Learner Guide

Working at Heights Course

TLILIC0005 Licence to Operate a Boom-Type Elevating Work Platform

Learner Guide

National Courses PTY LTD

1.1 Introduction

This training course is based on the National High Risk Licence Unit of Competency **TLILIC0005 Licence to Operate a Boom-Type Elevating Work Platform (boom length 11 metres or more)** from the Transport and Logistics Industry Training Package.

1.1.1 Course Overview

You will learn how to:

- Plan your work.
- Conduct routine checks.
- Set up the elevating work platform.
- Operate the elevating work platform.
- Shut down and secure the elevating work platform.

After you have finished the course you can be assessed for a National High Risk Licence.

1.1.2 What is a Boom-Type Elevating Work Platform?

A boom-type elevating work platform is a telescoping device, hinged device, or articulated device or any combination of these used to support a platform on which workers, equipment and materials may be elevated to perform work.

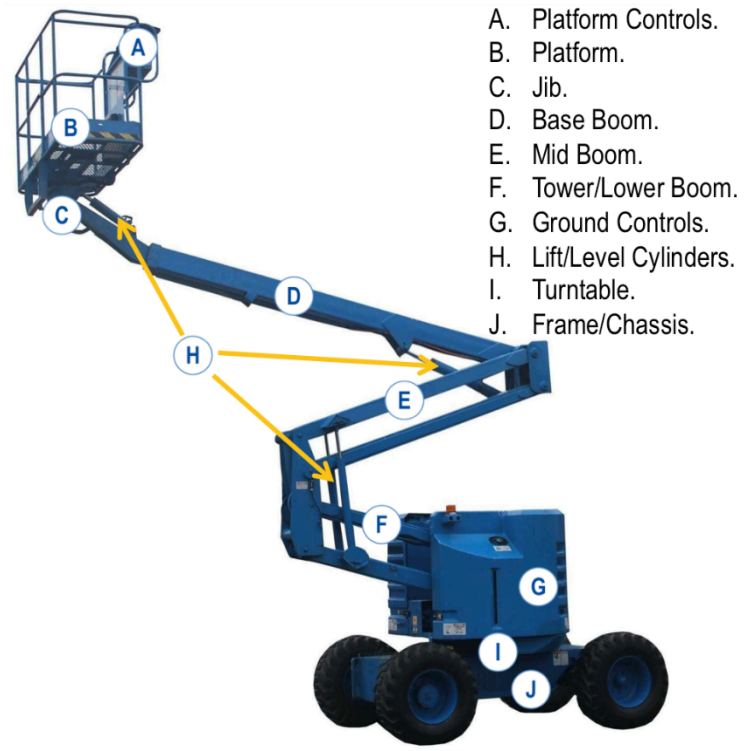
A high risk work licence is required to operate an EWP with a boom over 11 metres in length. The 11 metre boom length is measured as:

a) The vertical distance from the floor of the platform to the surface supporting the elevating work platform with the platform at its maximum height; or

b) The nominal reach, measured horizontally from the centre point of rotation to the outer edge of the platform in its most extended position.

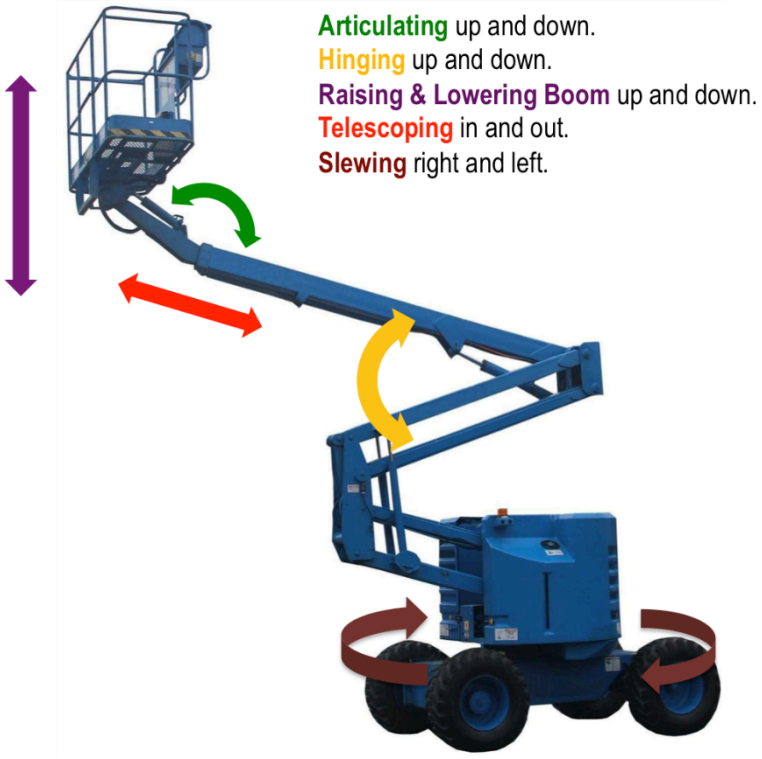
1.1.3 Parts and Movements of a Knuckle Boom-Type Elevating Work Platform

The parts of a knuckle boom-type EWP are:



A. Platform Controls.
B. Platform.
C. Jib.
D. Base Boom.
E. Mid Boom.
F. Tower/Lower Boom.
G. Ground Controls.
H. Lift/Level Cylinders.
I. Turntable.
J. Frame/Chassis.

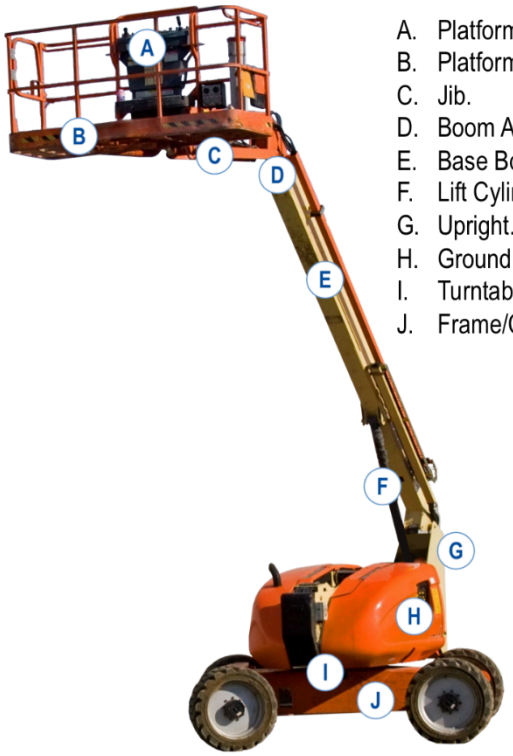
The movements of a knuckle boom-type EWP are:



Articulating up and down.
Hinging up and down.
Raising & Lowering Boom up and down.
Telescoping in and out.
Slewing right and left.

1.1.4 Parts and Movements of a Telescopic Boom-Type Elevating Work Platform

The parts of a telescopic boom-type EWP are:



A. Platform Controls.
B. Platform.
C. Jib.
D. Boom Assembly (Fly Boom & Mid Boom).
E. Base Boom.
F. Lift Cylinder.
G. Upright.
H. Ground Controls.
I. Turntable.
J. Frame/Chassis.

The movements of a telescopic boom-type EWP are:

Telescoping in and out.
Articulating up and down.
Hinging up and down.
Slewing right and left.

1.2 Plan Work in Accordance with Safety Information

All work must be done in accordance with a range of safety requirements including:

- Work Health and Safety requirements.
- Duty of care.

1.2.1 Work Health & Safety Requirements

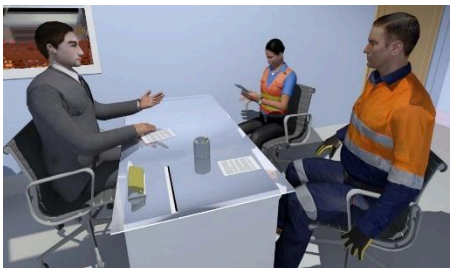
Work Health & Safety (WHS) laws and guidelines help keep your workplace safe.

