



**Australian Government**

# **TLILIC0020 Licence to operate a slewing mobile crane (over 100 Tonnes)**

**Release: 1**

# TLILIC0020 Licence to operate a slewing mobile crane (over 100 Tonnes)

## Modification History

**Release 1.** This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

## Application

This unit specifies the skills and knowledge required to safely operate a slewing mobile crane with a Maximum Rated Capacity (MRC) over 100 tonnes in accordance with all relevant legislative responsibilities. Competence in this unit, does not in itself result in a High-Risk Work Licence (HRWL) to operate this plant.

Slewing mobile crane means a mobile crane incorporating a boom or jib that can be slewed, but does not include:

- a front-end loader, or
- a backhoe, or
- an excavator, or
- other earth moving equipment, when configured for crane operation.

A person performing this work is required to hold a slewing mobile crane with an MRC over 100 tonnes HRWL.

This unit requires a person operating a slewing mobile crane with an MRC over 100 tonnes to:

- plan for the work/task
- prepare for the work/task
- perform work/task
- pack up.

## Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit of competency.

This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) regulations and meets Commonwealth, state and territory HRWL requirements.

The National Assessment Instrument (NAI) is the mandated assessment for the HRWL to operate the relevant licensing class as detailed in this unit.

## Pre-requisite Unit

Not applicable.

## Competency Field

LIC - Licencing Units.

## Unit Sector

Not applicable.

## Elements and Performance Criteria

### ELEMENTS

Elements describe the essential outcomes.

#### **1 Plan work/task**

### PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Task requirements are identified from work orders or equivalent, a lift plan is confirmed with associated personnel and a site inspection is conducted in accordance with workplace procedures
- 1.2** Work area operating surface is confirmed to determine the quality of ground suitability for operational use of mobile crane in accordance with workplace procedures
- 1.3** Mobile crane Rated Capacity (RC) and the lifting gear Working Load Limit (WLL) are established for the load/s and work/task requirements in accordance with manufacturer requirements and workplace procedures
- 1.4** Appropriate paths for operating the mobile crane and moving and placing load/s in work area are assessed and determined in accordance with workplace procedures
- 1.5** Relevant hazard identification and risk elimination/control measures are applied and advised to associated personnel in accordance with workplace procedures
- 1.6** Traffic management plan implementation is confirmed and followed in accordance with workplace procedures
- 1.7** Appropriate communication procedures are identified and tested with associated personnel in accordance with workplace procedures
- 1.8** All tasks are confirmed to ensure requirements for the relevant work area in accordance with a lift plan and

workplace procedures

- 1.9** Information required to ensure that lifting equipment and gear inspection, use, maintenance and storage complies with manufacturer requirements is obtained and interpreted
- 2 Prepare for work/task**
- 2.1** Consultation with workplace personnel is established and maintained to ensure lift plan is clear and consistent with site requirements in accordance with a lift plan and workplace procedures
- 2.2** Risk control measures for hazards identified are checked for implementation in accordance with the lift plan and safe work procedures
- 2.3** Mobile crane is accessed safely in accordance with manufacturer requirements and safe work procedures
- 2.4** Pre-start mobile crane checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with manufacturer requirements and safe work procedures
- 2.5** Mobile crane is set up correctly with any lifting gear and stabilised as per the lift plan in accordance with relevant manufacturer requirements, including load chart/s and safe work procedures
- 2.6** Counterweight/s are set up as required in accordance with the lift plan, relevant manufacturer requirements and safe work procedures
- 2.7** Fly jib and/or luffing fly are set up as required in accordance with specific manufacturer requirements and safe work procedures
- 2.8** Operational checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with manufacturer requirements and safe work procedures
- 2.9** Crane logbook is checked to confirm current compliance, is correct for the crane type, is completed and signed and required rectifications have been signed off in accordance with manufacturer requirements and safe work procedures

- 2.10** Weather and work environment conditions are assessed to determine any impact on mobile crane operations in accordance with manufacturer requirements and safe work procedures
- 2.11** Weight of the load is confirmed
- 2.12** Derated WLL of lifting equipment resulting from selected slinging techniques is calculated and confirmed as suitable to meet the requirements of the lift plan
- 2.13** Suitable lifting points and slinging techniques are identified
- 2.14** Lifting equipment and gear are confirmed as ready for safe use
- 2.15** Load destination stability is confirmed ensuring it is able to bear the load and is prepared for safe access and landing

