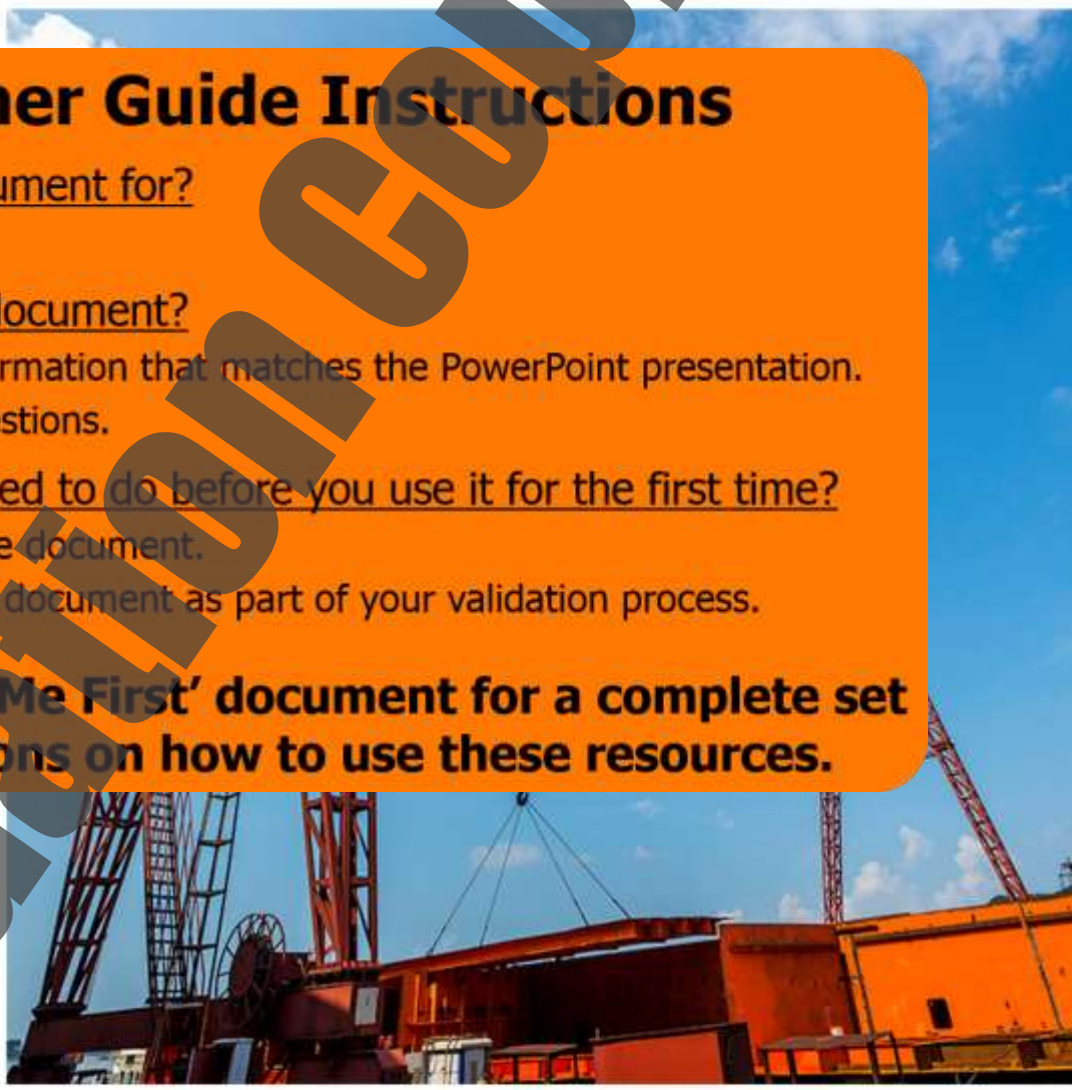
TLILIC0016

Licence to Operate a Bridge and Gantry Crane



Learner Guide Instructions

Who is this document for?

The learner.

What is in this document?

- Course information that matches the PowerPoint presentation.
- Review questions.

What do you need to do before you use it for the first time?

1. Rebrand the document.
2. Review the document as part of your validation process.

See the 'Read Me First' document for a complete set of instructions on how to use these resources.

LEARNER GUIDE

TLILIC0016 Licence to Operate a Bridge and Gantry Crane

Learner Name:	
Learner ID:	
Learner Contact Number:	
Learner Email Address:	
Date Training Commenced:	

This Book Contains:

- ☐ Course Information.
- ☐ Review Questions.