These can be broken down into four main types:

Legislation	Explanation
Acts	Laws to protect the health, safety and welfare of people at work.
Regulations	Gives more details or information on particular parts of the Act.
Codes of Practice	Are practical instructions on how to meet the terms of the Law.
Australian Standards	Give you the minimum levels of performance or quality for a hazard, work process or product.

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 or new elevating work platform**.
- Take action to ensure all equipment, plant & substances used on site is handled and stored in a safe way.

1.2.3 Work Instructions and Procedures

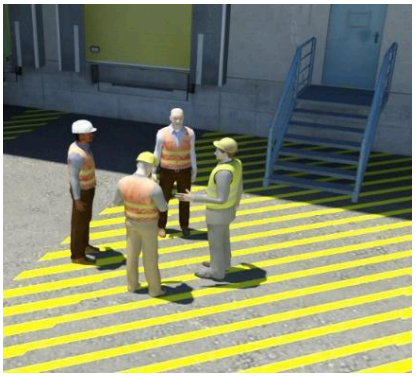
All work needs to follow worksite and company safety procedures.

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.

Elevating Work Platforms instructions 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.

When planning out your work you will need to think about:

- Communications on site, are they safe and adequate.
- Safe access and egress from the EWP.
- Location and specifics of the task.
- Having an appropriate rescue plan.
- Permits required for the task.
- Type and availability of equipment required for the task.
- EWP required for the task (capacity, type, reach).
- Boom movements to access the task once the EWP is in position.
- Number of spotters required to safely carry out the task.
- Skills, experience and qualifications of EWP operators.
- Suitable safety equipment including appropriate fall arrest harness and lanyard.

Make sure you have access to everything you need before you start setting up the EWP.

Please complete section 1 review question 1.

1.3 Identify and Manage Hazards

HAZARDS CREATE RISK. CHECK FOR HAZARDS.

A **RISK** is the chance of a hazard hurting you or somebody else or causing some damage.

A **HAZARD** is the thing or situation that has the potential to cause injury, harm or damage.

If you can remove or at least control a **HAZARD** you can reduce the **RISK** involved.

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

A good tip is to check:

- **Above head height** – remember the EWP will be working well above your head!
- **At eye level** – look around to see if there is anything in the way of where you want to move the platform.
- **On the ground (and below)** – Also make sure the path of travel is clear and can bear the weight of the EWP.

You should also speak with a number of personnel on site when preparing for work including:

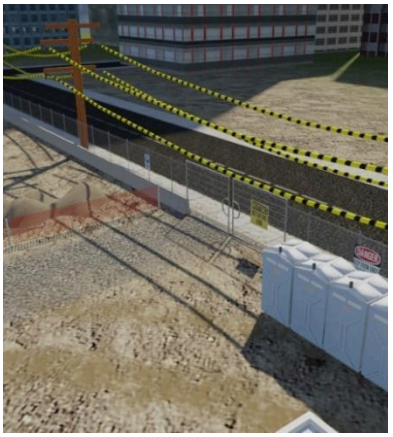
- Safety officers.
- Site engineers (where applicable).
- Supervisors.
- Other workers.
- Managers who are authorised to take responsibility for the workplace or operations.
- Health and Safety Representatives.
- Work Health and Safety Committee members.

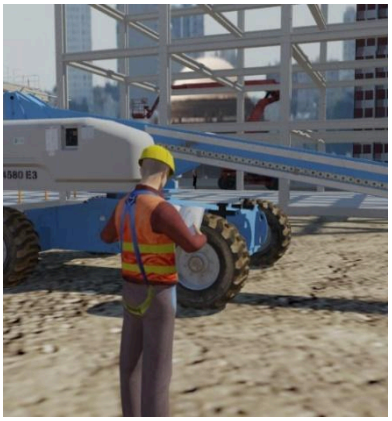
These people can help you to identify workplace specific hazards including unsuitable ground conditions and appropriate controls. It is important to speak with them to ensure that all workplace policies and procedures are being followed as well.

Common workplace hazards and hazards that EWP operators face include:

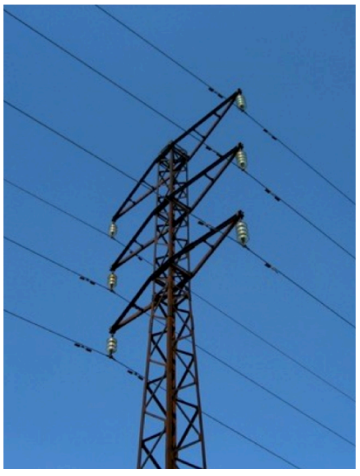
- **Ground conditions:**
  - Surface condition.
  - Spills.
  - Debris.
  - Underground services.
  - Weight bearing ability.
  - Recently filled trenches.
  - Slopes.
- **Poor lighting.**
- **Traffic:**
  - Pedestrians.
  - Vehicles.
  - Other plant.
- **Overhead hazards:**
  - Power lines.
  - Overhead service lines.
  - Obstructions.
  - Trees.
  - Scaffolding.
  - Service pipes.
  - Bridges.
- **Weather:**
  - Lightning.
  - Storms.
  - Wind.
- **Surrounding structures:**
  - Buildings.
  - Obstructions.

- **Site hazards:**
- Other workers.
- Equipment and machines.
- Facilities.
- Other equipment.
- **Other specific hazards:**
- Dangerous materials.
- Chainsaws.
- Pressure washers.
- Tidal areas.
- Potential for workers to be crushed.





1.3.1 Working Near Power Lines



Working near power lines can be dangerous if you are not careful.

It is very important that you know the safe operating distances for different types of power lines and the steps you must take if your job needs you to work closer than the safe distances.

Generally, if you need to work closer than the safe work distance you must:

- Contact the local electrical authority for permission to work closer (this is called an exemption).

- Have the power lines shut off. If this is not possible then have the power lines insulated.
- Use a spotter/guide/observer (depending on local laws and rules).

Distances are different depending on the state or territory you are working in and the voltage of the power lines. You should check with the local electrical authority for information and advice to find out the voltage of power lines in your work area.

Queensland

The Queensland Electrical Safety Regulation breaks down the distances in detail. Exclusion zones are broken down not only by size of power line but also by the competency level of the operator. This means that the requirements should be clarified with the electrical authority before work commences even if the distance appears to be outside the zones.

The following minimum distances are provided as guidance:

Power Line Type	Distance
Up to 132kV	3.0m
132kV up to 330kV	6.0m
330kV and above	8.0m

New South Wales

In New South Wales, for anyone who is not accredited, equipment operation may not be any closer than the following distances to power lines:

Power Line Type	Distance
Up to and including 132kV	3.0m
Above 132kV up to and including 330kV	6.0m
Above 330kV	8.0m

To work closer than these distances requires authority from the relevant electrical authority and adherence to cl.64(2)(e) of the regulations.

