



PROCEDURE

Title: **Lifting Equipment - Safe Use**

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1.0 PURPOSE

To provide standards for the safe use of lifting system equipment on the QAL site to comply with legal and site requirements.

2.0 SCOPE

This procedure applies to the use of all lifting equipment on the QAL site (including the Residue Disposal Area). It applies to the use of QAL owned equipment and all equipment hired by QAL. Contractors using their own equipment on site will have a safe use system in place of equal standing.

The procedure does not apply to the safe use requirements for:

- Industrial rope access rescue equipment and systems (refer AS/NSZ 4488 series)
- Personnel Fall Protection Systems (refer P314.311 Work at Height)

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- Queensland Fire & Rescue Service / First Response rescue lift equipment
- Elevators – personnel
- EWP and Scissor Lifts (refer P314.311 Work at Height and P314.701 Operation of Mobile Equipment procedures)

3.0 RESPONSIBILITIES

Basic Rigger

- Hold a Basic Rigger qualification that is recorded against the person's SAP training records
- Complete (and maintain ongoing currency) PG177a and PG177b Load Lift & Rigging training prior to commencing lifting activities onsite
- Perform inspections of lifting equipment prior to use
- Record a pre-start check for power operated lifting devices (log book retained with the device)
- Prepare a Lift Plan or Critical Lift Plan (subject to licence conditions) prior to undertaking any lift
- Only perform work to the level of qualification obtained (Refer Attachment 7.1)
- Immediately tag defective equipment and take out of service

Dogger

- Hold a Dogger qualification that is recorded against the person's SAP training records
- Complete (and maintain ongoing currency) PG177a and PG177b Load Lift & Rigging training prior to commencing lifting activities onsite
- Perform a visual inspection of all lifting equipment, prior to use
- Record a pre-start check for power operated lifting devices (log book retained with the device)
- Prepare a Lift Plan prior to undertaking any lift
- Only perform work to the level of qualification obtained (Refer Attachment 7.1)
- Immediately tag defective equipment and take out of service.

Equipment Owner

- Maintain register of all lifting equipment items under their control
- Ensure all lifting equipment items under their control are in safe order with inspection and testing programs undertaken as per procedure P314.420 Lifting Equipment – Inspection and Maintenance
- Ensure inspection tagging systems are used correctly
- Provide an adequate storage area for lifting equipment items
- Ensure the plant risk assessment for lifting equipment and devices includes all equipment under their control.

Intermediate (or Advanced) Rigger

- Hold an Intermediate Rigger qualification (or Advanced Rigger qualification) that is recorded against the person's SAP training records
- Complete (and maintain ongoing currency) PG177a and PG177b Load Lift & Rigging training prior to commencing lifting activities onsite
- Perform inspections of lifting equipment prior to use
- Record a pre-start check for power operated lifting devices (log book retained with the device)
- Prepare a Lift Plan or Critical Lift Plan (subject to licence conditions) prior to undertaking any lift
- Only perform work to the level of qualification obtained (Refer Attachment 7.1)
- Immediately tag defective equipment and take out of service

Lift Supervisor

- Hold a relevant Rigger qualification that is recorded against the person's SAP training records
- Signoff on Critical Lift Plan
- Be present throughout the duration of a Critical Lift

4.0 REFERENCES

P312.402	Pre-Task Hazard Assessment
P312.605	Competent To Operate
P314.301	Barricades and Cordons
P314.311	Work at Height
P314.420	Lifting Equipment – Inspection and Maintenance

P314.422 Cranes – Inspection and Maintenance
 P314.423 Cranes – Safe Use
 P314.615 High Voltage Vicinity Procedure
 P314.701 Operation of Mobile Equipment
 Queensland Work Health & Safety Act
 Queensland Work Health & Safety Regulation
 Code of Practice – Plant
 Code of Practice – Working near live parts (Electrical Safety Office)
 Rio Tinto HSE Performance Standard C6 – Cranes and Lifting Equipment
 PG177A and B Load Lift and Rigging Training Modules
 PG177C Load Lift and Rigging for Superintendents Training
 PG277 Load Lift and rigging for Non-licenced Personnel
W314.260.21 Lifting Conveyor Counterweights – Isolation and Pinning

5.0 DEFINITIONS

Competent Operator – a person who holds an appropriate QAL CTO for the piece of equipment being operated and has successfully completed (and maintains currency in) PG177a and holds a WHSQ qualification (or equivalent) appropriate to the complexity of task. For Rigging and Dogging activities refer to Attachment 7.1.

