Procedure

Cranes and Lifting

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Contents

1. Purpose

The intent of this document is to eliminate or minimise the risks of fatalities, injuries and events arising from the use of cranes and lifting equipment at Seqwater workplaces.

2. Scope

This Procedure applies to all Seqwater workers, business groups and work activities.

3. Critical Controls

Critical Controls for Cranes and Lifting		
	Critical Controls	**Objective**
1.	The maximum rated Working Load Limit (WLL) of Cranes & Lifting equipment is not exceeded	To prevent a mechanical failure and resulting loss of control of load or crane/lifting equipment
2.	Loads must be rigged, lifted, suspended and moved in a way that ensures that the load remains under control at all times.	Manage load movement to prevent the suspended load from falling or shifting.
3.	Cranes that use a workbox to elevate people have an anti-free fall device or secondary independent brake on all winches.	To prevent operation of a crane on unstable ground and resulting loss of control of load or crane.
4.	No persons positioned under a suspended load.	To prevent a person being struck by a falling or suspended load.
5.	No persons in the path of travel of moving load.	To prevent interaction between mobile plant or equipment and workers.

4. Additional Controls

- A SWMS must be in place for all lifting operations in accordance with the Hazard Identification and Risk Management Procedure (PRO-00657).
- A pre-lift meeting must be conducted with the lifting team to conduct a final review of the SWMS (and lift plan for critical lifts) and make any amendment due to changes to the job or environment. Any changes that affect the lifting operation must be approved by a dogger (or rigger).
- Where lifting activities include lifting of loads over an item of live plant, and there is a high risk of Seqwater's operations being impacted should the load fall, a Major Works Permit must be used. This must identify additional controls required to manage the identified risk to Seqwater's operations.
- The crane standing design must conform to the crane manufacturer's instructions or an RPEQ Engineer's (registered in the area of expertise with the Board of Professional Engineers of Queensland) recommendation.

- The crane standing area must be designed to withstand the forces likely to be imposed on it by the crane while in-service, out-of-service and during erecting and dismantling.
- When using a vehicle mounted crane controls must be implemented to ensure the vehicle is not able to be operated while the crane is in use (e.g. steering wheel lock).
- No person, plant or equipment is permitted to enter an overhead electrical exclusion zone. Refer to the Electrical – High and Low Voltage Procedure (PRO-00006) for further information on electrical exclusions zones for overhead electrical lines.
- All lifting hooks (except for grab and chain shortening hooks) must be fitted with a safety latch to prevent the load from accidentally detaching, unless otherwise specified in a SWMS.
- All cranes and hoists at Seqwater workplaces shall be subject to inspections carried out at sufficient frequency to ensure the crane is kept in a safe and satisfactory condition, refer to the Asset Class Plan.
- All cranes and lifting equipment must be inspected as per manufacturers specifications and prior to use, the lift must not proceed if any defaults are identified.
- All load movements must be controlled by a competent and qualified person.
- An anemometer (to measure wind speed) must be fitted to mobile cranes with a lifting capacity of 45 tonne or greater.

5. Types of Lifts

5.1. Pre-Approved Routine Lifts

Pre-approved routine lifts are those which are covered by an existing pre-approved SWMS that has been signed off by a dogger or rigger and do not require a dogger to sling the load.

An Seqwater worker deemed competent (completed RIIHAN203E – Conduct Lifting Operations), is able to sling a load without holding a dogging (or rigging) high risk work licence when there is no judgement required for slinging techniques or the suitability of lifting gear because the following factors are predetermined:

- The weight of the load (or within a weight range) to be lifted is predetermined by a competent person (e.g., may be marked on the load).
- Selection of the sling and slinging techniques for the load is predetermined by a competent person.
- The lifting points are predetermined by a competent person and marked on the load.
- The load is always lifted within the view of the crane operator.
- Standard lifting Procedures have been documented on a SOP/SWMS and signed-off by a dogger or rigger.

All pre-approved routine lifts must be reviewed by a dogger annually to validate that there have been no changes to the previously planned and documented lift.

5.2. Routine Lifts

Routine lifts are lifts that will require the lift to be planned and conducted by a suitably qualified dogger (or rigger) but are not critical lifts.

The lift must be planned and documented on a SWMS identifying all lift planning requirements identified.