### **3 Perform work/task**

- 3.1** Lifts are determined within the RC of the mobile crane in accordance with the load chart/s and lift plan
- 3.2** Boom/jib and hook block are safely positioned over the load following directions from associated personnel in accordance with the lift plan and safe work procedures
- 3.3** Main and/or auxiliary hook, including any lifting gear where required, are connected to the load and used safely in accordance with the lift plan, safe work procedures and manufacturer requirements
- 3.4** Test lift is carried out in accordance with dogging and safe work procedures
- 3.5** Loads are transferred using relevant crane movements and tag lines, as required, in accordance with lift plan and safe work procedures
- 3.6** Load and crane movement is monitored constantly and crane is operated safely in accordance with lift plan and

safe work procedures

- 3.7 All required communication signals are correctly interpreted and followed whilst crane is operated in accordance with the lift plan and safe work procedures
- 3.8 Load is lowered and landed safely in accordance with lift plan and safe work procedures
- 3.9 Lifting gear is disconnected from load and crane is positioned safely and efficiently for next task in accordance with lift plan and safe work procedures
- 3.10 Lifting equipment and gear are inspected for defects, and defective items are isolated, labelled and reported

## **4 Pack up**

- 4.1 Crane boom/jib, lifting gear and associated equipment are stowed and secured as required in accordance with manufacturer requirements and safe work procedures
- 4.2 Crane fly jib and counterweight are removed to storage position and secured as required in accordance with manufacturer requirements and safe work procedures
- 4.3 Relevant motion locks and brakes are applied as required in accordance with manufacturer requirements and safe work procedures
- 4.4 Outriggers are stowed and secured in accordance with manufacturer requirements and safe work procedures
- 4.5 Crane is shut down and secured to prevent unauthorised access/use in accordance with safe work procedures
- 4.6 Plates or packing are stowed and secured in accordance with safe work procedures
- 4.7 Shutdown crane checks are carried out in accordance with safe work procedures and manufacturer requirements

## **Foundation Skills**

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

## Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the TLI Transport and Logistics Training Package Companion Volume Implementation Guide.

## Unit Mapping Information

This unit replaces and is equivalent to TLILIC0015 Licence to operate a slewing mobile crane (over 100 Tonnes)

## Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>

# Assessment Requirements for TLILIC0020 Licence to operate a slewing mobile crane (over 100 Tonnes)

## Modification History

**Release 1.** This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

## Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- applying relevant mathematical calculations in conjunction with lift plan and load chart to determine radius requirements and relevant lifting gear to perform work/task to enable crane to be configured for load, including:
  - boom
  - counterweight/s
  - fly jib
  - line pull
  - outrigger positioning
  - type of hook
- applying relevant crane movements, including:
  - boom/jib up and down (luffing)
  - catching load swing appropriately
  - positioning and using main and auxiliary hook and lifting gear to connect to load safely
  - raising and lowering hoist
  - slew boom/jib
  - telescope in and out
- conducting and applying hazard and risk assessment strategies, including:
  - confirming work area operating surface suitability based on crane and task requirements
  - dynamic loads
  - load swing
  - overloading
  - lifting and placing load
  - tyre pressures or track condition
  - asymmetric loads
  - overhead hazards
  - restricted and poorly ventilated areas
  - risk of collision with people, moving plant and fixed structures
  - adequate lighting

- weather conditions
- complying with Commonwealth, state and territory work health and safety (WHS)/occupational health and safety (OHS) legislation and safe work procedures
- communicating with other associated personnel through using appropriate workplace procedures, including:
  - two-way radio
  - active listening
  - demonstrating and interpreting hand signals
  - questioning to confirm understanding
  - signage/visual aids
  - verbal language
  - whistles
  - written instructions
- completing pre-start checks, including:
  - boom wiring harness connection
  - engine/mechanical fluid level checks as required by manufacturer requirements
  - ensure rungs/steps are free of hazards
  - fire extinguisher
  - fluid leaks
  - lights work effectively
  - locating, identifying and confirming all controls
  - mirrors and seat are adjusted appropriately for the operator
  - presence of correct logbook
  - safety equipment checks
  - signage and labels to ensure they are visible and legible
  - checking for signs of paint separation and stressed welds indicating potential structural weakness
  - tyres and wheels for damage/wear and correct inflation
  - updating records as required
  - visual damage or equipment faults
- inputting crane configuration into crane computer (where fitted) and checking operation to accurately reflect crane configuration
- carrying out operational checks ensuring:
  - all controls are located, identified and tested for functionality
  - all hydraulic functions are operational
  - lifting gear movements and control functions are smooth and comply with lift plan
  - hazard warning systems, safety, audible and visual warning devices are checked for to ensure they are functional, including:
    - reversing beepers
    - lights

