gravel (with up to 20% sand)	40
Asphalt	20
Compacted sand	20
Stiff clay (dry)	20
Soft clay (dry)	10
Loose sand	10
Wet clay	Less than 10

Table 1 – Maximum permissible ground pressures (Mobile Crane - Code of Practice)

If applicable, the suitability of ground conditions, including sub-surface works, must be confirmed prior to lifting operations commencing. If required, additional support or advice should be requested and provided to relevant parties including:

- Soil test data reports;
- Geotechnical reports or assessment; and
- Other relevant site information such as facility plans or maps.



- The outrigger ground pressure is to be calculated for complex lifts in the Lift Plan.

6.7 Communications

For all lifting operations communications are required between the operator and other personnel, and only recognised signals can be used. The most appropriate method of communication for the lifting operation must be determined by the operator which may include: hand signals, whistle, signals, or radio

communications. Back up communication capability may be necessary as determined by a risk assessment.

6.8 Environmental Conditions

Environmental conditions must be assessed, prior to and during the lift operation, and should include the following considerations, relevant to the work area:

- Dust and wind – possible reduction or changes in visibility, load control and load swing. Approved taglines must be used for load control.
- Rain or moisture – including possible changes to surface conditions.
- Lighting - for the duration of the lifting operation ensure appropriate lighting is maintained, consider the duration and account for potential delays.
- Thunderstorm activity – if lightning is observed or thunder heard in the vicinity, retract and lower boom and cease the lifting operation.
- Waste management – disposal requirements of equipment to be lifted, if applicable.

6.9 Work Near Overhead Powerlines

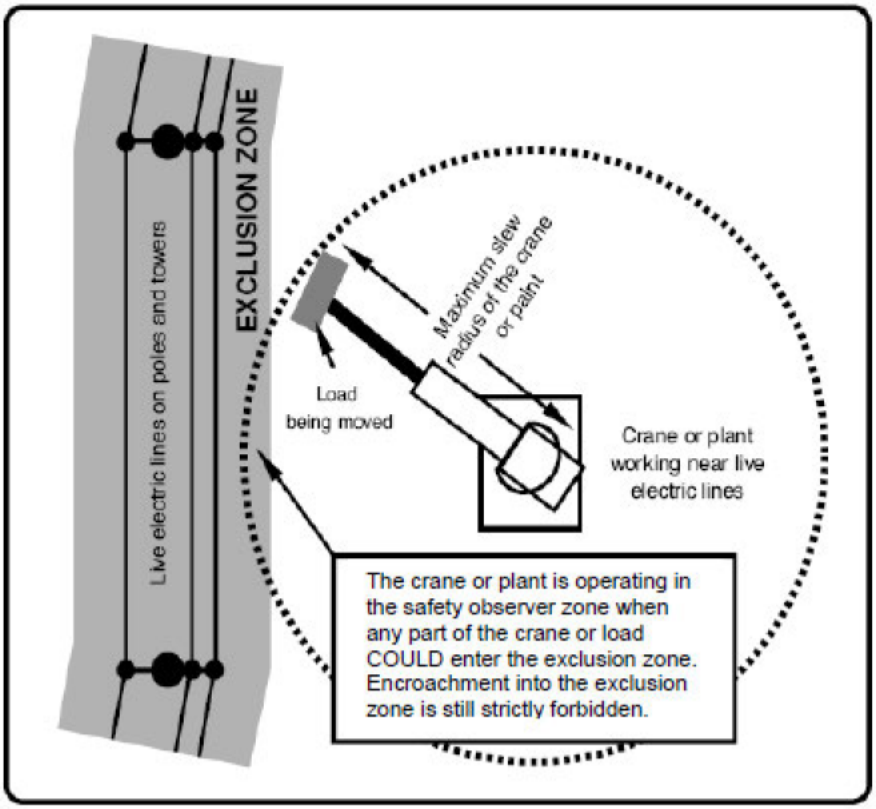
Where lifting operations are in the vicinity of overhead powerlines, all personnel associated with that operation must understand the safety observer zone/s and the exclusion zone/s where the crane is to operate.

