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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: Executive General Manager Plant Operations

DOCUMENT HISTORY

Key Changes	Prepared By	Checked By	Approved By	Date
Original Release	N Seibel	B Pike D Clarke A Cashin A Bruce	N Moran	30/09/2019

CONTENTS

1 PURPOSE

The purpose of this document is to define the minimum performance requirements for tasks involving crane and lifting activities.

2 SCOPE

This document is applicable to all sites and all crane activities including vehicle loading cranes, overhead cranes, mobile cranes, equipment used as cranes, hoists and lifting equipment such as forklift job, hoists, excavator quick hitch, other mechanical devices, side loaders.

3 RESPONSIBILITIES AND ACCOUNTABILITIES

3.1 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.

3.2 Managers and Supervisors

Managers and Supervisors are responsible for:

- monitoring compliance with this procedure and the risk control measures being implemented by the work party members;
- provision of appropriate training and other support to all personnel in application of this procedure;
- conducting and/or assisting personnel with SWMS/JSEAs; and
- authorisation of a completed SWMS/JSEA for complex lifts.

3.3 Officer in Charge (OIC)

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

- Appropriate lift plans are completed, and controls are in place prior to complex lifts; and
- Appropriate SWMS/JSEA and/or risk assessments are completed and controls in place prior to all lifts

3.4 Person in Charge of Work (PICW)

The PICW must ensure compliance with the safe assessment, control implementation and overall safe lifting practices in accordance with legislation and the JSEA/SWMS or lift plan for the job.

3.5 Work Party

Employees and contractors must:

- Utilize the appropriate equipment provided for crane, hoists and lifts;
- Perform visual inspections on equipment before use;

- Ensure working at height requirements are followed when work is being performed where there is the potential to fall causing injury;
- Ensure that all lifting devices used are not defective by completing pre-start checks;
- Report and tag as “out of service” any faulty or defective equipment;
- Ensure personnel using lifting devices are licensed in the relevant equipment/plant and have been approved to use a device; and
- Notifying their manager / supervisor in the event defects are identified and equipment/plant is tagged ‘out of service’ until cleared safe for use

4 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. A summary of requirements are listed below;

Type	Licence	Competency
Tower Crane	CT	CPCCLTC4001
Self-erecting Tower Crane	CS	CPCCLTC4002
Derrick Crane	CD	TLILIC3004
Bridge and Gantry Crane Cabin or more than 3 powered controls	CB	TLILIC3003 and a VOC for that Gantry Crane
Bridge and Gantry Crane with 3 or less functions	Nil	HRW dogging licence (DG); or HRW bridge or gantry licence (CB); or RIIHAN203D Conduct lifting operations; and a VOC for that Gantry Crane.
Vehicle Loading Cranes with a capacity of 10 metre tonnes or more	CV	TLILIC0012
Vehicle Loading Cranes (less than 10 metres tonnes)	Nil	OHSCER211 RIIHAN307D
Non-Slewing Mobile Crane with a capacity exceeding 3 tonnes	CN	TLILIC3006
Slewing Mobile Crane with a capacity up to 20T	C2	TLILIC3008 This licence also encompasses: Non- Slewing Crane (CN) Vehicle Loading Crane (CV)
Slewing Mobile Crane with a capacity up to 60T	C6	TLILIC4009 This licence also encompasses: 20 tonnes or less (C2) Non-Slewing Mobile Crane (CN) Vehicle Loading Crane (CV)
Slewing Mobile Crane with a capacity up to 100T	C1	TLILIC4010 This licence also encompasses: 60 tonnes or less – C6 20 tonnes or less – C2 Non-slewing mobile crane – CN Vehicle loading crane – CV