- horns
- crane computer alarm (where fitted)
- anti-two block alarms (where fitted)
- start-up is in accordance with manufacturer requirements and safe work procedures
- there are no unusual noises
- steering, transmission and brake functions comply with operating requirements
- confirming and following traffic management plan procedures relevant to their role in the work area
- determining any defects or faults with operation of crane, recording in relevant documentation and reporting to relevant person/s
- ensuring risk control measures within the work area are effective in accordance with safe work procedures
- following directions of dogger or rigger
- interpreting and acting on communication signals, including:
  - hoist down - hand and whistle and radio
  - hoist up - hand and whistle and radio
  - luff boom down - hand and whistle and radio
  - luff boom up - hand and whistle and radio
  - slew left - hand and whistle and radio
  - slew right - hand and whistle and radio
  - stop - hand and whistle and radio
  - telescope in - hand and whistle and two-way radio (where manufacturer requirements allow)
  - telescope out - hand and whistle and two-way radio (where manufacturer requirements allow)
- interpreting and confirming relevant documentation for the work task and relevant area
- maintaining three points of contact whilst accessing crane
- monitoring load disconnection from hook is safe and ensuring no movement of crane operational controls
- operating a slewing mobile crane configured with at least four parts of line greater than 100 tonnes to lift and move four different loads using the main hook through an obstacle course, including a 180-degree minimum slew using all crane operational controls while the load is in full view of the crane operator. Loads must consist of:
  - a load of >50% of the Rated Capacity (RC) of the crane with a boom length of >75%, and
  - stillage containing at least ten scaffolding standards or containing a load of steel pipes of equivalent weight that requires a dogger to sling, and
  - an asymmetrical load that requires a dogger to sling, and
  - a round load with a minimum diameter of 300 mm and minimum length of three m that requires a dogger to sling
- positioning the mobile crane for safe operation for:
  - application of the task/s
  - manoeuvring in the workplace

- the stability of the mobile crane and the load
- recording and maintaining accurate information relating to crane operations
- reporting to relevant person/s on workplace control measures that are not in place or deficient
- setting up and validating an exclusion zone
- shutting down a slewing mobile crane in accordance with manufacturer requirements and safe work procedures
- stabilising a slewing mobile crane for operation by:
  - correctly positioning plates or packing
  - deploying outriggers
  - establishing correct size plates or packing in accordance with the lift plan
  - checking levels
- planning for and managing load stability, including:
  - confirming and inspecting appropriate lifting gear and applying slinging techniques appropriate to the type of load, its mass and centre of gravity
  - identifying the Working Load Limit (WLL) tags of the lifting equipment and gear and calculating the deration of the WLL resulting from the slinging techniques applied
- test-lifting load just clear of lifting plane to allow for checks to be safely made in consultation with associated personnel to ensure:
  - slinging is correct
  - all crane equipment is functioning properly
  - load centre of gravity is correct
  - loads of unusual shape or weight distribution are correctly slung
- test-lifting load just clear of lifting plane to allow for checks of crane computer (where fitted) to ensure:
  - load measuring equipment can be used to verify calculated weight of load
  - near capacity loads do not overload crane.

## Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- appropriate workplace communication procedures, including:
  - listening
  - hand signals
  - questioning techniques
  - signage
  - two-way radios
  - written instructions
  - whistles
- characteristics and impact of factors affecting non-slewing articulated mobile crane stability whilst mobiling loads compared to slewing crane, including:

- articulation of crane
- correct tyre pressure (inflation/condition)
- driving safely on public and private roadways
- unique handling characteristics of a mobile articulated crane and the emergency procedures in the event of loss of control in accordance with manufacturer recommendations
- pick and carry the load
- side slope derations
- characteristics and impact of factors affecting vehicle loading crane stability whilst mobiling loads compared to slewing, crane including:
  - correct tyre pressure (inflation/condition)
  - emergency procedures in the event of an incident
  - position of operator
  - use of stabilisers
- characteristics and impact of factors affecting reach stacker stability whilst mobiling loads compared to slewing crane, including:
  - correct tyre pressure (inflation/condition)
  - driving safely on roadways
  - emergency procedures in the event of an incident
  - impact of boom height and steering on stability
  - use of stabilisers
- crane configuration mathematical calculations to:
  - estimate loads
  - establish counterweight/s requirements
  - establish radius requirements
- relevant lifting gear to perform work/task
- crane, lifting gear load chart/s and manufacturer requirements
- lift-impacting factors, including:
  - centre of gravity
  - dynamic nature of load
  - flex/deflexion of boom
  - length of load
  - radius of boom during lift
  - weight
- hazards, including:
  - erection and pack up
  - crane stability
  - ground stability and condition including recently filled trenches and slopes
  - insufficient lighting
  - obstacles or obstruction

- other specific hazards and dangerous materials
- overhead hazards, including:
  - electric lines
  - service pipes
  - structures
  - vegetation (trees)
- traffic, including pedestrians, vehicles and other plant
- operations on unusual, uneven or difficult terrains
- manufacturer requirements on outrigger procedures
- manufacturer requirements and instructions on shutting down and packing up crane
- mobile slewing crane characteristics and capabilities to allow crane configuration to suit a range of loads
- pre-start and operational checks required for a slewing mobile crane
- problems and appropriate response procedures to unplanned and/or unsafe situations and environmental conditions, including:
  - wind, lightning and storms
  - failure of equipment, including hydraulic system
  - failure/loss of control, including brakes and steering
  - obstacles and obstructions
  - unusual or difficult terrains
- hazards commonly encountered while preparing load:
  - instability of landing surfaces
  - overhead and underground hazards
  - insufficient lighting
  - traffic
  - weather
  - pedestrian traffic
  - work at heights
- selection, inspection, care, handling, application, limitations and storage of lifting equipment and gear:
  - flexible steel wire rope (FSWR) sling
  - synthetic sling
  - chain sling (including shortener)
  - spreader bar or lifting beam
  - tag line
  - shackles
  - eyebolts
  - plate clamps
- methods of making temporary connections to loads using fibre and synthetic ropes:
  - single sheet bend

- clove hitch
- rolling hitch
- bowline
- relevant workplace instructions, safety information and emergency procedures
- relevant documentation requirements and procedures for recording, reporting and maintaining workplace records and information
- risk assessment management and mitigation strategies, including hierarchy of control:
  - elimination
  - substitution
  - isolation
  - engineering controls
  - administrative controls
  - personal protective equipment (PPE)
- roles and responsibilities of duty holders in accordance with legislative obligations of WHS/OHS requirements, safe work and workplace procedures
- set up of:
  - jib
  - fly jib/luffing fly
  - counterweight/s
- stability of load and avoidance of hazards, including:
  - allowing for boom deflection
  - boom/jib as low as possible
  - carrying load near to ground surface
  - crane stability
  - gently accelerating and braking on slew/boom to minimise load swing
  - lowering load safely onto appropriate dunnage taking into consideration swing and restrictions of area
  - minimum boom/jib length
  - minimum speed
  - using handheld tag lines as required
  - identification of incorrect sling of load
- starting procedure of crane as per manufacturer requirements
- weather bureau forecasts and associated information and environmental conditions that could impact operation including:
  - lightning
  - rain
  - wind
  - water impacted ground
  - ultraviolet (UV) exposure
- work area suitability based on relevant ground reports, including:

- backfilled ground
- bitumen
- concrete
- hard compacted soil
- pre-contaminated soils
- rock
- rough, uneven ground
- soft soils
- workplace standards, requirements, policies and procedures for conducting safe work operations for the mobile slewing crane.

## Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

- Simulators must not be used in the assessment of this unit of competency.

Resources for assessment must include access to:

- slewing mobile crane with a MRC over 100 tonnes in safe/serviceable working order in accordance with manufacturer specifications
- appropriate loads as outlined in the Performance Evidence requirements
- appropriate personnel to sling and direct loads, including:
  - licenced dogger or rigger
- communication equipment, including:
  - two-way radios
  - whistles
- relevant PPE
- relevant documentation for operating a derrick crane, including:
  - approved codes of practice and relevant guidance material
  - relevant Australian technical standards
  - manufacturer guidelines (instructions, requirements or checklists), relevant industry standards and operating procedures (where applicable).

## Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>