The review questions can be retained by the trainer/assessor as proof of formative assessment if required.

Table of Contents

1.1 Introduction

This training course is based on the National High Risk Licence Unit of Competency **TLILIC0016 Licence to Operate a Bridge and Gantry Crane.**

You will learn about:

- Planning the job.
- Selecting and inspecting equipment.
- Preparing the site and equipment.
- Performing the task.
- Shutting down the job.

1.1.1 What is a Bridge and Gantry Crane?

Bridge Crane – A bridge beam, mounted at each end to an end carriage, capable of travelling along elevated runways and having one or more hoisting mechanisms arranged to traverse across the bridge.

Gantry Crane – A bridge beam, supported at each end by legs mounted on end carriages, capable of travelling on runways on supported surfaces or deck levels, whether fixed or not and which has a crab with one or more hoisting units arranged to travel across the bridge.

This unit includes the use of a bridge and gantry crane that is:

- Controlled from a permanent cabin or control station on the crane.

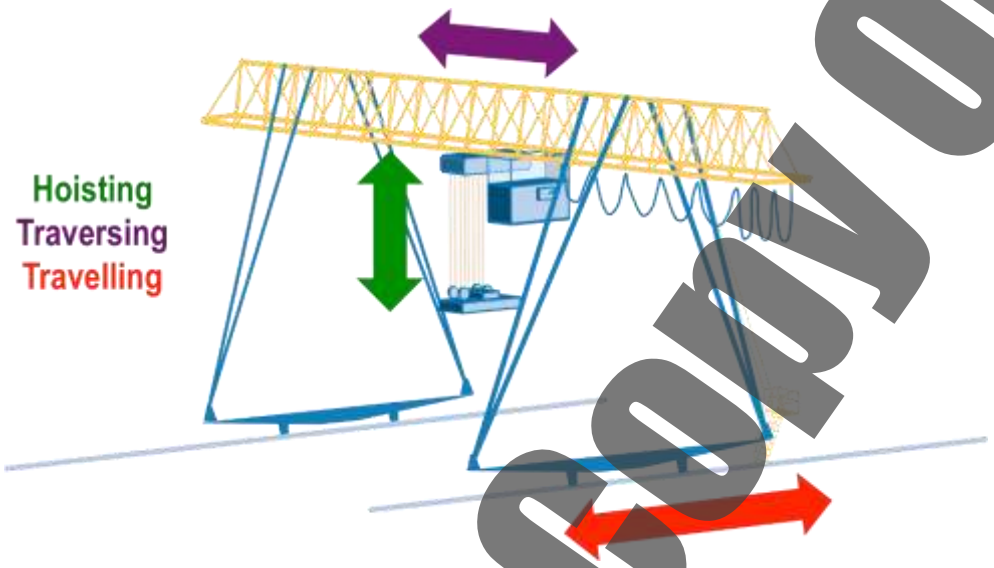
OR

- Remotely controlled and having more than 3 powered operations.

1.1.2 Crane Movements

Common crane movements that you may use when shifting loads with a bridge and gantry crane include:

- **Hoisting** – The raising and lowering of the hook block using the hoist rope.
- **Traversing** – Moving the hoisting mechanism along the bridge.
- **Travelling** – The movement of the crane along the runway. Load swing can be reduced by travelling at a minimum speed and using gentle acceleration and braking.



Other crane movements may include:

- **Rotating** – A function that allows you to control the rotation of the load.
- **Pitch and Yaw** – Load movements that may be available depending on the crane in use.

Please complete Section 1 Review Questions 1 to 3

1.2 Working Safely

You must follow all safety rules and instructions when performing any work. If you are not sure about what you should do, ask your boss or supervisor. They will tell you what you need to do and how to do it in a safe way.

1.2.1 Health and Safety Rules

Every workplace has to follow laws and rules to keep everyone safe. There are 4 main types:

Legislation	Explanation
Acts	These are laws that you have to follow.
Regulations	These explain what the law means.
Codes of Practice	These are instructions on how to follow the law, based on industry standards.
Australian Standards	These tell you what the minimum requirement is for a job, product or hazard.

Some states use OHS laws, and other states use WHS laws. They both talk about the same thing, but use different words or names for people. If you have any questions about safety rules you should talk to your boss or supervisor.

1.2.2 Duty of Care

Everybody in the workplace has a responsibility to keep themselves and others as safe as possible while they are at work. This is called a 'Duty of Care'.