Type	Licence	Competency
Slewing Mobile Crane with a capacity over 100T	C0	TLILIC4011 This licence also encompasses: 100 tonnes or less – C1 60 tonnes or less – C6 20 tonnes or less – C2 Non-slewing mobile crane – CN Vehicle loading crane – CV
Materials Hoist	HM	CPCCLHS3002
Personnel and Materials Hoist	HP	CPCCLHS3001
Boom Style Elevating Work Platform (11m or more)	WP	TLILIC2005 Note: CS Energy has expanded this license requirement to all boom type EWPs
Scissor Lift / Elevated Work Platform (less than 11m)	Nil	RIIHAN301D or equivalent site approved training
Dogger	DG	CPCCLDG3001 RIIHAN208
Basic Rigger	RB	CPCCLRG3001 RIIHAN209
Intermediate Rigger	RI	CPCCLRG3002 RIIHAN210
Advanced Rigger	RA	CPCCLRG4001

5 PLANNING

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.

5.1 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, and 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 could be used;

- Job Safety Environment Analysis (JSEA)
- Standard Work instruction (SWI)
- Pre Lift Assessment Form (booklet)
- Complex Lift Plan

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

5.2 Complex Lift

Lifting operations are categorised into two lift types ordinary lifts and complex lifts as described below. Any lift that meets the complex lift criteria requires a Complex 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) or
- 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, C of G. • 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); or b) 90% or more (fixed crane) of the rated capacity (excluding proof tests of 100 to 125% rated capacity); or c) gross weight is greater than 20 tonnes •
Plant Risk	• • Not lifting over live plant/system required for operation	• Lifting or lifting over, live plant/system required for operation
Injury to People	• Probability low for lost time injury	• Significant risk that lift could result in serious bodily injury
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.

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

A Complex 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. to S2078 Complex Lift Plan. 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.

5.3 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 but will be supervised by a CS Energy person responsible for the task.

5.4 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

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 including:

a) Soil test data reports;

b) Geotechnical reports or assessment; and

c) Other relevant site information such as facility plans or maps.

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

5.5 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.

5.6 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 tag lines must be used for load control.
- Rain or moisture – including possible changes to surface conditions.
- Lighting - for the duration of the lifting operation to 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.

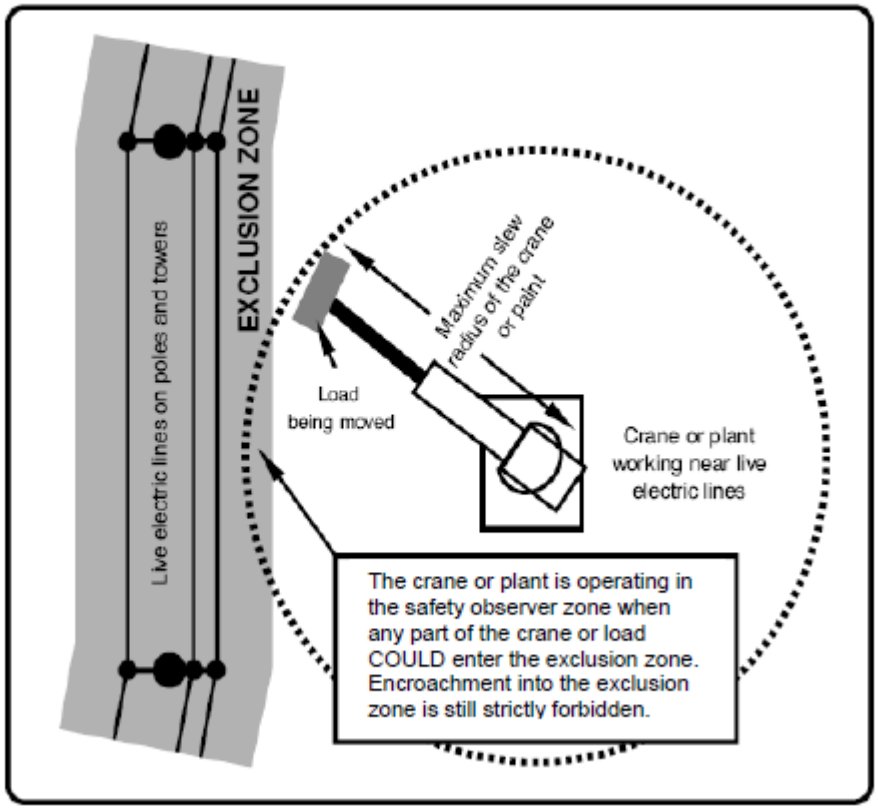
5.7 Work Near Overhead Powerlines

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.