Where possible the overhead lines should be deenergised however, if it is not reasonably practicable to de-energise or re-route, establish and maintain an **exclusion zone** so far as reasonably practicable to prevent any person, part of the crane, or the load entering the exclusion zone. CS Energy should ensure workers, the crane and load stay at least **three metres away up to 132 kV**, and 6m for all higher voltages, and outlines factors to consider (load swing, line sway/sag, mechanical constraints, and use of a trained spotter who does not perform other tasks at the time).

A minimum distance is to be calculated between the tip of the extended crane jib and the nearest overhead powerline as per Framework - CS-FW-ENG-001 - Hazard Management - Arc Flash and Schedule 2 of the Electrical Safety Regulation– refer to Figure 1.

Nominal Voltage of Overhead Line	Minimum Distance to be maintained
Up to and including 132 kV	3m
Above 132 kV, up to and including 330 kV	6m

Figure 1: Safety observer zone for overhead electric lines



Electrical Code of Practice Working near overhead and underground electric lines Qld

- *Three roles are nominated by the Electrical Safety Regulation – Untrained Person, Instructed Person and Authorised Person. Refer to the regulation for specific exclusion distances as per those roles*

The crane frame should be connected to the mass of earth when working within 20 metres of 275Kv powerlines.

Entry into an exclusion zone is strictly forbidden. If entry into the exclusion zone is required, the powerlines must be isolated and earthed before the lift can proceed.

6.10 Lift Operational Area

The lift operational area is the entire area affected by the lifting operation. This includes areas such as mobile crane access paths, mobile crane turning areas, slew crane swing area and drop zones – refer to Attachment 1. The area also includes external obstacles such as swing or exclusion zones from overhead power lines, buildings and any other objects.

During initial lift planning, management of the operational area must be considered to identify possible risks and to identify appropriate control measures. This should include restricting access to the operational area and prohibiting access to the drop zone during a lifting operation. Controls may include the use of spotters, barricades or other suitable measures appropriate to the lifting operation. If 'No Entry' barricading is erected, personnel are not to enter the drop zone – refer to Barricades and Signage Procedure.

7 LIFTING OPERATIONS

General considerations when working in lift operational areas:



- No person can be under a suspended load or in a position where they could be struck by a falling load. Where there is a risk of a load falling and striking a person, barricading or similar controls to prevent access must be in place. A similar control may be a spotter, for example, when working in an area where it is not practical to barricade, such as a turbine hall.

- Operators must undertake a pre-operational safety check before crane or lifting equipment is used. Verify equipment is in good condition (free from obvious signs of wear, damage / contamination);
- Check all lifting equipment and accessories are marked with a rated capacity. Lifting equipment must be inspected prior to use and any defective equipment removed from service;
- Check lifting equipment is labelled or tagged indicating currency of certification and inspection;
- All load bearing hooks must have a safety catch fitted, and the weight being lifted must not exceed the capacity of the lifting equipment;
- Where not practical to establish a lift operational area whilst transporting a load (pick and carry) or during gantry crane operations with a suspended load, the operator or dogger or rigger must control / manage interactions with adjacent work groups if there is potential for interactions (people / equipment / area);
- A dogman or spotter is required to sweep areas at levels dependant on load and barricading required;
- Ensure crane is not left unattended with the engine running or with a suspended load;
- Ensure crane is locked and keys removed when not in operation
- A person operating a mobile or slewing crane cannot undertake their own dogging / rigging work or supervise a trainee dogger / rigger;
- Only taglines (minimum 16mm natural fibre / non-conductive) will be used to prevent uncontrolled load movement, length of taglines must be relevant to the height of load lifted;



- If the tagline presents a hazard during the lift the appropriate risk assessment process must be followed to remove the use of taglines e.g. working around electricity.

- Persons not involved in the lift must not disrupt anyone with the lift;
- Outriggers and stabilisers where installed must be engaged during lifting operations; and
- If the load is outside of the Operator's view during the lifting operation, the operation must be directed by a person with minimum qualification of Dogger.
- Lifting operations SWMS/JSEA must be verified by the Manager or their delegate.

7.1 Construction Work

When a crane is used for construction work, there may be a number of activities associated with this work that is high risk construction work. A safe work method statement (SWMS) must be prepared for that work before commencing. These activities include:

- tilt-up and precast construction work;
- the movement of the mobile crane at the workplace;
- work on a telecommunications tower;

- work in, over or adjacent to water, where there is a risk of drowning; and
- work on, or adjacent to, a road or railway.