Critical Lifts - Critical Lifts are:

- Lifts requiring two or more lifting devices - where the combination includes one or more power operated lifting devices
- Where the load is being lifted onto or passed over occupied buildings
- Operation or load passing over or within the electrical wires exclusion zone and / or over electrical equipment (i.e., High Voltage yards / transformers)
- Lifts at maximum rated load capacity of crane
- Lifts involving personnel in workboxes or workbaskets – Additional approvals are required for these lifts

CTO – Competent to Operate

Davit – a lifting beam that can rotate or move on a horizontal plane.

Dogger - a person holding a WHSQ Certificate of Competency for Dogging and a QAL qualification imparted by completing PG177a and PG177b.

Drop Zone – the area underneath the load where the load would likely fall to or through if it was inadvertently released or dropped (See section 6.6).

Exclusion Zone – See section 6.6.

Lift Plans:

- **Critical Lift Plan** – a document that specifies the crane class and configuration, rigging techniques, load details, hazards and controls required to perform a critical lift. It requires joint development by all parties involved in the lift.
- **Fixed Crane Lift Plan** – Any lift involving the use of fixed plant cranes. It is completed by a qualified and competent operator.
- **Mobile Crane Lift Plan** – Any lift that involves the use of a mobile crane. It requires joint development between the crane operator and the Dogger / Rigger.
- **Lift Plan** – all lifts that do not come under the Critical Lift or Mobile Crane Lift Plan. It is completed by the Dogger / Rigger.

Lifting Attachment – an attachment designed to be used in conjunction with lifting devices and similar lifting equipment to raise, lower or haul, arrest and sustain a load.

Lifting Device – a device equipped with mechanical means that will raise, lower or haul, arrest and sustain a load in any working position within the full range of hoisting or haulage without adverse effects on any components. Cranes and mobile cranes are inclusive. The lifting device may be manually, engine or power operated (electric, hydraulic, and pneumatic).

Lifting Equipment – lifting attachments and rigging equipment that will raise, lower or haul, arrest and sustain a load or object.

Lifting Equipment Register – details the current list of equipment including a description, date of purchase, last inspection date and condition and WWL / SWL.

Lift Supervisor - a competent person who manages a critical lift and at a minimum holds an appropriate Rigger qualification for the lift being performed (refer Attachment 7.1)

Load Control Pole – a piece of non-conductive equipment that is manageable in length, sturdy to control and light enough to assist in controlling and guiding a load for placement where tag lines are not suitable. An example is a length of wooden pole and / or conduit tube which may have a recessed “V” notch (minimising slippage) or a hook attached.

Rigger – a person holding a WHSQ Certificate of Competency for Basic Rigging and a QAL qualification imparted by completing PG177a and PG177b.

RPEQ Engineer – Register Professional Engineer Queensland.

Tagline - a rope attached to an object before a lift takes place and used to control the sway, stability and placement of the object. It will be a minimum of 16 mm fibre rope and of a non-conductive material. The line may not be attached to the rigging equipment or hook.

Workbasket - a device designed to be elevated by a forklift or similar having tyne arrangements to provide a working area for a person. Use of a workbasket involving personnel in the basket is restricted.

Workbox - a device designed to AS1418.17 to be suspended from a crane to provide a working area for a person.

WHSQ - Work Health and Safety Queensland

WWL / SWL – Working Load Limit / Safe working load limit – equivalent meaning.

6.0 ACTIONS

6.1 Operation of Lifting System Equipment

All lifting equipment and devices shall be operated strictly in accordance with the manufacturer's operating handbook.

6.2 Pre-Task Hazard Assessment

Completion of a pre-task hazard assessment (Take5 or JHA) should focus on the overall task being undertaken, not the lift component in isolation which is covered by the Lift Plan.

6.3 Pre-Lift Requirements

6.3.1 Hazard Identification

A hazard assessment must be completed prior to commencing any lift that requires the use of rigging, slinging or winching methodologies. All persons involved in the lift must participate in the assessment process to ensure everyone understands how the job will be managed. The hazard assessment identifies:

- How the lift is to be performed

- What equipment is required
- What resources are needed
- Qualifications required to control the lift
- What hazards are present and how will they be controlled

6.3.2 Hazard Assessment Tools

- For lift tasks with an approved PPM or Work instruction:

Review the document and ensure all prescribed equipment is available, work methods are understood and equipment checks are performed as noted in the documentation.