A minimum distance is to be calculated between the tip of the extended crane jib and the nearest overhead powerline as per Schedule 2 of the Electrical Safety Regulation 2013.

Nominal voltage of overhead uninsulated electric line	Untrained person	Operating plant operated by untrained person
above 33kV up to 132kV	3m	3m
above 132kV up to 220kV	4.5m	6m
above 220kV up to 275kV	5m	6m
above 275kV up to 330kV	6m	6m
above 330kV up to 500kV	6m	8m

Figure 1: Safety observer zone for overhead electric lines



Electrical Code of Practice Working near overhead and underground electric lines Qld 2010

Note: 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.

5.8 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 Appendix 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.

6 LIFTING OPERATIONS

General considerations when working in lift operational areas:

NOTE: 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.

- Operators must undertake a pre- operational safety check for each shift the crane or lifting equipment is used. Verify the 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 - Work Load Limit (WLL) or Safe Work Limit (SWL). 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 unless a specific working instruction indicates otherwise, and the weight being lifting 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 when there is potential for interactions (people/equipment/area);
- A dogman or spotter is required to sweep areas at levels dependant on the load and the barricading required;
- Ensure the crane is not left unattended with the engine running or with a suspended load;
- A person operating a mobile or slewing crane cannot undertake their own dogging / rigging work or supervise a trainee dogger/rigger;
- Only taglines (minimum 16 mm natural fibre/non-conductive) are to be used for the task to prevent uncontrolled load movement, length of taglines must be relevant to the height of load lifted;

NOTE: If the tag line 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;

6.1 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. 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.

A safe work method statement (SWMS) must be prepared for high risk construction work before starting that work.

7 EQUIPMENT

7.1 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:

a) Pre-use or pre-start inspections;

b) Routine inspection and maintenance;

c) Annual inspections;

d) 10-year major inspection to assess a crane for continued safe operation; and

e) Crane Safe Certification.

Rigging and support equipment must be uniquely identified with a code or number, inspected at intervals at a determined frequency by the CS Energy preferred supplier (Bullivants), colour coded and recorded in a register. 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.

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
Synthetic Fibre Slings	3 months
Chains	3 months
Wire Rope Slings	3 months
Fibre Rope Slings	3 months
Winches	3 months
Shackles	3 months
Cranes	Yearly (major 10 years)

7.2 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. The register must be maintained and contain the following information:

a) Equipment's unique identification number.

b) Documentary evidence of all aspects.

c) Certifications.

d) Maintenance.

e) Modification and tests.

7.3 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.

7.4 Modifications

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

- General Requirements – Lifting Gear
- The selected must have the correct Working Load Limit (WLL) for lifting task. A competent person must assess the Safe Working Load (SWL) 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 shall not be used for towing.

7.4.1 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. Tag lines 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.

7.4.2 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
- Verification of Competency (VOC)
- 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.

7.4.3 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.

7.4.4 Workboxes

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

- 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.
- The workbox must only be used to lift personnel and materials necessary to carry out the work.
- 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.
- The crane operator must remain at the controls of the crane at all times.
- All movements of the 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 the 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 AN/NZS 1891.1, with the lanyard or lanyard assembly attached to anchorage points.
- Personnel must not enter or leave the workbox when elevated, except in an emergency, or with an approved risk assessment.

7.4.5 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.
- SWL 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 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 perform correctly 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.
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.