8 EQUIPMENT

A person with management or control of certain types of plant must apply to register the equipment with Work Health and Safety Queensland. This will apply to new cranes installed. The following items of plant requiring design registration are (relevant to this Procedure);

- Tower cranes including self-erecting tower cranes
- Hoists with a platform movement exceeding 2.4m, designed to lift people
- Workboxes designed to be suspended from cranes
- Boom type working platforms
- Gantry cranes with a safe working load greater than 5 tonnes or bridge cranes with a safe working load of greater than 10 tonnes, and any gantry crane or bridge crane which is designed to handle molten metal or Schedule 11 hazardous chemicals
- Vehicle hoists
- Mast climbing work platforms
- Mobile cranes with a rated capacity of greater than 10 tonnes

The following items of plant require annual registration (relevant to this Procedure);

- Concrete placing booms
- Mobile cranes with a rated capacity of greater than 10 t
- Tower cranes including self-erecting tower cranes
- Lifts and escalators and moving walkways
- Building maintenance units



- Plant design registration and plant registration are different. Not all plant requiring design registration need to be registered e.g. workboxes.

8.1 Inspections and Maintenance

All cranes and lifting equipment must have a preventative maintenance program. This program must be based on the original equipment manufacturer's recommendations and documentation, the working environment, frequency and severity of use of the lifting equipment. Inspections must be documented for each level, applicable to the type of equipment and as a minimum must include:

- Pre-use or pre-start inspections;
- Routine inspection and maintenance;
- Annual inspections;
- In accordance with AS2550.1 (10-yearly for mechanical and 25 yearly for structural);
- If the crane has been damaged (or potentially damaged) as the result of an overload;
- if the cranes has been upgraded or modified; and
- Crane Safe Certification including calibration of limiting and indicating devices

Rigging and support equipment must be uniquely identified with a code or number, inspected at intervals as per the table below, colour coded and recorded in a register.

Externally owned or managed lifting equipment used on CS Energy sites must also be tagged and comply with inspection dates. The intervals for inspection are as follows:

Item to be inspected	Inspection Frequency	Item to be inspected	Inspection Frequency
Synthetic Fibre Slings	3 months	Chains	3 months
Wire Rope Slings	3 months	Winches	3 months
Fibre Rope Slings	3 months	Shackles	3 months
Cranes	Yearly (major 10 years)		

Lifting equipment subject to wear and frequent replacement e.g. shackles, eyebolts and pad eyes, need only be colour coded to confirm compliance with inspection requirements.

Specialised lifting equipment or equipment that is used irregularly needs to be in date of inspection prior to use.

8.2 Register

A register of cranes and lifting equipment must be established for each site and maintained by the owner. A prestart book for the crane must be kept in the crane and made readily available at all times. A logbook must be maintained and contain the following information:

- Equipment's unique identification number.
- Documentary evidence of all inspections.
- Certifications.
- Maintenance.
- Modification and tests.

8.3 Non-Compliant Equipment

Any lifting device or equipment that is damaged, faulty, out-of-certification or compliance, must be removed from use immediately and an Out-of-Service tag attached. Non-compliant equipment must be segregated and tagged out of service from use until the status of the equipment is determined and appropriate action is completed.

Cranes and lifting equipment must not be operated if defective or with an inoperable or defective safety critical device e.g. emergency stops.

8.4 Modifications

Modifications to all lifting equipment must be managed in accordance with the CS Energy Plant Modification Procedure.

8.5 General Equipment Requirements – Lifting Gear

- The equipment must have the correct Working Load Limit (WLL) for lifting task. A competent person must assess the rated capacity for rigging for the different application i.e. when using reeving, shortening, doubling etc.
- Lifting lugs, eye bolts and similar (if applicable) must be rated for use and in good condition. A current inspection tag must be located on the equipment.
- Where practicable or where the weight of a lift is uncertain, cranes must be fitted with a load cell with the weight of the load displayed in the visual range of the operator.

- Where practicable, cranes must be equipped with an anti-two-block device or limit switch that includes audible and visual alarms.
- Lifting or rigging equipment must not be used for towing.