5.3. Critical Lifts

When contractors have identified that a critical lift is being performed, as a minimum the Engaging Officer must verify prior to the lifting commencing:

- That critical lift plans have been developed by appropriately qualified workers
- The qualifications of all members of the lifting team have been verified.

When Seqwater employee's have identified a critical lift is being performed, the Critical Lift Plan (FRM-00867) must plan and document the critical lift.

- Critical lift plan must be developed by a qualified worker to address all the lift planning requirements identified.
- Critical lift plan is approved by a Level 3 Manager

5.4. Lifts with a Workbox

A workbox must only be used:

- Where there are no alternatives to accessing a work area (e.g. scaffolding or elevated work platform).
- Where it is necessary to elevate personal to carry out work where it is not reasonably practicable to use scaffolding or equipment designed specifically to lift people.

Any cranes used to lift a work box must:

- Be equipped with a secondary back-up system that will prevent the load from falling if the primary lifting device fails.
- Have a minimum 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 kg.
- Be fitted with an upper hoist limit – anti-two block – that stops operation of the hoist, luff and telescope functions of the crane or be designed so two-blocking cannot damage part of the crane or lifting gear.
- Have levers and foot pedals fitted with a constant pressure system so crane motion stops immediately after the operator removes pressure from the controls.

If the crane is fitted with a free fall facility, this function must be positively locked out to prevent inadvertent activation when lifting a work box.

Where a crane has a brake acting directly on the drum, the braking efficiency of the hoisting drive train must be tested by hoisting and holding a load:

- Equivalent to the line pull of the hoist winch; or
- Not less than twice the maximum hoisted load.

If the crane will be used to lift other loads the test must be repeated before re-lifting the workbox.

During operation of the crane with a workbox the line pull of the hoist winch must not exceed that used in the test.

To help make sure people in a crane-lifted workbox are safe the following must be undertaken:

- High-Risk Work Rescue Plan (TEM-00027) must be completed. The rescue plan must include emergency retrieval arrangements should workers need to safely exit the workbox in the event of crane failure.
- The workbox must be securely attached to the crane.
- Full body fall-arrest harnesses must be worn at all times.

- Harnesses must be attached to fall-arrest anchorage points in the workbox or to the main sling ring above the heads of the workers.
- Direct communications to the crane operator are to be maintained and must only be provided from the workbox by a person holding a dogging or rigging licence.
- Mobile cranes must not travel while suspending a workbox.
- Workers remain substantially inside the workbox while it is lifted or suspended.

5.4.1. Workers suspended over water.

If there is a requirement for workers to be suspended in a workbox or in an elevated work platform (EWP) while working over water, the workers may not be required to be attached to the workbox or EWP via a harness subject to the following conditions:

- The risk of falling into water and drowning is higher than the risk of being injured by hitting the water surface or submerged objects.
- A dedicated spotter/dogger must be present at all times to guide the operator and monitor the person working over water.
- A floatation device is readily accessible for rescue purpose e.g., life ring and life floats.

Other uses of a workbox or EWP outside of these specific circumstances (e.g. when traversing to the water's edge) must follow the Working at Heights Procedure (PRO-00015).

6. Definitions

Term	Definitions
Anemometer	A device used to measure wind speed. Must be fitted or retro fitted to cranes with a lifting capacity of 45 tonnes or greater
Bridge beam or gantry crane system	A bridge or gantry crane: • Consists of a bridge beam or beams supported at one or both ends by legs mounted to end carriages. • Is capable of travelling on supporting surfaces or deck levels, whether fixed or not has a crab with one or more hoisting units arranged to travel across the bridge beam.
Critical lift	Critical lifts include: • Lifts exceeding 80% of the crane's load chart capacity (this does not apply to gantry cranes which may lift up to 100% of the rated capacity). • Multiple crane lifts. • Lifts from a suspended or floating structure. • Lifts where outriggers cannot be fully extended. • Lifts requiring complex crane maneuvers. • Lifting of concrete precast tilt panels. • Lifting of personnel using a mobile crane. • Lifting of complex loads such as vessels containing more that 1000l of liquids or loads with a large sail area in proportion to weigh. • Lifts performed in the designated proximity zone of overhead powerlines. • Lifts where a mobile crane is set up on or over water or is lifting to or from water • Lifts where there is potential for public interaction or requires closure of a public road or footpath • Demolition, including removal of piles
Dogger	A High-Risk Work licensed (DG) person with the qualifications to conduct dogging work. Dogging work includes the application of slinging techniques, including the selection and inspection of lifting gear, to safely sling a load. It also includes directing a plant operator in the movement of a load when the load is out of the operator's view.
Rigger	A High-Risk Work licensed (RB, RI, RA) worker who conducts rigging work. Rigging work involves the use of mechanical load shifting equipment and associated gear to move, place or secure a load including plant, equipment or members of a structure to ensure the stability of those members. It also includes the setting up or dismantling of cranes or hoists.