Term	Definition
Must	Indicates that compliance with the requirement is mandatory.
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: – the movement of plant or equipment, or – the placement of precast concrete, or – hoists other than hoists with jibs and self-climbing hoists, or – steel erection, or – safety nets and static lines, or – mast climbers, or – perimeter safety screens and shutters, or – cantilevered crane loading platforms. **Intermediate** - Means a person who performs: ▪ the work of a basic rigger, and ▪ rigging work associated with: – hoists, or – cranes, conveyors, dredges and excavators, or – tilt slabs, or – demolition work, or dual lifts. **Advanced** - Means a person who performs: ▪ the work of an intermediate rigger, and – rigging work associated with: – gin poles and shearlegs, or – flying foxes and cable ways, or – guyed derricks and structures, or – suspended scaffolds and fabricated hung scaffolds.
SWMS	Safe Work Method Statement
Tag line	A tagline is used to help orient a load for proper placement or connection upon landing

9 REFERENCES

Reference No	Reference Title	Author
Booklet	Pre- Lift Hazard Assessment	CS Energy
B/D/10/7377	CS AM 010 Plant Modification Procedure	CS Energy
B/D/12/72999	Queensland Work Safety and Health Regulations 2011	Qld Govt
B/D/14/20521	CS-OHS-69 Minimum Training Requirements for High Risk Work	CS Energy
B/D/11/19581	CS-PTW-HAZ-02 Working at Heights Procedure	CS Energy
B/D/11/19576	CS-PTW-HAZ-04 Digging, Excavation and Building Penetration	CS Energy
B/D/19/7291	S2078 Complex Lift Plan	CS Energy
B/D/18/26036	S2272 Loading/Unloading Checklist	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 1418	Cranes design specifications	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 2321	Short link chain for lifting purposes	Aust Standards
AS 2359	Lift Trucks	Aust Standards
AS 2615	Trolley jacks	Aust Standards
AS 2741	Shackles	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 2006	Qld Govt
Code of Practice	Tower Crane Code of Practice 2017	Qld Govt
Code of Practice	Working near overhead and underground electric lines 2010	Qld Govt

10 RECORDS MANAGEMENT

In order to maintain continual improvement, suitability, safety and effectiveness of the organisation, CS Energy's registered documents will be reviewed on a two-yearly basis or at intervals specified by legislative or regulatory requirements. Review of controlled 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.

CS Energy 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 CS Energy business must be retained in line with minimum retention periods as detailed in legal retention and disposal schedules.