8.5.1 Overhead Cranes and Gantry Cranes

- Gantry cranes must be fitted with audible travel alarms or an equivalent warning device.
- Methods must be developed and implemented that allow steadying and guiding of loads, so that the load does not inadvertently fall or impact a person in the vicinity. Taglines or similar devices must be attached to loads that require steadying or guidance while suspended. The load must be well secured and properly balanced in the sling or lifting device.

8.5.2 Mobile Cranes

- For mobile cranes and slew cranes, the following additional requirements are applicable:
  - Seat belt – ensure fastened at all times, when installed.
  - Seat position – the operator is comfortable and can reach all required controls.
  - Distractions – ensure cabin door is closed and there is no additional communication or distractions for the crane operator (other than for the lifting operation).
- Controls – ensure the crane is not left unattended with the engine running or with a suspended load.
- Mobile cranes must have a rating capacity chart (load chart) available in the crane cabin.
- Crane markings:
  - A mobile crane marking, and its lifting components must be clear and legible in English as specified in AS1418.5.
  - All operator controls must be suitable marked to indicate their function and operation.
  - The cranes computer must also be compatible with the above requirements.
- Rated capacity limiter
- Motion limiting device
- Anti-two block system
- Load indicators (Xmas Tree)
- Crane operator's manual in the cab
- Slew pins must be secured in place in slewing mobile cranes while travelling.
- The boom of a non-slew mobile crane must not be greater than 5 degrees while travelling without a load.
- Slewing to test the integrity of outriggers on mobile cranes must be conducted prior to commencing lifts.

8.5.3 Vehicle Loading Cranes (VLC)

- Operator control stations for vehicle loading cranes (VLC) must be located in an area protected from swinging loads and from the crane jib.
- An E stop button that is visible and operational must be adjacent to the controls at every control station
- The VLC must only be used with all stabilisers extended. Timber or other pads specified by the manufacturer must be used under the stabiliser pads.

- The crane must only be used so that it is level in accordance with the crane manufacturers specifications.
- The crane must be operated from a position that prevents the boom or load being passed or lifted over the operator.
- The VLC operator must not operate in an area where visibility of the load, hook or attachment is obstructed by fixtures or loads without a dogger.
- The crane must only be used with a load suspended vertically from the hook.
- Reference must be made to the VLC operating instructions and rated capacity charts and specifications to establish the restrictions, limitations or special conditions applicable to the particular VLC.
- Rated capacity limiter (overload protection) should be provided on all vehicle loading cranes with:
  - A maximum rated capacity of one tonne or greater; or
  - A gross lifting moment of 40kNm (kilonewton metres) or greater.
- All VLC`s manufactured after 2003 must be fitted with a rated capacity indicator (load warning >90% of rated capacity)
- During transit, the VLC should be stowed in the carry position or in accordance with manufacturer's operating instructions and local requirements. If the boom is not stowed in the carry position, a travel height indicator must be installed.
- During transit, stabilisers and footpads must be securely stowed and fastened.

8.5.4 Workboxes

When personnel are suspended from a crane, the following requirements apply:

- Workboxes are to be 'design registered' before they are used in the workplace and workbox is designed in accordance with AS 1418.17.
- The rated capacity of the workbox must not be exceeded.
- The workbox, lifting attachments and records must be inspected by a trained, assessed and authorised person prior to use.
- Personnel and materials must be securely confined within the workbox.
- Where reasonably practicable, other working platforms designed specifically to lift personnel, such as EWPs or scaffolding, must be used instead of a workbox or work platform. Workboxes may only be used where other access methods are not reasonably practicable and must be limited to lifting personnel and the tools and materials necessary to perform the task.
- A safety sling/s should be installed between chains and hook block.
- The crane must not be used to simultaneously raise, lower or suspend any other load.
- An appropriate procedure must be developed and implemented to transfer any work materials from the workbox. Comprehensive documented lifting procedures should be prepared for the lifting of workboxes with people in the boxes.
- The crane operator must remain at the controls of the crane at all times.
- All movements of crane must be carried out under power and free-fall lockout must be applied.
- At least one person in the workbox must hold a dogger's licence class or equivalent to ensure correct directions are communicated to and from the crane operator.
- Communication between any person in the workbox and the operator must be by established methods. Back up radios/communication should be used.