Signoff is done by a person holding a current PG177a qualification.

- For lift tasks where there is no approved PPM or Work instruction:

Complete a Lift Plan (Form S164). Signoff is done by a competent Dogger or Rigger (See Attachment 7.1)

- For Critical Lifts additional planning, controls and signoff is required.

Complete a Critical Lift Plan (Form S165). Signoff of the hazard assessment is done by the Lift Supervisor and approved by one of the following roles:

- Maintenance Services Manager
- Turnaround Superintendent
- Construction Management & Execution Superintendent
- Central Workshop Superintendent
- Maintenance Superintendent.

Critical lifts must be carried out in accordance with the critical lift plan and be under the control of the Lift Supervisor. The Lift Supervisor must be present throughout the duration of the critical lift. The Lift Supervisor shall position themselves to have a good view of the overall lift, and have the ability to stop the lift at any time.

If the task changes or there is a need to move away from the original lift plan, the lift must stop and the critical lift plan must be up-dated and re-approved.

6.3.3 Pre-Use Inspections of Lifting System Equipment

All lifting system equipment shall be inspected by a competent person prior to use or at the commencement of each shift.

Any lifting equipment component found to be defective, missing current inspection tags or an identification number shall be taken out of service immediately.

An 'Out of Service' Tag with the relevant information indicating why the equipment is defective will be affixed to the equipment.

Note: If the inspection is being performed under a PPM lift instruction, items must be replaced 'like for like', if this is not possible a Lift Plan identifying alternate lifting equipment / arrangements must be prepared by an appropriately competent person and the lift supervised by that person.

6.4 Rigging the Load

Operations involving rigging and winching the load (including sheave blocks) shall only be undertaken by persons holding as a minimum, a Basic Rigging qualification, or is under direct supervision of a qualified Rigger for the purpose of training.

All rigging connections are to be checked prior to commencing a lift.

When the chosen rigging method has the ability to be mechanically adjusted (eg chain block, cum-along, turn buckle etc) or shortening chains can be adjusted beyond 60°, the rigging shall be connected to a common piece of lifting equipment (eg. shackle or lifting ring) effectively locking the rigging together. This piece of lifting equipment shall then attach to the hook of the lifting device.

When a load has the ability to be adjusted through a mechanical lifting device (e.g. chain block, cum-along) whilst suspended for positioning, a Dogger/Rigger shall be in place to monitor the lift and its rigging arrangements. The Dogger/Rigger needs to be positioned so that the entire lift can be seen and assessed.

Rigging equipment that is exposed to sharp edges of structural members shall be protected.

6.4.1 Handover of Rigged Load to another Work Group

When lifting arrangements have been set up by a work group for another workgroup to perform the lift activity the following must occur:

- a) the completed Lift Plan must be placed in the job pack at the worksite
- b) the incoming workgroup are to review the completed Lift Plan and perform a visual check to confirm components selected and rigging/sliding arrangements are suitable for task.

6.4.2 Correct use of Lifting Equipment

Lifting equipment (chains, slings etc) normally used for lifting and rigging purposes **SHALL NOT** be used for towing, snigging or pulling mobile equipment.

6.4.3 Synthetic Sling Approval Process

Before using synthetic slings, approval shall be obtained from an Area Superintendent and the form (HSE-021 Permit to Use synthetic Lifting Gear) attached to the relevant Hazard Assessment form.

6.4.4 Use of Workbaskets as a work area

Use of a workbasket as a work area that can be lifted by a forklift (or other similar lifting device) is restricted to the Boiler House and Refinery Support areas only.

Part A and B of the Critical Lift Plan (S-165) shall be completed and then approved by the Area Superintendent.