Australian Capital Territory

In the ACT mobile plant operators and persons erecting or working from scaffolding must maintain a safe minimum distance to power lines as outlined in the table below:

Electric/Power Line Type	Distance
Less than 33kv	4.0m
33kV or more (transmission lines)	5.0m

Victoria

In Victoria the Framework for Undertaking Work Near Overhead and Underground Assets states that equipment must not be closer than the following distances to power lines:

Power Line Type	Distance
Distribution lines up to and including 66kV (power poles)	6.4m (or 3.0m with a qualified spotter)
Transmission lines greater than 66kV (towers)	10m (or 8m with a qualified spotter)

Tasmania

In Tasmania equipment must not be closer than the following distances to power lines:

Power Line Type	Distance
Up to and including 133kV (poles)	6.4m (or 3m with a safety observer)
Greater than 133kV (towers)	10m (or 8m with a safety observer)

South Australia

In South Australia mobile plant operators and persons erecting or working from scaffolding must maintain a safe minimum distance to power lines as outlined in the table below:

Power Line Type	Distance
Up to 132kv (including 132kv poles)	6.4m (or 3.0m with a spotter)
132kv or more (including 132kv towers)	10.0m (or 8.0m with a spotter)

Western Australia

In Western Australia this falls under Regulation 3.64 from the OSH Regulations and states the following as the minimum distances:

Power Line Type	Distance
Up to 1kV (insulated)	0.5m
Up to 1kV (uninsulated)	1.0m
Above 1kV and up to 33kV	3.0m
Above 33kV	6.0m

Northern Territory

In the Northern Territory equipment must not be closer than the following distances to power lines:

Power Line Type	Distance
Up to and including 132kV (distribution lines)	6.4m (or 3m with a spotter)
Greater than 132kV (transmission lines)	10m (or 8m with a spotter)

1.3.1.1 Power Line Visual Indicators

There are a range of different indicators in use across the country to identify the position of overhead power lines.

Important: Visual indicators **DO NOT** insulate the power lines so exclusion zones and safe operating distances must still be used, even when any of these systems are in use.

Tiger Tails and Coloured Markers

Tiger tails or coloured markers are used to clearly show the location of overhead power lines. Poles may also be coloured up to 3m from the ground.

Marker Balls or Flags

Marker balls are fixed to the power line and are often red or another bright colour.

Safety, Warning and Danger Signs

Signage may also be present to warn of overhead power lines and services.

1.3.2 Risk Assessment

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

Risk levels are worked out by looking at 2 factors:

Consequence	How bad will it be if the hazard causes harm?
Likelihood	What is the chance of the hazard causing harm?

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

Likelihood	**Consequence**				
	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**.

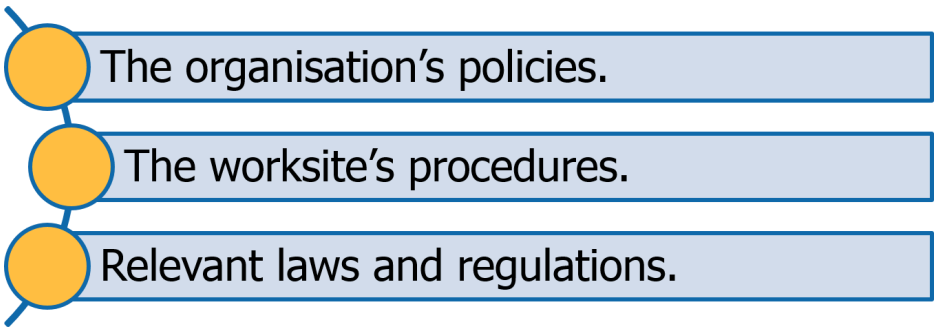
Likelihood	**Consequence**				
	1. Insignificant	**2. Minor** First Aid Required	**3. Moderate** Medical Attention and Time Off Work	**4. Major** Long Term Illness or Serious Injury	**5. Catastrophic** Kill or Cause Permanent Disability or Illness
1. Rare	Low	Low	Moderate	Moderate	Moderate
2. Unlikely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



1.3.3 Hazard Controls

Once hazards and risks have been identified and assessed you need to work out what the best way to manage them will be.

The Hierarchy of Hazard Control is the name given to a range

of control strategies used to eliminate or control hazards and risks in the workplace. Hazard controls should be applied before you start work, or as soon as a hazard is identified during the work.

The Hierarchy has 6 levels.

Always start at the top of the list and work your way down.

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. Includes Safe Work Practices.
6. Personal Protective Equipment	The least effective control. Use PPE while you carry out your work. This should be selected at the planning stage of your work, and checked before starting the job.

You may need to use a range of control measures to reduce the risk to an acceptable level.

1.3.3.1 Personal Protective Equipment

Personal protective equipment (PPE) can help to reduce the effects or chance of being hurt.

All operators working in the EWP platform need to have:

- A safety harness and fittings.
- Hard hat.
- Rubber soled shoes.

The safety harness must be securely fitted to the operator and connected to an anchor point within the platform of the EWP.

- Hard hats.
- Ear muffs.
- Safety goggles.
- Boots.
- Hi-visibility clothing.
- Respiratory equipment.
- Aprons.
- Arm guards.

- Gloves.
- UV-protective clothing and sunscreen.

Common PPE includes:

Make sure that you have, at least, the minimum PPE requirements on at all times.

1.3.3.2 Specific Control Strategies for Traffic

Whenever there are people working around the EWP there is an increased risk of them being struck or crushed by the EWP as it moves, or being hit by falling objects.

If the work area is going to be shared with pedestrians, site personnel, vehicles or mobile plant you will need to make sure you have selected appropriate control measures.

These may include:

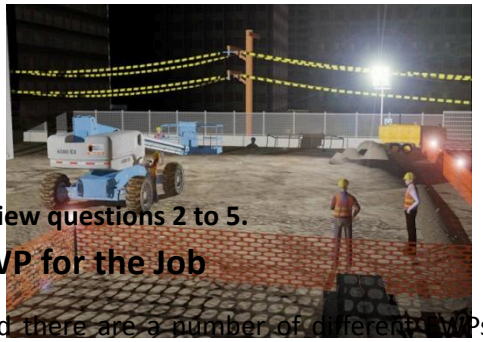
- Flashing hazard lights.
- A flag person.
- Hoardings, gantries or scaffolding.
- Warning signs and barriers.
- Pedestrian and vehicle exclusion zones.

The combination that you choose will need to be clearly outlined in the risk treatment plan.

1.3.3.3 Specific Control Strategies for Operating at Night or in Darkened Areas

If EWP operations are being carried out at night, or in darkened areas, adequate lighting needs to be provided across the entire work area.

This is to ensure that the operator and associated personnel can see properly and carry out their work safely.



Please complete section 1 review questions 2 to 5.

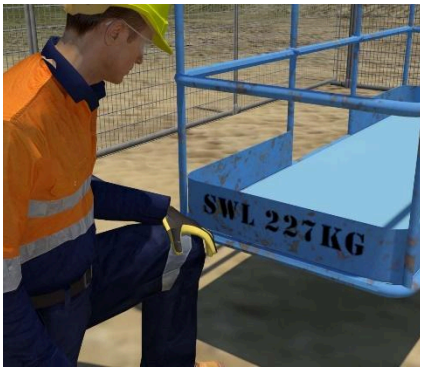
1.4 Picking the Right EWP for the Job

Depending on the job at hand there are a number of different EWPs available. The height, reach, rated capacity, ground conditions and terrain all play a part in selecting the correct EWP.

Type	Description	Example
Trailer Mounted EWP	These elevating work platforms are mounted on a moveable trailer and can be towed by most vehicles with a tow ball. They have manually adjusted stabilisers to provide stability for the platform while it is being used and have a range of working heights up to 26 metres.	
Self-Propelled EWP with Telescoping Boom	These EWPs are self-propelled units for use on flat slabs or firm unsealed areas. The work platform is elevated using a straight extension (telescoping) boom. There are controls at ground level and on the platform.	
Self-Propelled EWP with Telescoping Knuckle Boom	These EWPs are self-propelled units for use on flat slabs or firm unsealed areas. The work platform is elevated by a boom, which has at least two main sections, with a knuckle between them, and is mounted on a turret that allows slewing. This arrangement permits the boom to reach up and over obstacles. Both sections of the boom may incorporate a telescoping extension. There are controls at ground level and on the platform.	
Vehicle-Mounted EWP	These EWPs are usually road-registered trucks with a boom or knuckle boom mounted on the truck chassis. The boom is mounted on a turret to allow slewing, and outriggers are fitted to the chassis. There are controls at ground level and on the platform.	

Please complete section 1 review question 6.