- Mobile cranes must not travel while people are in the workbox.
- Movements of workbox must be at slow speeds with minimum acceleration and deceleration.
- Personnel suspended from a crane must wear a general-purpose fall arrest harness, complying with AS/NZS 1891.1, with the lanyard or lanyard assembly provided with energy absorbers, attached to anchorage points – refer to Working at Heights Procedure.
- Personnel remain within the workbox whilst they are being lifted and suspended, except in an emergency, under conditions listed in section 6.19.3 of AS 2550.1 or with an approved risk assessment.
- The crane must be fitted with the means to safely lower the workbox in an emergency or a power supply failure.
- No declutching allowing free fall is to be used while a workbox is in use.
- The crane should have a rated capacity of at least twice the total load of the workbox and its contents, at the maximum radius for the task to be performed and not less than 1000 kilograms.
- The crane should be fitted with an upper hoist limit that stops operation of the hoist and luff functions of the crane.
- The maximum hoisted load, safe working load, tare mass, minimum allowable (rated) crane capacity and design registration number of the workbox should be clearly marked (e.g. on a data plate) and permanently attached to the workbox in a prominent position.
- In very unusual circumstances, such as where a one person box is being used to inspect sewerage (where the shaft is too small for a two person box), a risk assessment to not include a dogger in the box can be undertaken. The box must be in clear view of the dogger and watched at all times.
- Further requirements relating to the use of crane workboxes is in AS 2550.1.

8.5.5 Earthmoving Equipment (Jib or Form Attachment)

- Earthmoving equipment should not be used as a crane unless specifically authorised by site for each task or when approved purpose-built adapters are used.
- Where an excavator and backhoe is used, and a load moment indicator and external rated capacity lighting is not practical, an engineer must:
  - Calculate the lifting lug position.
  - Take into consideration the design strengths of the boom.
  - Rate the load bearing capacity of the lifting lug as low as reasonably practicable to prevent the risk of machine overload.
  - Sign off the above load calculations.
  - OEM guidance must also be sought for lifting operations with this equipment.
- Rated capacity must be clearly marked on the machine.
- Earth moving equipment to be used as lifting devices must have hydraulic burst protection fitted.
- A dogger must be used when using earth moving equipment as a mobile crane.
- All lifting points on earthmoving equipment must form a closed eye to which a load rated shackle may be attached.

8.5.6 Forklifts

- Forklifts will be used in accordance with relevant Australian Standards including AS2359 series – powered industrial trucks.
- The rated capacity must be clearly displayed along with any specific conditions e.g., lift or attachment points.
- The forklift must not be operated for a purpose other than for what it was designed or exceeding the rated capacity.
- Forklifts must travel with unobstructed view.
- Forklift operators secure/rig their own loads if safe to do so.
- Seat belts must be worn by the operator.
- All attachments must be rated and certified in accordance with legislative requirements and used within rated capacity. Current test and tag for all attachments.

8.5.6.1 Forklift Attachments

Forklift operators and pedestrians are at risk of serious injury from forklifts overturning, loads falling and collisions when forklift operators:

- operate a forklift without knowing how an attachment can affect the overall operation of the forklift
- are unaware of changes to the lift capacity and stability of the forklift caused by the attachment
- use a non-approved attachment to perform a task.

When using an attachment, the forklift capacity may need to be de-rated, and some operating controls restricted.

Ensure attachments such as side shift devices, jibs and extension forks have rated capacities and provide operators information on the safe use of the attachment.

- Ensure the attachment is secured correctly and safely on the forklift. If a load is suspended, reduce the lift capacity.
- Attachments are to be used only for specified tasks.
- Supply instructions for the attachments use and ensure the forklift driver understands them.
- Only use attachments designed and matched for a specific forklift.
- Work platforms used on forklifts to elevate people should be engineer-designed and used in accordance with additional requirements in AS 2359.1 and AS 2359.2 and WAH procedure.