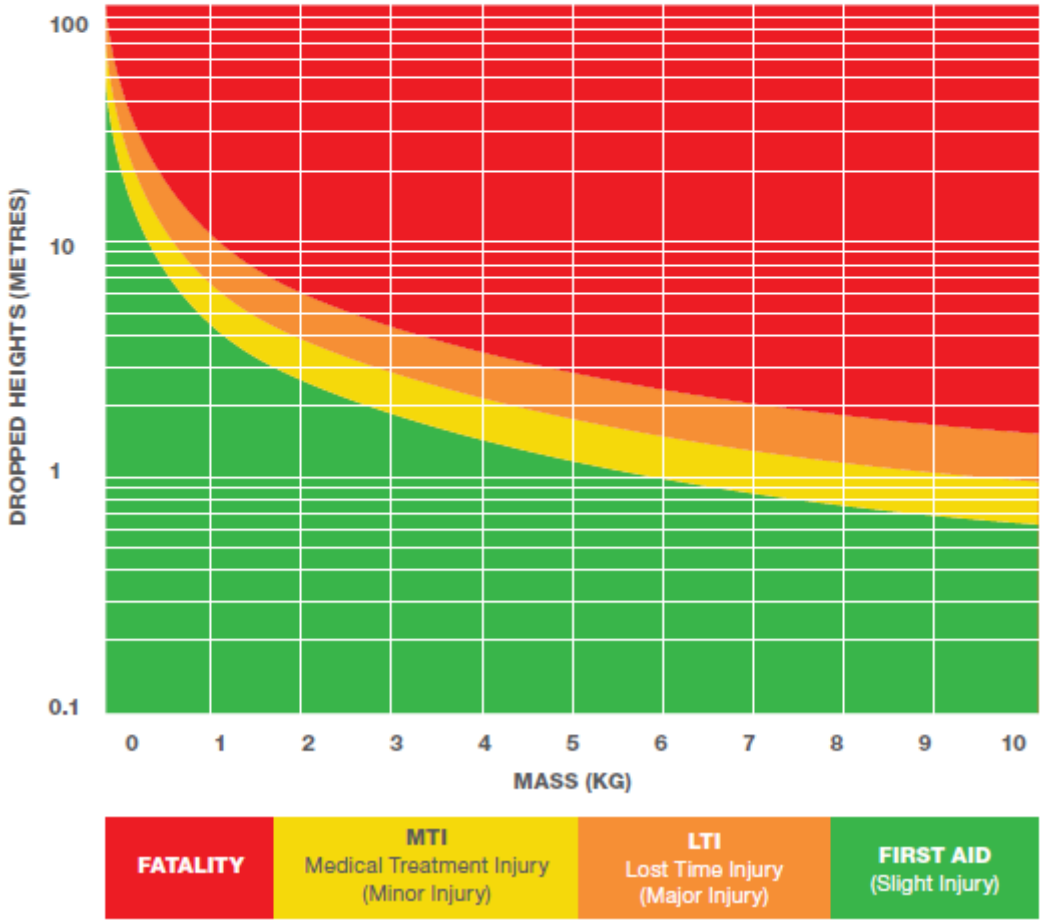
11 ATTACHMENTS

11.1 Attachment 1 - Drop zone calculator

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

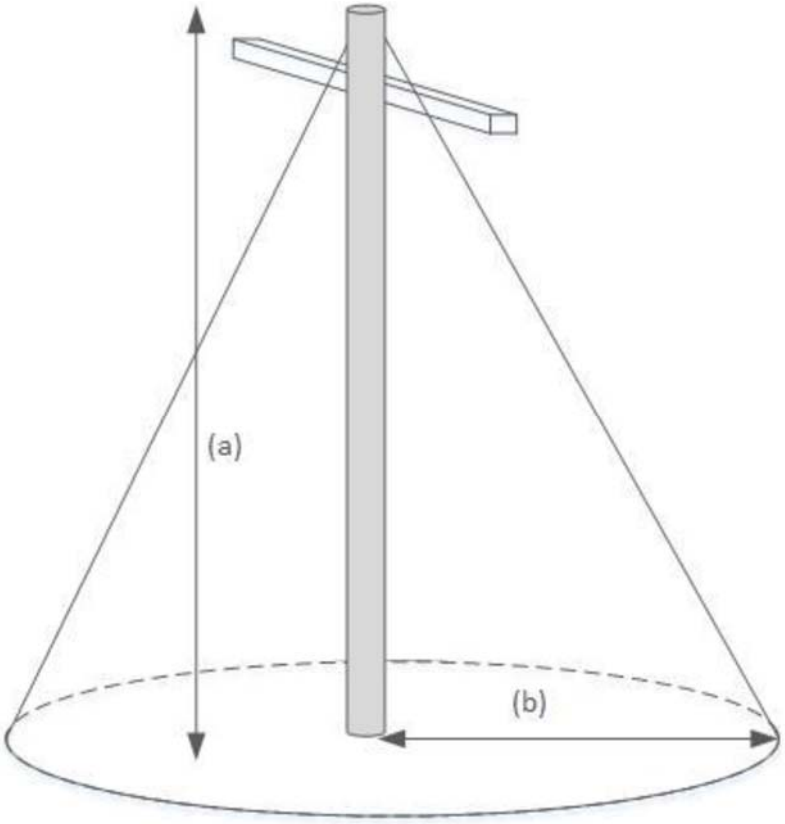
CONSIDERATIONS

- 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



11.2 Attachment 2 - Exclusion Zone Calculator

As a rule of thumb when the working height is less than 20m the Drop Zone radius should be approximately one third (33%) of the working height. However, as a general rule, a minimum Drop Zone radius of 4m should be established (where practicable).



Working Height (a)	Drop Zone radius (b)	Working Heights (a)	Drop Zone Radius (b)
<12m	4m	25m	6m
14m	5m	30m	7.5m
16m	5.5m	40m	10m
18m	6m	50m	12.5m
20m	6m	75m	19m