1.5 Rated Capacity



The other consideration to make when selecting which EWP to use is the rated capacity of the machine. The rated capacity should be clearly marked on the side of the EWP or contained in the manufacturer's information.

The rated capacity includes the weight of all workers, tools and equipment in the platform.

For example, if the rated capacity of an EWP you are operating

is 250kg then the weight of the operator/s and the weight of the equipment must not be more than 250kg.

NEVER overload the EWP – doing this will make the EWP unstable and can cause damage to its structure.

Check the weight of all items and people that are going in the basket before loading the EWP to make sure the rated capacity is not exceeded.

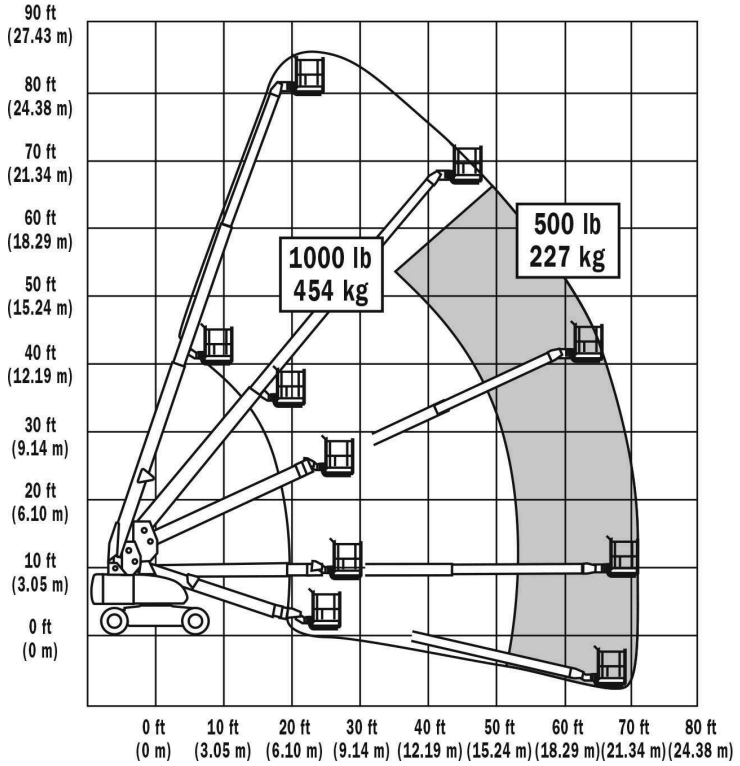
When selecting which EWP to use you must also consider the boom length capabilities in relation to the work to be completed. The boom length capabilities are the nominal reach and vertical reach of the machine.

The **nominal reach** of an EWP is calculated by the horizontal distance from the centre point of rotation to the outer edge of the platform.

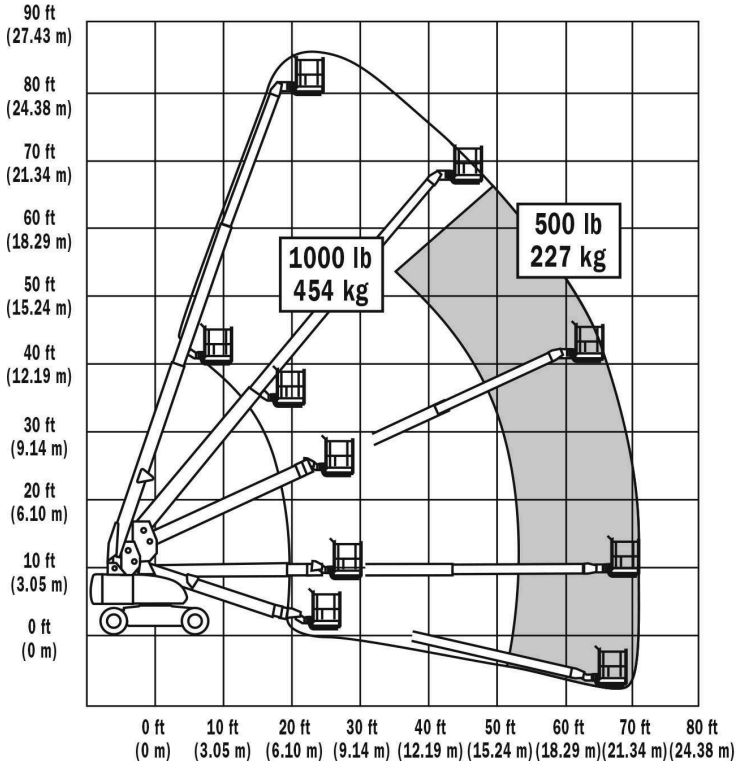
The **vertical reach** of an EWP is measured as the vertical distance from the ground or surface the EWP is on to the floor of the platform.

Both of these lengths are calculated when the platform is at maximum extension and will be available in the manufacturer's guidelines.

In the example chart here, the EWP has a reduced capacity in the grey zone.



The way a range chart works is to show you the operating capacity of the EWP in different positions. In the example below you can see that the grey area has a reduced capacity. This is because the boom extends away from the base of the EWP shifting the overall centre of gravity of the equipment.



You can work out the capacity of the EWP by measuring the distance of the basket from the EWP

horizontally and drawling a line up the chart to where the basket will be vertically.

1.5.1 Forces and Loads

When operating an EWP you need to be aware of the various forces and loads that affect the EWP:

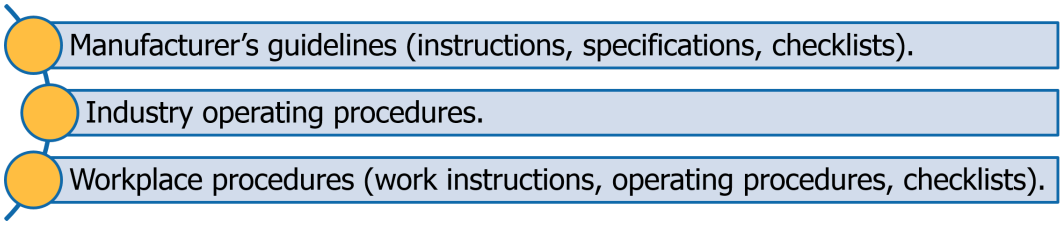
Forces and Load	Explanation
Live Load	The load of all persons and/or materials that are being supported by the EWP.
Dead Load	The weight of the EWP.
Wind Load	The wind loadings, resulting from wind speeds up to the maximum permitted, taking into account the degree of the exposure of the site. Refer AS 2550.

Please complete section 1 review question 7.

1.6 Communication Methods

As an EWP operator you need to be able to communicate with workers around you while you work, and you need to be able to understand the instructions to use the EWP safely.

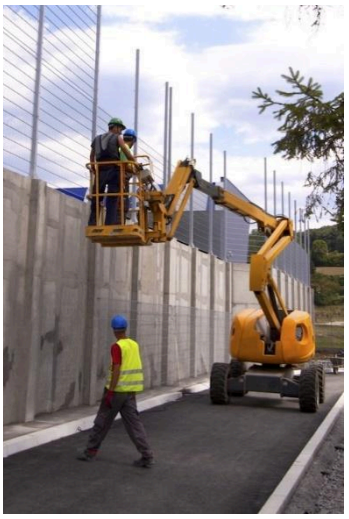
These can include:



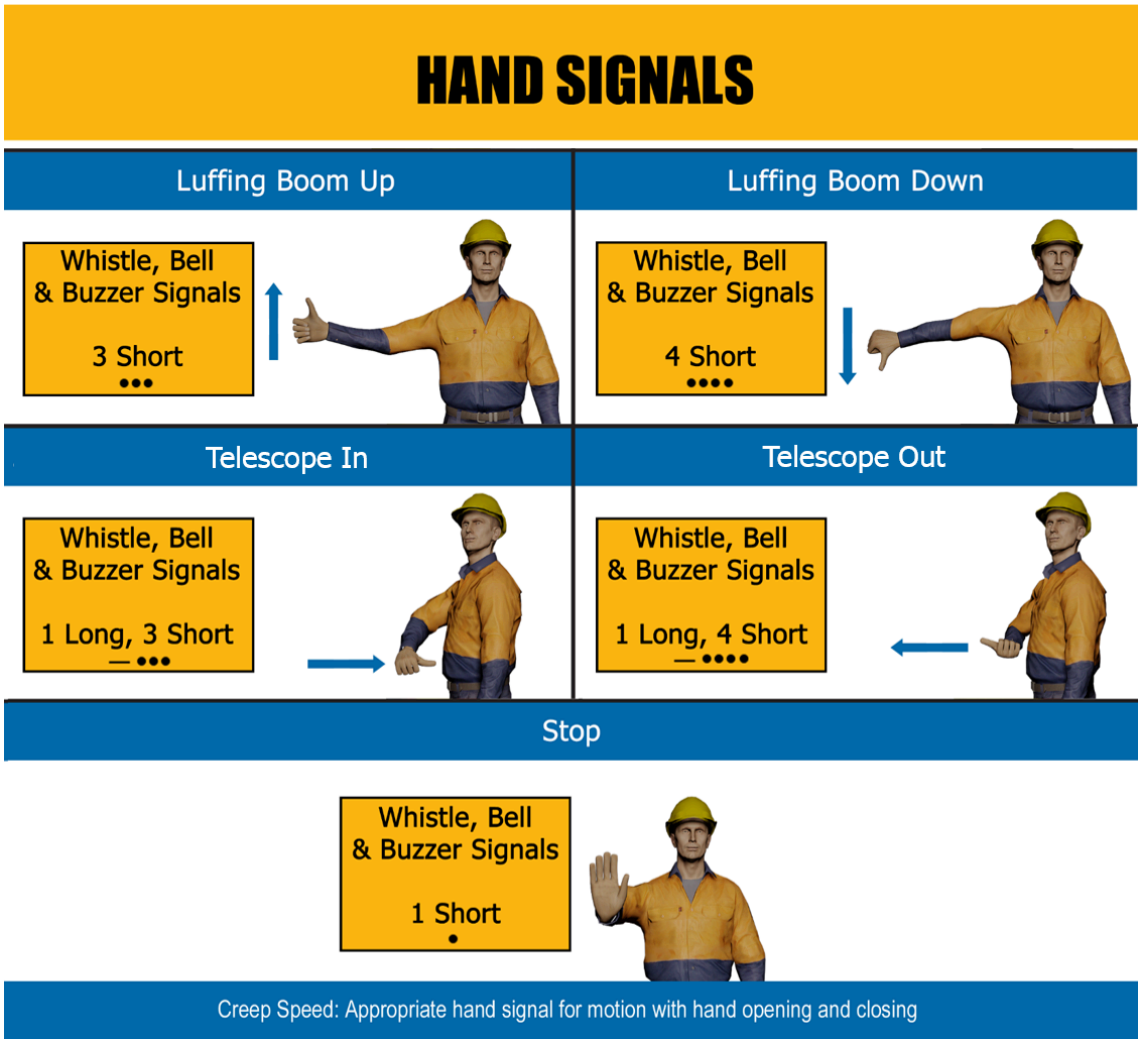
Workplace communications may take the form of:

- Verbal communication.
- Two-way radio.
- Hand signals.

You need to decide how you are going to communicate with other workers while you are still at the planning stage of the job.



Shown here are the signals used in Australia for directing a Boom-Type Elevating Work Platform:



Please complete section 1 review questions 8 and 9.

2.1 Logbook

Each EWP should have a logbook with details specifically for that machine.

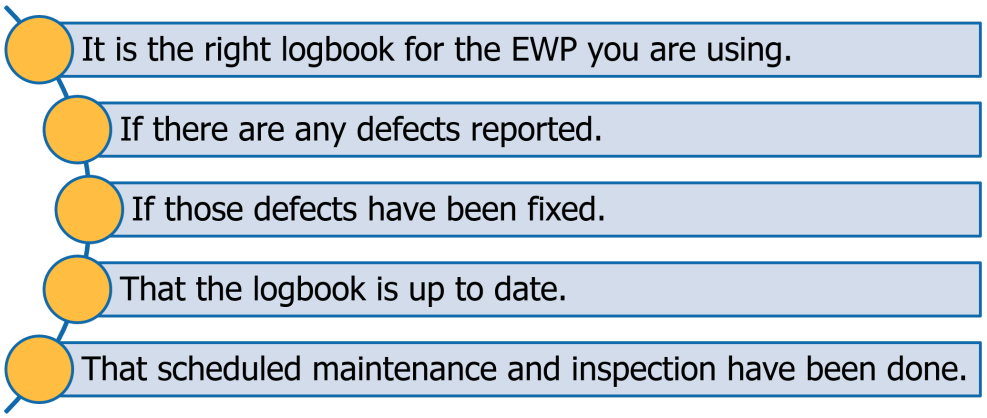
Before using the EWP check the logbook to make sure the EWP is in working order. These are commonly found in a yellow waterproof pouch attached to the EWP basket.

The EWP logbook is where details are recorded of:

- The EWP's owner.
- EWP operation (dates, times and operators).
- Daily safety checks that have been done.
- Defects that have been identified during checks.
- Action taken to repair or address defects.

- Servicing, maintenance and inspections that have been carried out.

When you check the logbook you need to confirm:



If the service logbook indicates that the EWP has not been tested in accordance with the requirements of Australian standards; AS 2550 or that the EWP has faults that have not yet been repaired you should:

- Tag out the EWP.
- **DO NOT** use the EWP.
- Report the problems to the appropriate person as per site procedures.

Please complete section 2 review question 1.

2.2 Pre-Operational Checks

Always check the EWP before you use it. As the EWP operator it is your responsibility to make sure that the EWP is inspected and ready for use. It is important that the EWP is inspected before starting work as the inspection can ensure that all equipment is safe to use and suitable for the task.

Refer to the manufacturer's manual and workplace rules for routine machine check procedures and documents such as inspection checklists. For an example of an EWP Inspection Checklist see Appendix A.

During your pre-operational checks:

- Make sure that there are no safety tags on the plant – Only the person who put the tag on and a person who is authorised in accordance with workplace safety procedures are allowed to remove a safety tag. Unless you are authorised never remove safety tags from any plant or equipment.
- Inspect all fluid levels.
- Ensure there are no fluid leaks.

- Ensure signage is present and legible – These need to be in place and readable to ensure the operator is aware of the capacities and capabilities of the EWP. They also identify safety features, emergency and standard operating procedures and possible hazards associated with the equipment.
- Inspect tyre condition and pressure – Ensure these are in line with manufacturer and legal requirements. It is extremely important that the tyres are inflated to the correct pressure as stated on the load chart or in the operator's manual. The capacity and stability of the EWP depends on the tyres being correctly inflated.
- Inspect outriggers and packing.
- Inspect EWP for any obvious signs of damage:
  - Damage to slew ring teeth.
  - Loose, missing or damaged slew ring bolts.
- Ensure that the logbook is present, up to date and all previous defects have been rectified.
- Inspect the boom/jib for any structural damage – this can be indicated by:
  - Cracks in the boom, superstructure or welds.
  - Bends and/or twists in the boom or superstructure.
  - Visual rust from welds or joints.
  - Flaking paint.
  - Loose or missing bolts.
  - Oil leaks.
  - Bent pins.

If you find any signs of defect when completing the pre-operational or visual inspection of the EWP you should:

- Tag out the EWP.
- Record the defect into the logbook (if appropriate).
- Report the defects to the appropriate person as per site procedures.
- **DO NOT** use the EWP or remove the tag until the fault has been repaired.