9 DEFINITIONS

Term	Definition
Anchorage Point	A device or thing by which a lanyard, static line or other line may be attached to a building or other structure and includes the part of the building or structure to which the device or thing is attached.
Anti two-block device	The **anti-two-blocking device** consists of a weighted ring around the hoist line; the ring is suspended on a chain from a limit switch that is attached to the boom tip. When the "headache ball" or hook assembly touches the suspended weighted ring, the switch opens and an alarm in the cab warns the operator to stop hoisting.
Competent Person	A person who has through a combination of training, education and experience, acquired knowledge and skills enabling that person to correctly perform a specified task.
Complex Lift	**Complex Lift Criteria** • Requires two or more cranes • Operating Cranes <20 metres live overhead powerlines • Lift is 85% or more (mobile crane) of capacity at radius • Lift is 90% or more (fixed crane) of the rated capacity • Gross weight is greater than 20 tonnes • Where significant risk is identified in relation to people, plant and environment. **Note:** that some lifts are classified as complex lifts because of items they are lifted over or attached to and assessed for each lifting task.
Crane	An appliance intended for raising or lowering a load and moving it horizontally and includes the supporting structure of the crane and its foundations, but does not include an industrial lift truck, earthmoving machinery, a tractor, an industrial robot, a conveyor, building maintenance equipment, a suspended scaffold or a lift or rigging equipment
Dogger	Means a person who: • uses techniques, including the selection or inspection of lifting gear, to safely sling a load, or • directs a plant operator in the movement of a load when the load is out of the operator's view. Note: Such a competent person must possess a National High Risk Work licence for Dogging from one of the various statutory health and safety authorities.
Drop Zone	An area below a suspended load where objects from the suspended load have the potential to fall.
Exclusion Zone	The area within the safe approach distances where personnel are prohibited
Hoist	An appliance intended for raising and / or lowering a load vertically and without slewing which includes basic chain hoists but does not include complex hoists such as mast climbing work platforms, personnel and materials hoists, scaffolding hoists or serial hoists, or lifts or building maintenance equipment
Elevating Work Platforms	Powered mobile plant designed to lift personnel to a work location by means of a telescoping device, scissor action or articulated device.
Fall Arrest Harness	A safety harness specifically used for the arresting of falls from a height.
JSEA	Job Safety Environment Analysis – a task based risk assessment
Lift Plan	A standardised plan for a complex lift which includes all weights, calculations, diagrams and approvals. A JSEA/SWMS is completed with a Lift Plan.
Lifting Gear or Lifting Equipment	Equipment used for slinging and lifting loads. It includes, but not limited to, sheave blocks, crane or other hooks, lifting beams, shackles, eye bolts, clamps, pulley systems, swivels, chain slings, wire rope slings and synthetic slings.
Load Indicator	A device which indicates audibly or visually to the operator the mass being hoisted.
Must	Indicates that compliance with the requirement is mandatory.

Term	Definition
Rated Capacity	The maximum gross load which may be applied to the crane or hoist or lifting equipment while in a particular working configuration and under a particular condition of use. Previously known or referred to as Safe Working Load (SWL) or Working Load Limit (WLL).
Rigging Work	Means using mechanical load shifting equipment and associated gear: • to move, place or secure a load using plant, equipment or members of a building or structure to ensure the stability of those members, or • to set up or dismantle a crane or hoist. Note: Such a person undertaking rigging work must possess the relevant National High-Risk Work Licence for Rigging (i.e. Basic, Intermediate or Advanced) from one of the various statutory
Rigging Type	**Basic -** Means a person who performs: • the work of a dogger, and • rigging work associated with: o the movement of plant or equipment, or o the placement of precast concrete, or o hoists other than hoists with jibs and self-climbing hoists, or o steel erection, or o safety nets and static lines, or o mast climbers, or o perimeter safety screens and shutters, or o cantilevered crane loading platforms. **Intermediate** - Means a person who performs: • the work of a basic rigger, and • rigging work associated with: o hoists, or o cranes, conveyors, dredges and excavators, or o tilt slabs, or o demolition work, or o dual lifts. **Advanced** - Means a person who performs: • the work of an intermediate rigger, and o rigging work associated with: o gin poles and shearlegs, or o flying foxes and cable ways, or o guyed derricks and structures, or o suspended scaffolds and fabricated hung scaffolds.
Safety Observer	**A safety observer or 'spotter' is a person who is trained and competent to observe and advise the crane operator if the crane or any part of the load it is carrying is likely to come within the exclusion zone of an overhead powerline. Safety observers should not carry out other tasks, such as dogging duties, at the time of observing crane operations.**
SWMS	Safe Work Method Statement
Tagline	A tagline is used to help orient a load for proper placement or connection upon landing