Any licensed worker must take reasonable steps to make sure the way they work does not impact on the safety of themselves or any other worker. This is their legal duty of care. Your duty of care requires the following:

- To take reasonable care of your own safety and the safety of others.
- To cooperate with your employer in any way that ensures the health and safety of the workplace.
- To avoid taking unnecessary risks, acting dangerously or using workplace equipment in unsafe ways, or ways it is not designed to be used.

Failing to work safely can result in the health and safety regulator:

- Suspending or cancelling your licence.
- Refusing to renew your licence.
- Ordering that you are reassessed to ensure you are competent.
- Take legal action to prosecute you.

Your employer must take steps to ensure that the workplace is as safe as possible for you and other workers. In order to do this they can:

- Provide a safe workplace with minimal risks.
- Provide and maintain safe plant, equipment and structures.
- Provide and maintain safe systems/procedures for work.
- Provide facilities that are adequate for the personnel on site.
- Provide instruction, training, supervision and information for any work to be undertaken safely, **including any time you are required to use an unfamiliar piece of equipment**.
- Take action to ensure all equipment, plant & substances used on site is handled and stored in a safe way.

Please complete Section 1 Review Questions 4 to 5

1.3 Planning for the Work

There will be specific requirements and things to consider when you plan for the particular task you will be completing.

You should think about:

- Communications (safe and adequate).
- Location of the task.
- Access and egress, both to the site and for the specific task.
- Permits and/or licences required for the task.
- Specifics of the task. This may include:
  - Requirements for tag lines.
  - Requirements for using a dogman or rigger.
- Equipment required for the task.
- Availability of equipment.
- Capability/capacity of the crane.
- Load configuration and conditions, weight, size of the load, slinging arrangements, method of attachment, load balance, load security (loose loads).
- Safe work and emergency procedures.
- The distance and speed of travel.
- Issues specific to the site or workplace.

1.3.1 Work Instructions and Safety Information

All work needs to follow worksite and company safety procedures.

Procedures help to make sure that all work is done in a safe way, without damaging equipment or putting people in unsafe situations. They also help to make sure that work is done in the correct order and doesn't interrupt or get in the way of other work that is happening on the site.

Your work instructions will tell you the safest way to do the job, and the equipment that you will need to use. It is a good idea to check your work instructions with your boss or supervisor to make sure you know exactly what you need to do.

You need to be clear about what work you will be doing. Make sure you have everything about the job written down before you start. This includes what you will be doing, how you will be doing it and what equipment you will be using.

Make sure you have all of the details about where you will be working and the job. For example:

The Site
Is there clear access for all equipment? Are there buildings, structures, facilities or trees in the way? What are the ground conditions like? Is there a safe place for the load to be moved to?

The Weather
Is there wind, rain or other bad weather? Is it too dark?

Facilities and Services
Are there power lines or other overhead or underground services to think about?

Traffic
Are there people, vehicles or other equipment in the area that you need to think about? Do you need to get them moved out of the area? Do you need to set up barriers or signs?

Hazards
Are there dangerous materials to work around or think about? Will you be working close to power lines or other people?

The Task
What load is being moved? How big is it? How much does it weigh? Does it need any special lifting arrangements?

Instructions for the task can include:

- Manufacturer's guidelines (instructions, specifications, checklists).
- Industry operating procedures.
- Workplace procedures (work instructions, operating procedures, management plans, safety policies, checklists).

If you don't know where to get your instructions or you can't understand them, you can ask your boss or supervisor. They will tell you where to find your work instructions and explain what they mean.

You can also speak with your WHS workplace representative for more information about workplace safety.

1.3.1.1 Lifting Plans

Before starting the work, you will need to plan the job. This usually includes completing a Lifting Plan.

A lifting plan should include:

- Confirmed details of lifting and slinging requirements.
- Confirmed dimensions and mass.
- Site access and egress.
- Suitability and availability of materials.
- Tools and equipment.
- Identification of potential hazards.
- Probable control measures.
- Identification of site coordination requirements.

Shown here is an example of a lifting plan template:

LIFTING PLAN

Date:

Work location:	
Load description:	
Load dimensions:	
Load weight:	
Load location:	
Load destination:	
Lifting device:	
Lifting gear in use:	
Rigging configuration:	
Licensed Dogger/Rigger:	
Other personnel:	
Hazards identified:	
Controls to be implemented:	
Task plan:	*Step-by-step process of how the lift will be conducted and schedule of lifts.*
Tools & Equipment required:	
Communication method:	
Plan checklist:	☐ Is the exact weight of the load known and confirmed? ☐ Is the lifting device suitable for the lift (rated capacity)? ☐ Has equipment been checked and cleared for use? ☐ Have drawings and sketches been completed? ☐ Has a risk assessment been conducted?
Approval signoff:	

You will need to speak with other personnel on site while putting together the plan so that you can organise coordination requirements and hazard control measures.