6.5 Modifications to Lifting Equipment and/or use of support structures for rigging loads

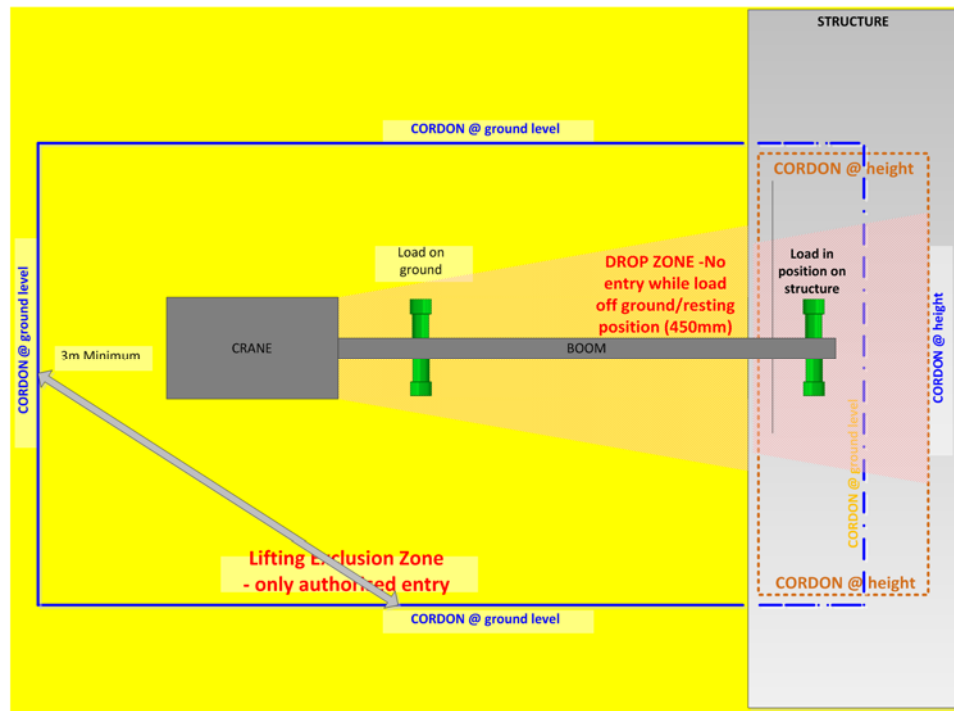
Prior approval by an RPEQ Engineer is required when a load requires supporting by a structure, process pipes or framework or when modifications / alterations to lifting equipment is required.

Note: The review process and approval must be registered in accordance with QAL Procedure P774.008 Registration of Design Calculations, Computational Models and Reports.

6.6 Cordons

The person in control of lift is responsible for establishing and maintaining the lifting exclusion zone cordon in accordance with QAL procedure P314.311.

The Drop Zone must be identified and all personnel must be kept clear of this zone during the lift.



6.7 Suspended Load Control

For the purpose of lifting and pinning a conveyor counterweight refer to W314.260.21 - Lifting Conveyor Counterweights – Isolation and Pinning.

Prior to the object being lifted an exclusion zone cordon shall be erected around the full lift area to prevent unauthorized entry.

The drop zone must be identified and all personnel must be kept clear of this zone during the lift.

Tag lines shall be used to maneuver all structures / components to their final position.

When landing items, the securing slings must be kept under tension until the load has been properly secured.

6.7.1 Working under a suspended load

NO PERSON MUST BE UNDER A SUSPENDED LOAD OR IN A POSITION WHERE THEY CAN BE STRUCK BY A FALLING LOAD. Barricading or similar controls to prevent access to the exclusion zone must be in place.

6.7.2 Physical Handling of Loads

The physical touching of a suspended load is restricted to the load being less than 450 mm from the final attachment, mounting or set-down point.

Where a suspended load requires physical handling outside the restriction zone:

- a detailed documented risk assessment with Section Superintendent approval shall be completed, or
- Where work is performed under a PPM approved by the Section Superintendent, and the PPM specifies physical touching of the load outside of 450 mm from the final resting place or set down point, this shall be considered as the approval to perform this task in the specified manner.

6.7.3 Taglines

A tagline or load control pole shall be attached to the load and not the actual lifting equipment and be of an appropriate length where its use does not introduce additional hazards. The use

of taglines or a load control pole shall be used to guide suspended loads into position and to control the sway and stability of the load in transit.

Tag lines should be made of non-conductive material.

6.8 Working Near Live Electrical Lines

Insulated lifting links may be required when working near overhead power lines or when the risk deems direct current as a threat.

A person must not operate any part of a lifting device within 3 m of bare electrical conductors (eg. overhead power lines) rated low voltage up to 1,000 volts.

Insulating links will be installed if operating within 3 m.

For all lifts within 6 m of electrical conductors greater than 1,000 volts, a High Voltage Vicinity Permit is required as per Procedure P314.615 High Voltage Vicinity. Part of the risk assessment under P314.615 will determine if an insulated link is required.

6.9 Environmental Conditions

Persons involved in lifts are to be aware of wind conditions throughout the lift. Hand held wind speed meters are available from the Crane Base Supervisor.