2.2.1 Safety Equipment

You must check all safety equipment before staring up the EWP. Safety equipment that is required by an EWP operator includes:

- A safety harness.
- An energy absorber.
- A lanyard.
- All anchor points.

The safety harness is the most important piece of protective equipment that an EWP operator uses.

Check that the harness fits properly and that it is in good condition. When inspecting your harness ensure that you check the:

- Webbing.
- Snap hooks.
- Buckles and adjusters.
- Sewing.
- D-rings.

For an example of a harness inspection checklist see Appendix B.

Check the energy absorber and lanyard assembly for damage or wear, and check that it is correctly attached to the harness.

Whenever climbing into the EWP platform always use 3 points of contact. Check that the gate on the EWP platform closes automatically behind you.

There are specific reinforced anchor points within the EWP platform that the lanyard needs to be attached to.

Check that these anchor points are in good condition and that the lanyard attaches properly, allowing you to move freely in the platform.

2.2.2 EWP Controls

Read the operator's manual if you are not familiar with the EWP to learn where the controls are located.

Check the ground controls are clearly marked. Once in the basket, check that all controls are clearly and properly marked.

2.2.3 Start the EWP

If the pre-operational visual inspection shows that there are no faults then start up the EWP according to the manufacturer's start-up procedure.

Please complete section 2 review questions 2 to 8.

2.3 Operational Checks

Once the pre-start checks have been completed and the EWP has been started, you should complete operational checks including:

- Ensuring that hazard controls are in place.
- Ensuring the operator has clear vision across the work zone (where applicable).
- Making sure a safe slewing radius is available.
- Inspecting warning devices/systems.
- Checking warning lights and devices.
- Testing communication methods and equipment.
- Testing brakes.

2.3.1 Check Controls

Once these checks have been made you should ensure the ground controls are functioning at full capacity.

The ground controls are there to bring the platform to the ground in case of an emergency as well for testing and maintenance purposes.

Using the ground controls check the following operations:

- Lift and lower the boom.
- Slew the boom to the left and right, making sure there are no potential hazards in performing this function. If the boom cannot be slewed, check that the slew locking pin has been removed.
- Telescope the boom out to the range required for the tasks to be undertaken and back again.
- Check the auxiliary power unit on diesel and gas machines. If the machine does not have an auxiliary power unit or emergency lowering valves (taps), refer to the operator's manual for instruction on how to lower the machine in the event of an emergency.

Listen for any abnormal noises during the operational checks to indicate a problem with the machine.

If you are confident that the ground controls are working then check the basket controls:

- Turn the select switch to platform/basket.
- Use 3 points of contact to climb into the EWP basket.
- Attach your harness and put on your hard hat (safety helmet), rubber-soled steel cap shoes and other PPE as required.
- Make sure the self-closing action of the platform gate is working as well as checking the condition of the anti-crush bar.
- Test the dead man switch to make sure it is functional – this switch acts as an interlocked safety device in that no function will operate unless it is activated.
- Test the automatic levelling device.
- Check all alarm systems including the limit device functionality.

Test each of the control levers in the basket to make sure all operations are functioning correctly and smoothly.

Test the following movements/functions:

- Raise and lower boom.
- Slew left and right.
- Telescope boom in and out.
- Hinging.
- Articulating.
- Steering.
- Emergency lowering device.

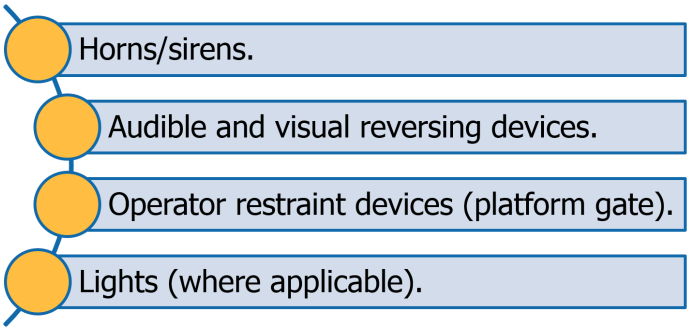
It is important that throughout the operational checks you test

the EWP to the full extent of its capabilities to ensure that it is functioning correctly and is safe to use, and to get familiar with how the machine responds to the controls.

2.3.2 Check Safety Devices

Part of the EWP start-up process is checking that all safety devices are working before you start the job.

Safety devices include:



Make sure each of these is working correctly before using the EWP.

Please complete section 2 review questions 9 to 11.

2.4 Test and Check Communication Equipment

Check that any communication equipment you are planning to use is working properly and is appropriate for the job before you start the task.

Communication equipment could include:

- Two-way radios.
- Mobile phone.

Please complete section 2 review question 12.

2.5 Report All Faults

If you find any defects, damage or signs of interference (tampering) during your inspection of the EWP you must:

- Immediately stop operating the EWP.
- Isolate the EWP and attach a safety tag to it.
- Record the fault in the EWP logbook, EWP service book and any other location outlined in site procedures.
- Report the fault to an authorised person, such as your supervisor, workplace security or the equipment owner for corrective action to be taken.

DO NOT use the EWP until it has been fixed, signed off by a competent person and returned to

service.

Please complete section 2 review question 13.

2.6 Ground Conditions

Before setting up the EWP you need to check the ground suitability for the machine.

Check the work area for the following factors that might influence the safe operation of the EWP:

- Rough uneven ground.
- Backfilled ground.
- Soft soils.
- Hard compacted soil.
- Rock.
- Bitumen.
- Concrete.

The work area should be flat and able to stand the weight of the machine.

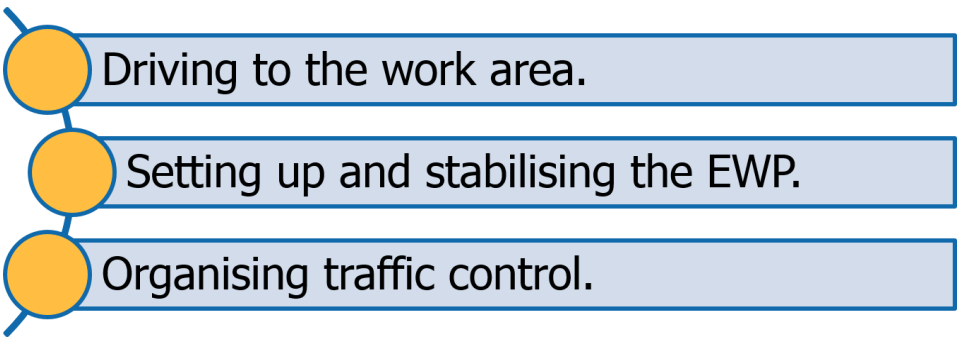
If it is not flat, or if it has a soft base or has been backfilled etc., you will need to make sure you have the required ground cover, such as steel plates and/or sleepers, to control the hazards associated with loose or unstable ground.

If you are required to set up the EWP on a concrete slab ensure that a qualified engineer has inspected it and provided a report indicating that the slab is capable of supporting the EWP.

Please complete section 2 review question 14.

2.7 Set Up EWP

The set up procedure includes:



2.7.1 Drive to the Work Area

Check that the way is clear before moving the EWP to the work area. Look out for other workers, obstructions and other equipment that is working in the area.

2.7.1.1 Assess Weather Conditions

Before setting up the EWP it is important that you take note of the weather conditions. The manufacturer guidelines, operator's manual or data plate will outline the maximum wind speed in which operations can continue.

Some EWPs have their wind speed capacity marked on them (either on the platform or on decals or signage at the controls) or written on the data plate. It is important that if the wind speed exceeds the manufacturer's specifications all work with the EWP is stopped. Lower and secure the EWP and report to your supervisor if you need to stop work.

Operating the EWP in windy conditions can cause hazards such as:

- Uncontrollable boom movement.
- Tipping over of the EWP.
- Falling objects.
- Dislodgement of power cables from cable guides.
- Reduced visibility because of debris, dust or insects.