Once you have completed your preliminary lifting plan in accordance with procedures and site requirements you will need to confirm that the job can be carried out the way you have planned. This is called confirming the job feasibility.

Confirming the job feasibility includes:

- Checking with any other personnel involved in the work to make sure they are:
  - Available.
  - Experienced, competent and qualified.
  - Aware of the requirements of the job and the lifting equipment that is available.
- Organising to contact:
  - The load designer.
  - Site management.
  - Suppliers.

The load designer is the person who determines the best way to pack and unpack items from a truck, pallet or container. They work out how items will fit together in the best way, as well as making sure the load is properly balanced.

You may need to speak to the load designer to make sure you:

- Unload items in the correct order.
- Load items correctly.

The load designer may also have information about:

- The load weight or size.
- The weight distribution for the load.

Speak with your supervisor once you have completed your plan to make sure it is achievable in the timeframe available to you.

1.3.2 Traffic Management Requirements

On worksites it is often necessary to control the movement of traffic around and through the site. To do this there are 2 different types of traffic management plans:

- **Traffic Management Plan** – deals with traffic moving through the site, i.e. traffic on public roads and members of the public.
- **Vehicle Management Plan** – deals with on-site vehicle movements, haul circuits and dump runs, and material routes.

As part of planning your work you need to confirm that the traffic management plan has been implemented according to workplace procedures.

Please complete Section 1 Review Questions 6 - 9

1.4 Identify and Control Hazards

Before you start work, you need to check for any hazards or dangers in the area. If you find a hazard or danger you need to do something to control it. This will help to make the workplace safer.

Part of your job is to look around to see if you can find any hazards before you start any work.

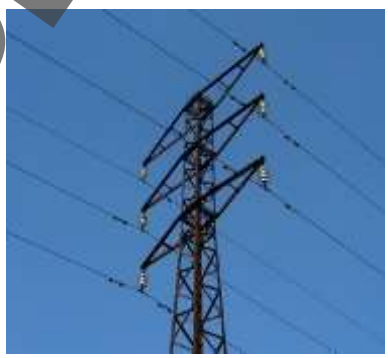
A **hazard** is the thing or situation with the potential to cause injury, harm or damage.

When you start checking for hazards, make sure you look everywhere. A good way to do this is to check:

- **Up high** above your head.
- All around you **at eye level**.
- **Down low** on the ground (and also think about what is under the ground).

Some common workplace hazards related to bridge and gantry crane operations include:

- Overhead hazards such as power lines, service lines, and service pipes.
- Underground services.
- Ground surfaces and conditions including:
  - Surfaces that may not bear the weight of the crane or other equipment.
  - Recently filled trenches.
  - Slopes.
- Bad weather conditions, such as strong winds, lightning or storms.
- Insufficient lighting/lack of illumination.
- Vehicle traffic.
- Plant and equipment.
- Pedestrians and workers.
- Site specific hazards, such as dangerous materials.
- Trees.
- Buildings, facilities and other surrounding structures.
- Obstructions or obstacles.
- Unusual or difficult terrains.
- Working at heights.



1.4.1 Consulting with Other Workers about Hazards and Risks

Controlling a hazard can be a team effort and it's important that everybody knows what they need to do and how or if they need to change their work process to suit.

You should also speak with several personnel on site when preparing for work including:

- Safety officers.
- Site engineers (where applicable).
- Supervisors.
- Other workers.
- Managers who are authorised to take responsibility for the workplace or operations.
- Health and Safety Representatives.
- Work Health and Safety Committee members.

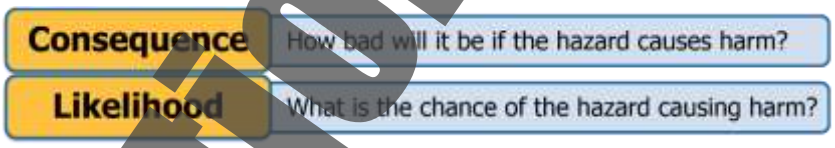
These people can help you to identify workplace specific hazards including unsuitable conditions and appropriate controls. It is important to speak with them to ensure that all workplace policies and procedures are being followed as well.

1.4.2 Assess Risks

Once you have identified the hazards on site or related to the work you will be doing you may be required to assess their risk level.