6.10 Communication

A method of communication must be established and documented in the Lift Plan or Critical Lift Plan before commencing work. The chosen method must take into account the operating environment in which the lift will occur and will include only radios, hand signals and whistles (or combinations). Mobile phones shall not be used. If a mobile phone has to be used by a person directly involved in the lift, the lift must be stopped.

6.11 Training and Qualifications

Lifting device operators working under an approved PPM lift instruction must hold a QAL qualification imparted by completing PG277 Load Lifts and Rigging for non-licenced Personnel. They must be confident to perform the lift activity and be able to demonstrate the correct process to Supervision.

Any QAL employee or contractor performing dogging operations must hold a WHSQ Certificate of Competency for Dogger and a QAL qualification imparted by completing PG177a Load lifts and Rigging and PG177b practical demonstration of skills. Refresher training is required every 3 years.

Any QAL employee or contractor performing Basic or Intermediate Rigging operations must hold the relevant WHSQ Certificate of Competency (or other similar State qualification) and a QAL qualification imparted by completing PG177a Load lifts and Rigging and PG177b practical demonstration of skills. Refresher training is required every 3 years.

All qualifications will be recorded in SAP against the individuals training record.

6.12 Records

All Lift Plans may be disposed of upon safe completion of the lift activity.

6.13 Manuals

Manufacturer supplied manuals and other service books and pre-start check books are to be easily accessible.

7.0 ATTACHMENTS

7.1 Competent Person: Dogging and Rigging - Qualification requirements for lifting devices and equipment

8.0 REVISION HISTORY

Issue	Revision	Revision date	Change Reason
1	1	22/09/2017	Added reference to 6.7 to give guidance on Lifting and Pinning Conveyor Counterweights
1	0	22/12/2016	Complete review and rebuild of system

Competent Person: Dogging and Rigging

Table 1: Level of Licencing required to sling loads

No licence	Dogger	Rigger
<p>Applies to lifting tasks performed on a regular / routine basis (workshops or routine equipment change outs in the field) where predetermined <i>slinging techniques</i>* does not involve the use of a mobile crane or other mobile equipment with lifting capability and are specified in an approved procedure eg. PPM, Work instruction, etc</p> <p>Documentation will specify:</p> <ul style="list-style-type: none"> - the lifting point/s to be used - lifting equipment required for task - method of preparing & performing the lift <p>Prior to perform the lift:</p> <ul style="list-style-type: none"> - Demonstrate correct process to Supervision before working unsupervised - Take PPM / Work instruction to the lift site 	<p>Applies to lifting tasks that require judgment on the:</p> <ul style="list-style-type: none"> - suitability and condition of lifting gear - method of slinging, by considering the nature of the load, its mass and its centre of gravity. <p>For a Dogger to perform this lift the:</p> <ul style="list-style-type: none"> ✓ Anchorage must be predetermined (eg. a crane or lifting beam) ✓ SWL/WLL must be marked on the lifting beam/point ✓ Capacity of all components are known <p>Prior to perform the lift:</p> <ul style="list-style-type: none"> - Prepare a <i>Lift Plan</i> - involve all persons participating in the lift - Have the <i>Lift Plan</i> approved by the appropriate person (this is documented on the Lift Plan) - Complete a pre-use inspection of the equipment selected for the lift – does not require documenting 	<p>As per “Dogger” but additional <i>judgement</i>** may be required for complex rigging tasks where:</p> <ul style="list-style-type: none"> - capacity of structural member used for anchorage may not be known
<p>Qualification required to perform this work:</p> <ul style="list-style-type: none"> - PG177a Load Lifts & Rigging Theory (<i>QAL issued</i>) & - PG105 Slinging & Movement (<i>QAL issued</i>) 	<p>Qualifications required to perform this work:</p> <ul style="list-style-type: none"> - PG177a Load Lifts & Rigging Theory (<i>QAL issued</i>) & - PG177b Load Lifts & Rigging Demonstration of Skills (<i>QAL issued</i>) & - Nationally recognised Dogger license <p>Work under the supervision of a qualified person if your qualifications are not current <u>or</u> if training to achieve competency.</p>	<p>Qualifications required to perform this work:</p> <ul style="list-style-type: none"> - PG177a Load Lifts & Rigging Theory (<i>QAL issued</i>) & - PG177b Load Lifts & Rigging Demonstration of Skills (<i>QAL issued</i>) & - Nationally recognised Rigger license <p>Work under the supervision of a qualified person if your qualifications are not current <u>or</u> if training to achieve competency.</p>
<p>** <i>Judgement allowed is determined by licence held. See Table 2 for details.</i></p>		