2.7.2 Set Up

Before setting up the EWP ensure that you check:

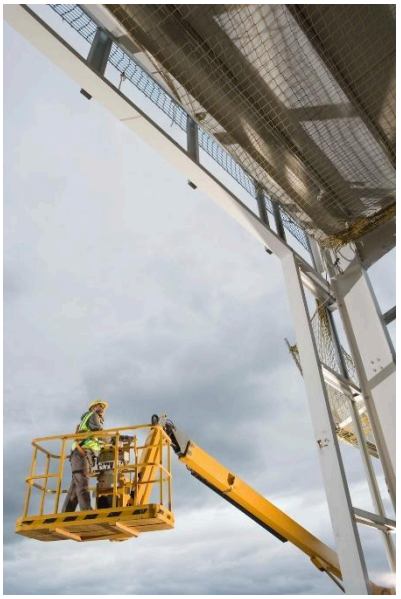
- The safe working radii.
- The position of the EWP in relation to the work to be undertaken.
- Adequate clearances from obstructions and hazards.
- Ground conditions.
- Movements of other vehicles and plant.
- EWP range diagram.

Set the EWP up as close as possible to the work that you are required to do, but at the same time create minimum disturbance to others.

If you have to position the EWP close to recent excavations or trenches, the rule of thumb – depending on the soil condition – is that you set up the EWP as far away from the excavation as it is deep. For example, if the excavation is 2m deep you would not set up closer than 2m to the excavation.

It is important that the EWP is set up level and you can check with a bubble level indicator or a spirit level. Some EWPs are also fitted with a tilt sensor or slope alarm that will tell you if it is not level.

Make sure the EWP will not be on a slope that exceeds the manufacturer's recommendations.



When setting up an EWP close to buildings you should consider:

- The access and egress.
- Whether the position of the EWP is appropriate.
- Whether the boom is set up to slew away from the building if possible.
- Whether the building needs protection.
- Whether screens are required for fragile and easily damaged parts of the building such as windows.
- Underground or overhead services.
- Foundations and structural bearings.
- Underground structures.
- Erosion.
- Uncompacted soil or loose backfill.
- Pedestrians and other traffic.
- Uneven ground.
- Weather conditions.

2.7.2.1 Positioning in a Restricted Space

When setting up an EWP in a confined area ensure that you consider:

- The access and egress – will the EWP fit in and out of the space?
- Obstructions and personnel in the area.
- Is a guide needed?
- Can the boom be slewed safely?
- Is there enough room for emergency egress?
- Will there be a build-up of gas or fumes?

2.7.3 Stabilise EWP

If the EWP does not have outriggers, you should position the EWP wheels on steel plates or other suitable baseplates.

If the EWP has outriggers, you can use steel plates, hardwood packing, baseplates or heavy rubber matting to support the outriggers.

The outriggers need to be fully extended, unless they are also being used to level the machine.

Never reset the outriggers while the machine is elevated as this can cause major instability and allow the machine to overturn.

Remember to avoid soft ground, sloping surfaces or other conditions that may affect the stability of the unit. This includes:

- Backfilled ground.
- Bitumen that is damaged or cracked.
- Concrete that is damaged or cracked.
- Potholes.
- Railway tracks.
- Uneven, soft or unstable ground.
- Trench or pit covers.

If the work area where you are required to set up the EWP is soft or waterlogged, have a competent person carry out an assessment of the area.

If the EWP begins to lean to one side while you are using it, immediately lower the platform and check the outriggers to ensure stability.

Check the ground conditions and repack the outriggers before continuing.

If you are setting up next to a building with an underground level or car park, have a competent person assess the ground conditions before you set up.

There is a possibility that the weight of the EWP could cause the walls of the lower levels to crack or collapse.

If the EWP is set up, but one or more of the wheels or outriggers starts to sink you should:

- Stop operations.
- Return the EWP to the ground.

- Relocate the EWP to safer ground.
- Rectify the sinking if possible. If not possible, relocate the EWP to an area where stability can be maintained.

2.7.4 Packing

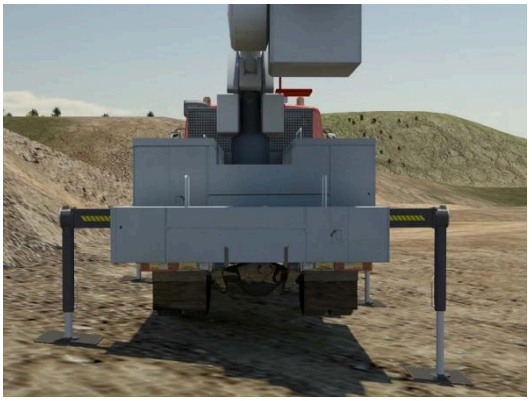
Selecting the correct packing is important. There are different kinds and sizes of packing available:

- Steel plates.
- Baseplates.
- Hardwood packing (pig-stying or cribbing).

Pig-sty packing should be arranged so that each layer is at a 90° degree angle to the one before.

2.7.5 Sloping Surface

If the EWP is being set up on a sloping surface, position the outriggers/stabilisers on the lower sloping side first, again making sure the area is clear of personnel before lowering the outriggers/stabilisers. This will allow you to level the platform and then engage the remaining stabilisers.



Please complete section 2 review questions 15 and 16.

2.8 Apply Hazard Control Measures

Once the EWP has been set up it is important to put any hazard control measures into place.

If any new hazards are identified during the operation, ensure that work is stopped until hazard control measures have been put into place and the risk is at an acceptable level.

Hazard control measures can include:

- Disconnecting the power.
- Adequate lighting to meet illumination requirements.

- Insulated power lines.
- Moving obstructions out of the way of operations.
- Pedestrian and traffic barricades and controls.
- Personal protective equipment (PPE).
- Safety tags on electrical switches/isolators.
- Using safety observer inside exclusion zone.
- Suitable area for set-up with firm and stable ground for EWP operation.
- Installing trench covers on excavations (as required).

2.8.1 Traffic Control

Before setting up the EWP on a busy street you should always check with the local authorities whether there are any permits required for traffic control, any conditions for operating the EWP at that location or any exclusion zones necessary.

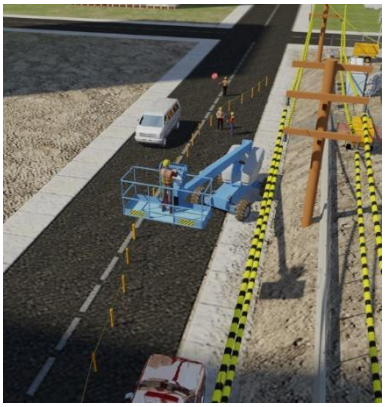
Place all the required traffic control displays and warning devices.

Warning signs at the front and rear should be placed at least 50 metres, but not more than 150 metres, from the vehicle.

Ensure any necessary barricades or road marker cones are placed along the side of the vehicle.

Road marker cones should be arranged to keep traffic clear of the area where the elbow of the boom will be operating.

2.8.2 Controls for Personnel



When working with an EWP it is important to ensure the safety of the operator and all other people in the area. It is very important that exclusion zones are put in place.

Exclusion zones ensure that no personnel or objects are at risk of being struck by the EWP when it is in motion or by falling objects.

DO NOT ever raise or lower the boom over people.

When people are under the boom they are unsafe and at risk of serious injury or death.

2.8.3 Controls for Operating over a Body of Water

If you are required to operate the EWP over a body of water there are a series of additional hazard controls that need to be implemented. These include:

- Having a rescue plan in place.
- Ensuring there is a rescue boat and emergency retrieval system standing by.
- Wearing a life jacket just in case you fall into the water.

Depending on the situation it may not be safe for you to be attached via a harness to the EWP as you may be dragged under if the plant tips into the water.

Please complete section 2 review question 17.

2.9 Store Tools and Equipment

All tools and equipment should be stored or secured in a fixed or removable box or basket.