A **Risk** is the chance of a hazard causing harm or damage.

Risk levels are worked out by looking at 2 factors:



You can use a table like the one shown here to work out the risk level:

	Consequence				
Likelihood	**1. Insignificant**	**2. Minor** First Aid Required	**3. Moderate** Medical Attention and Time Off Work	**4. Major** Long Term Illness or Serious Injury	**5. Catastrophic** Kill or Cause Permanent Disability or Illness
1. Rare	Low	Low	Moderate	Moderate	Moderate
2. Unlikely	Low	Low	Moderate	Moderate	High
3. Possible	Low	Moderate	High	High	Extreme
4. Likely	Moderate	Moderate	High	High	Extreme
5. Almost Certain	Moderate	High	High	Extreme	Extreme

For example, a hazard that has a **Major** consequence and is **Almost Certain** to occur has a risk level of **Extreme**.

	Consequence				
Likelihood	**1. Insignificant**	**2. Minor** First Aid Required	**3. Moderate** Medical Attention and Time Off Work	**4. Major** Long Term Illness or Serious Injury	**5. Catastrophic** Kill or Cause Permanent Disability or Illness
1. Rare	Low	Low	Moderate	Moderate	Moderate
2. Unlikely	Low	Low	Moderate	Moderate	High
3. Possible	Low	Moderate	High	High	Extreme
4. Likely	Moderate	Moderate	High	High	Extreme
5. Almost Certain	Moderate	High	High	**Extreme**	Extreme

The risk level will help you to work out what kind of action needs to be taken, and how soon you need to act.

The table below is an example of a site risk policy:

Risk Level	Action
Extreme	**This is an unacceptable risk level** The task, process or activity **must not proceed**.
High	**This is an unacceptable risk level** The proposed activity can only proceed, provided that: **1.** The risk level has been reduced to as low as reasonably practicable using the hierarchy of risk controls. **2.** The risk controls must include those identified in legislation, Australian Standards, Codes of Practice etc. **3.** The risk assessment has been reviewed and approved by the Supervisor. **4.** A Safe Working Procedure or Work Method Statement has been prepared. The supervisor must review and document the effectiveness of the implemented risk controls.
Moderate	**This is an unacceptable risk level** The proposed activity can only proceed, provided that: **1.** The risk level has been reduced to as low as reasonably practicable using the hierarchy of risk controls. **2.** The risk assessment has been reviewed and approved by the Supervisor. **3.** A Safe Working Procedure or Work Method Statement has been prepared.
Low	The proposed task or process needs to be managed by documented routine procedures, which must include application of the hierarchy of controls.

The action you take will depend on:

- The organisation's policies.
- The worksite's procedures.
- Relevant laws and regulations.

1.4.3 Control Hazards

The best way to control hazards is to use the Hierarchy of Hazard Control. The Hierarchy of Hazard Control is the name given to a range of control methods used to eliminate or control hazards and risks in the workplace.

You start at the top of the list and see if you can take away (eliminate) the hazard or danger.

If you can't take it away you move down the list to see if you can swap it for something safer (substitution).

Keep working through the list until you find something that controls that hazard or danger.

This table shows you the 6 different types of controls in order from best to worst:

Hierarchy Level	Action
1. Elimination	Completely remove the hazard. This is the best kind of hazard control.
2. Substitution	Swap a dangerous work method or situation for one that is less dangerous.
3. Isolation	Isolate or restrict access to the hazard.
4. Engineering Controls	Use equipment to lower the risk level.
5. Administrative Controls	Site rules and policies attempt to control a hazard.
6. Personal Protective Equipment	The least effective control. Use PPE while you carry out your work.

Hazard control measures need to be put in place before you start your work, or as soon as you see a hazard while you are doing your work. Hazard controls can sometimes be listed in your work instructions or you can ask your boss or supervisor for help.

Talk to the other workers in the area to make sure they are aware of the control measures you have put in place.

Once a hazard control is in place you will need to check to make sure it is working well to control the hazard or danger.

Talk to your supervisor or safety officer if you are not sure if it is safe enough to carry out your work. If you think the hazard is still too dangerous you should not try to do the work.

1.4.3.1 Personal Protective Equipment

Personal Protective Equipment (PPE) is clothing and equipment designed to lower the chance of you being hurt on the job. It is required to enter most work sites.

As a minimum, a person involved in crane operations must wear PPE such as:

- A safety helmet (hard hat).
- Safety boots/footwear.
- High-visibility clothing.