Term	Definitions
Routine lifts	Lifts that will require the lift to be planned **and** conducted by a suitably qualified dogger (or rigger) but are not critical lifts. The lift must be planned and documented on a SWMS identifying all lift planning requirements.
SWMS	A SWMS is a document that sets out the high risk construction work activities to be carried out at a workplace, the hazards arising from these activities and the measures to be put in place to control the risks.
Workbox	Personnel carrying device designed to be suspended from a crane to provide a working area for a person elevated by and working from the box. May also be called a man box.
Working Load Limit (WLL)	The maximum load which an item of lifting equipment, lifting device or attachment is designed to. This was previous referred to as the Safe Load Limit.

7. Roles and Responsibilities

Role	Responsibility
All workers	• Follow any instructions in relation to the safe use of cranes and lifting equipment. • Develop a SWMS or Critical Lift Plan and implement risk control measures prior to commencing any task that involves the use of cranes or lifting equipment. • Only conduct lifts they are qualified and competent to undertake. • Utilise a SWMS or Critical Lift Plan for all lifting operations. • Establish appropriate exclusion zones for all lifting operations in accordance with the requirements of this Procedure. • Engage an appropriately qualified external contractor for any lifting that involves a critical lift. • Report hazards, risks or incidents in relation to cranes and lifting operations to the Seqwater Incident Hotline (07) 3270 4040 and their line supervisor.

Role	Responsibility
Engaging Officers (including project managers)	• Communicate Seqwater's requirements for cranes and lifting operations with contractors engaged to perform crane and lifting operations. This may be achieved by providing the contractor with a copy of Seqwater's Critical Control Handbook and a copy of this Procedure. • Review contractor's safety documentation to confirm that Seqwater's requirements for lifting operations are addressed. Where required, obtain advice and support from the HSQ Team or a qualified rigger, dogger or engineer to support this review. • Confirm, or arrange for a representative to confirm, that contractors they engage have the required qualifications, training and licences to perform the planned lifting operations and are following the approved safety documentation.
HSQ Team	• Provide advice, support and consultation on the hazards of working with cranes and lifting equipment, including identification and implementation of risk controls.
Maintenance Coordinators	• Ensure, so far as is reasonably practicable, that all cranes and lifting equipment at workplaces within their area of responsibility is recorded in CIS. • Implement strategies to make sure that all required maintenance, inspection, testing and calibration is undertaken on cranes and lifting equipment at workplaces within their area of responsibility.
Managers	As a leader, engage staff and establish processes to: • provide resources to identify and manage hazards associated with crane and lifting operations. • supervision, instruction, and access to training for crane and lifting operations in accordance with the requirements of this Procedure.
Tactical Maintenance and Planning Coordinator	• Establish preventative maintenance and inspection programs for all cranes and lifting equipment, including the establishment of work orders in CIS.

8. Training

8.1. Role competency requirements

Role	Requirement
Crane Operators	Personnel who operate cranes must hold the appropriate license and be competent in the use of the crane (refer section 8.2 below for specific competencies).
Dogger	Any Seqwater worker responsible for planning or conducting routine lifts must be a dogger. A dogger must hold the appropriate Vocational Educational Training (VET) qualification to enable them to apply for a High-Risk Work licence for dogging.

Role	Requirement
Rigger	There is no requirement for Seqwater workers to hold a rigging high-risk work licence.
Others	All workers who conduct pre-approved routine lifts must complete RIIHAN203E – Conduct Lifting Operations. This provides a competency in basic rigging and slinging techniques, however, does not certify them as either a rigger or dogger.