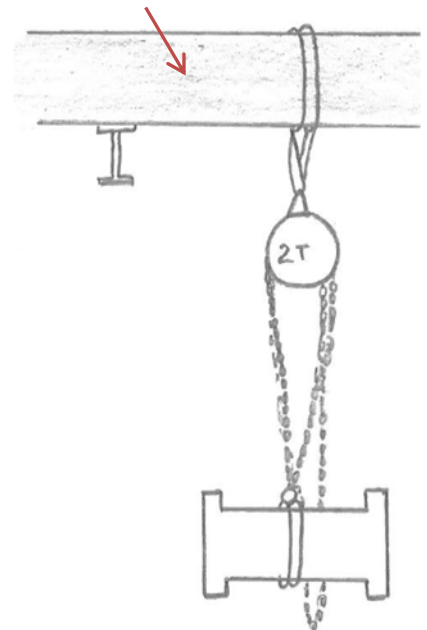
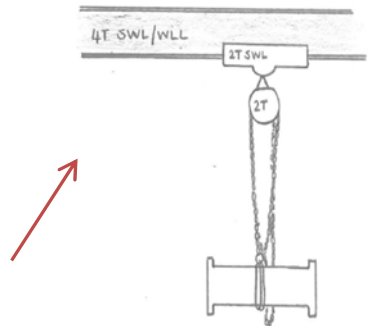


Table 2: Licencing Specifications Details

High Risk Work Licences			
Dogger - DG	Rigger Basic - RB	Rigger Intermediate - RI	Rigger Advanced - RA
<p>Dogging work is the use of <i>slinging techniques</i>* including the selection and inspection of lifting gear to safely sling a load, or the directing of a plant operator in the movement of a load when the load is out of the operator's view.</p> <p><i>*Slinging techniques is the exercising of judgment in relation to the suitability and condition of lifting gear and the method of slinging, by consideration of the nature of the load, its mass and its centre of gravity.</i></p>	<p>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.</p> <p>A basic rigging licence encompasses the requirements for a dogging licence. It is a prerequisite that applicants for a basic rigging licence already hold or have previously passed assessment for a dogging licence.</p> <p>The scope of work for basic rigging includes:</p> <ul style="list-style-type: none"> • dogging work • structural steel erection • particular hoists • placement of pre-cast concrete members of a structure • safety nets and static lines • mast climbers • perimeter safety screens and shutters • cantilevered crane loading platforms <p>Basic rigging <u>does not</u> include:</p> <ul style="list-style-type: none"> • use of load equalising gear • rigging of cranes, conveyors, dredges and excavators • tilt slabs • all hoists with jibs and self-climbing hoists • demolition of structures or plant • dual lifts • rigging of gin poles and shear legs • flying foxes and cableways • guyed derricks and structures • suspended scaffolds and fabricated hung scaffolds. 	<p>It is a prerequisite that applicants for the intermediate rigging licence already hold or have previously passed assessment for a dogging and basic rigging licence.</p> <p>Alternatively, assessment for applicants for the intermediate licence must incorporate the requirements of dogging, basic and intermediate rigging licence assessments.</p> <p>The scope of work for intermediate rigging includes:</p> <ul style="list-style-type: none"> • rigging work in the class Basic Rigging • all hoists • rigging of cranes, conveyors, dredges and excavators • tilt-slabs • demolition of structures or plant • dual lifts. <p>Intermediate rigging work <u>does not</u> include:</p> <ul style="list-style-type: none"> • rigging of gin poles and shear legs • flying foxes and cableways • guyed derricks and structures • suspended scaffolds and fabricated hung scaffolds. 	<p>It is a prerequisite that applicants for the advanced rigging licence already hold or have previously passed assessment for a dogging, basic and intermediate rigging licence.</p> <p>The scope of work for advanced rigging includes:</p> <ul style="list-style-type: none"> • rigging work in the class Intermediate Rigging • rigging of gin poles and shear legs • flying foxes and cableways • guyed derricks and structures • suspended scaffolds and fabricated hung scaffolds.

Ref: <http://www.deir.qld.gov.au/workplace/licensingregistrations/licences/whatlicence/index.htm> [accessed 04/06/2013]