10 REFERENCES

Reference No	Reference Title	Author
	Work Health and Safety Regulation	Qld Govt
	Electrical Safety Regulation	Qld Govt
B/D/14/20521	Procedure - CS-OHS-69 - Minimum Training Requirements for High Risk Work	CS Energy
B/D/12/11085	Procedure - CS-OHS-36 - Barricades and Signage	CS Energy
B/D/11/19581	Procedure - CS-PTW-HAZ-02 - Working at Heights	CS Energy
B/D/10/7377	Procedure - CS-AM-010 - Plant Modification	CS Energy
B/D/11/19582	Procedure - CS-PTW-01 Permit to Work (PTW)	CS Energy
B/D/19/13988	Form - S2278 - Pre Lift Hazard Assessment	CS Energy
B/D/19/7291	Form - S2078 - Complex Lift Control Checklist	CS Energy
B/D/18/26036	Form - S2272 - COR - Loading / Unloading Checklist	CS Energy
B/D/18/6006	Dropped Object Cone Calculator	CS Energy
B/D/26/34593	Framework - CS-FW-ENG-001 - Hazard Management - Arc Flash	CS Energy
AS 1418 set	Cranes, hoists and winches – set	Aust Standards
AS 2550 set	Cranes, hoists and winches – set	Aust Standards
AS 1353	Flat synthetic-webbing slings	Aust Standards
AS 1380	Fibre rope slings (or natural or synthetic rope)	Aust Standards
AS 1438	Wire coil flat slings	Aust Standards
AS 1666	Wire rope slings	Aust Standards
AS 1891 set	Industrial fall arrest systems and devices	Aust Standards
AS 2089	Sheave blocks for lifting purposes	Aust Standards
AS 2319	Rigging screws and turnbuckles	Aust Standards
AS 2359	Powered Industrial Trucks	Aust Standards
AS 2615	Trolley jacks	Aust Standards
AS 2741	Shackles	Aust Standards
AS 2759	Steel wire rope – use operation and maintenance	Aust Standards
AS 3569	Steel wire ropes – Product specification	Aust Standards
AS 3775	Chain slings – Grade T	Aust Standards
AS 3776	Lifting components for grade T chain slings	Aust Standards
Code of Practice	Mobile Crane Code of Practice	Qld Govt
Code of Practice	Tower Crane Code of Practice	Qld Govt
Code of Practice	Working near overhead and underground electric lines	Qld Govt

11 RECORDS MANAGEMENT

In order to maintain continual improvement, suitability, safety and effectiveness of the organisation, registered documents will be reviewed by the responsible team within a two-yearly basis or at intervals specified by legislative or regulatory requirements. Review of registered documents should occur where it has been identified that there are changes in technology, legislation, standards, regulation or where experience identifies the need for alteration to the content. Registered documents should also be reviewed following an incident, change management process, modification or where directed as part of a risk assessment process. A 'review' can simply mean that it has been identified, confirmed and appropriately recorded that no changes are required and that the existing process remains the same.

For CS Energy level registered documents, contact the Records Manager to request a review copy.

For Site registered documents, contact the Document Management Officer to request a review copy.

Government Owned Corporations must ensure that records are retained according to accountability, legal, administrative, financial, commercial and operational requirements and expectations. In compliance with records retention and disposal, all documentation created in relation to business must be retained in line with minimum retention periods as detailed in legal retention and disposal schedules.

12 ATTACHMENTS

12.1 Attachment 1 - Drop zone calculator

This Calculator provides a common benchmark in the classification of the potential consequence of a dropped object.

CONSIDERATIONS

- With light objects (<0.1 kg) a key influencing factor is the effect of an object punching the skin and damaging tissue / organic functions. The calculator assumes a blunt object so is not compatible with broken glass, metal shards etc.
- The wearing of standard PPE, eg hard hat, safety boots and eye protection, is assumed in the calculator.
- Do not subtract the height of an individual, measure fall distance to solid deck / ground level.
- DROPS Calculator and other similar tools are guides only providing cursory indication of possible outcome – they are not an accurate prediction.
- In reality, even a small object falling from height can be lethal.
- Dropped Object Cone Calculator – B/D/18/6006