8.2. Equipment competency and licencing requirements

Crane type	Typical use	Competency/Licencing requirement
Workshop bridge beam or gantry cranes that are remotely controlled with three or less powered operations. Three movements are north/south, east/west, hoist up/down only.	Moving equipment around a workshop or lifting dam wall infrastructure.	RIIHAN203E – Conduct Lifting Operations
Workshop bridge beam or gantry cranes that are: controlled from a permanent cabin or control station; or remotely controlled with more than three powered operations (e.g., a single hoist with four powered operations - traversing, travelling, hoisting and rotating)		Bridge beam and gantry crane license (Class CB)
Mobile crane (slewing & non-slewing)	Typically, routine or critical lifts for construction or maintenance activities. Worksafe QLD registration of plant where the safe working load of more than 10t. Rating capacity chart is fixed in a position visible to the crane operator or available in the crane cabin. Slew pins must be secured in place in mobile cranes while travelling. Slewing to test the integrity of outriggers on mobile cranes must be conducted prior to commencing lifts.	Mobile crane license applicable to the type of crane: • Class CN License for non-slewing mobile cranes with a capacity greater than three tonnes 1; • Class C0 License for a slewing mobile crane with a capacity greater than 100 tonnes; • Class C1 License for a slewing mobile crane with a capacity of 100 tonnes or less; • Class C2 License for a slewing mobile crane with a capacity of 20 tonnes or less;

Crane type	Typical use	Competency/Licencing requirement
		• Class C6 License for a slewing mobile crane with a capacity of 60 tonnes or less *[1] Persons who hold a slewing mobile crane license are also licensed to operate a non-slewing mobile crane with a capacity greater than 3 tonnes.*
Vehicle loading cranes (<10MT)	Typical used for the delivery of equipment and supplies. Operator control stations for vehicle-mounted cranes must be located in an area protected from swinging loads and from the crane jib.	Nil
Vehicle loading cranes (>10MT)		(TLILIC0002 - Licence to Operate Vehicle Loading Crane (capacity 10MT and above) [1] *[1] Persons who hold a slewing mobile crane license are also licensed to operate a vehicle loading crane with a capacity of 10 tonnes or more.*
Using other powered mobile plant as a crane	Powered mobile plant used in this way includes forklifts and earthmoving machinery like backhoes, front-end loaders and excavators. Mobile plant used as a crane must be fitted with Hydraulic Burst Protection where the rated capacity exceeds 1 tonne. Loads must only be suspended from the manufacturer's designated lift point or quick hitch if fitted unless another designated lifting point has been designed and fitted. Using powered mobile plant as a crane for construction work is classified as high-risk construction work and a SWMS must be prepared before the work starts. If additional attachments are used, for example, a jib attachment on a forklift, the operator must have completed additional training, such as SOP training, in the attachments use.	Operators of powered mobile plant must be trained and competent to operate the plant safely. When mobile plant is used to lift freely suspended loads, as a minimum the mobile plant operator must have completed RIIHAN203E Conduct Lifting Operations training course.

9. References and Related Materials

9.1. Legal and other requirements

Description
Work Health & Safety Act 2011 (QLD) and Work Health & Safety Regulation 2011 (QLD)
SafeWork Australia Managing the Risks of Plant in the Workplace Code of Practice
SafeWork Australia National Standard for Licensing Persons Performing High Risk Work
Mobile Crane Code of Practice (Qld)
AS 2550 Cranes, Hoists and Winches- Safe Use- General Requirements' and the series of AS 2550 as they relate to the crane type.

9.2. Seqwater documents

Description	Location
FRM-00867 Critical Lift Plan Form	REX
PRO-00006 Electrical – High and Low Voltage Procedure	REX
PRO-00015 Working at Height Procedure	REX
PRO-00657 Hazard Identification and Risk Management Procedure	REX
PRO-00867 Safe Work with Plant Procedure	REX
PRO-01820 Permit Access Safety System (PASS) Procedure	REX
RSK-00472 Cranes and Lifting Generic SWMS	REX
RSK-00481 Combined Generic SWMS	REX
TEM-00013 Safe Work Method Statement (SWMS) Template	REX
TEM-00027 High-Risk Work Rescue Plan Template	REX