It is important to store the tools and equipment securely in order to:

- Prevent them from falling from the EWP platform.
- Prevent them from jamming the 'dead man' foot control.
- Prevent them from interfering with safe entry and exit from the EWP.
- Ensure a high standard of housekeeping in the EWP platform.

DO NOT leave tools lying around on the floor of the EWP platform.

Please complete section 2 review question 18.

3.1 Operate EWP

Before operating the EWP make sure hazard controls are in place.

Before raising the platform always secure your fall arrest harness and look up and around to make sure there are no overhead obstructions or power lines that might have been overlooked. You should also think about:

- The size, weight and security of loads on the platform.
- The safe working radius of the EWP.
- The surrounding area including visibility, ground conditions, nearby equipment or structures.

The path of movement of the boom needs to be as safe as possible. When you are deciding how you are going to approach the work area with the platform you should think about:

- Clearance from structures or obstacles.
- Loads on the platform.

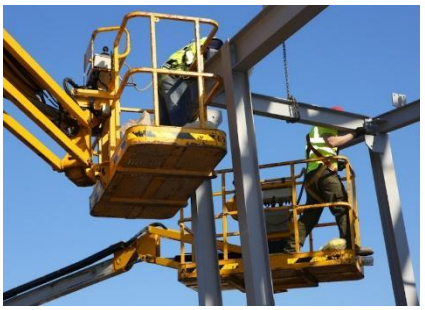
- Weight.
- Security.
- Stability of the vehicle.
- Other workers in the area.
- Risk of falling objects.
- Power lines and other services or the requirement for a spotter.
- Speed of boom movements.
- Any other traffic in the area.
- The weather.
- Adequate lighting over the work area.

Once you are sure that it is safe you can start the elevation by shifting the control lever. Do not operate the lift at a high speed, especially if you are in a confined area. Raise, slew and telescope the boom to get the platform into the correct position. Elevate the EWP to the full extension required, provided it is safe to do so.

It is important that all EWP operators continually monitor boom and platform movements to ensure that all aspects of the operation are conducted in a safe and efficient manner.

If you are using a spotter/guide to assist with the positioning of the EWP you must maintain clear and constant communication with them. If they give you a direction which is unclear stop and ask them to clarify what they meant.

The EWP should not be used as a crane for lifting anything outside the basket or platform, and slings should not be attached to the guardrails of the EWP unless it has been specifically designed for the purpose of shifting loads.



3.1.1 Monitor the Work Area

While operating the EWP it is important that you monitor the area around the machine to ensure nobody has entered the exclusion zone you have set up.

If a person does enter the exclusion zone:

1. Immediately stop work.
2. Identify who is in the exclusion zone.
3. Direct a co-worker (guide or spotter) to remove the person from the exclusion zone.
4. Lower the basket and exit the EWP.
5. Speak with the person responsible for maintaining the exclusion zone so they can take appropriate action.
6. Report to your supervisor about the interruption to work.

Please complete section 3 review questions 1 and 2.

3.2 Mobile EWP

Moving (or 'mobiling') an EWP requires special care, because of the greater risk of destabilising the machine. Never move an EWP with its outriggers extended.

If you have to move an EWP with an elevated platform:

- Never travel over rough or uneven ground.
- If the ground surface has pot holes or is uneven, lower the machine to increase its stability.
- Be constantly aware of overhead obstructions such as power lines, services, people, surrounding structures and other machinery.
- Travel at creep speed with the utmost caution, staying alert to make sure the surface is flat with no gradients or speed humps etc.
- Maintain a good lookout for ground conditions such as potholes, soft, unstable or rough surfaces and anything that will make the machine unstable.

The following safety measures need to be applied when moving an EWP:

- Before mobiling the EWP ensure that you have determined the path of movement for the boom and all hazards have been identified and all controls have been put in place.
- Retract the boom section(s) of the machine and lower the basket to a level where you can clearly see the path of the EWP to ensure the path is not rough or uneven.
- Keep a good watch out for people at ground level and make sure people are aware of your path of movement.
- Ensure all warning devices are operating.
- Ensure that the tyres are inflated to the correct pressure as per the manufacturer's instructions.
- Wear your harness and have it attached to the anchor point.

- Make sure the boom is in line with the chassis and the basket is behind the drive wheels.
- Check that the turntable/basket lock is engaged (where fitted).
- Be constantly alert for potholes, obstructions, people, other machinery and any other hazards.
- If the EWP is fitted with axle lockouts ensure that they have been activated.
- Make all of your steering movements smoothly.
- Gently and smoothly accelerate and apply brakes.
- Travel at an extremely slow speed, as per the manufacturer's specifications.
- If you are moving an EWP up or down a hill:

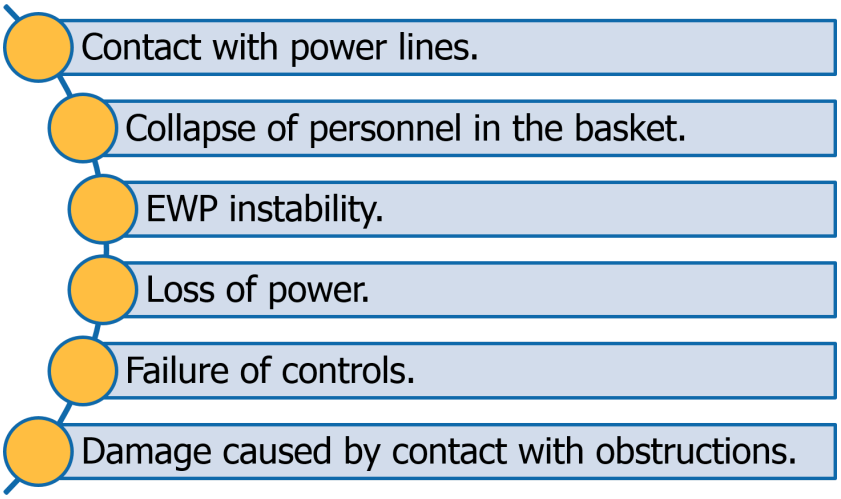
- Always travel with the platform pointing up the hill. This gives the operator a better view over the area and helps to counterbalance the weight of the machine.
- Always follow the manufacturer's specifications.

Please complete section 3 review question 3.

3.3 Emergency Procedures

Any number of things can go wrong while you are operating the EWP. The best thing you can do is know how to deal with these situations when they happen to give you the best chance of avoiding injury.

Unsafe situations could include:



An emergency situation is the only time that it is appropriate to disengage the dead man control to stop the platform from moving.

Depending on the kind of emergency there are a range of actions that should be taken. All action should follow your site or organisation emergency response policies and procedures.

If an unsafe incident occurs you will need to:

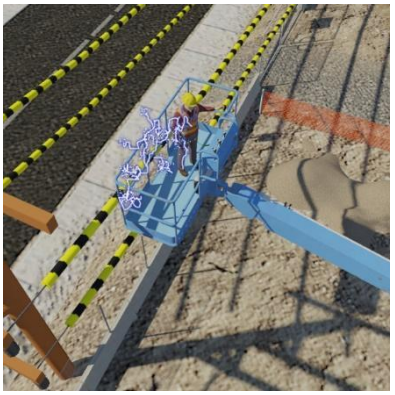
- Stop work immediately.
- Tell people in the immediate vicinity.
- Try to work out what the problem is.
- Resolve the problem if you can, or lower the EWP platform.
- Record the details of the incident in the logbook.
- Report the problem to an authorised person or as per workplace requirements.
- Stop other people from entering the area as it may be unsafe.

Generally in the case of an emergency you need to tell other people at the site, safety officers, managers, supervisors and emergency services about it. When you are passing on details make sure you clearly explain:

1. That there is an emergency situation.
2. What the emergency is.

3. Where it is or has happened, and if any areas are unsafe.

3.3.1 Contact with Power Lines



If the EWP comes into contact with power lines you should:

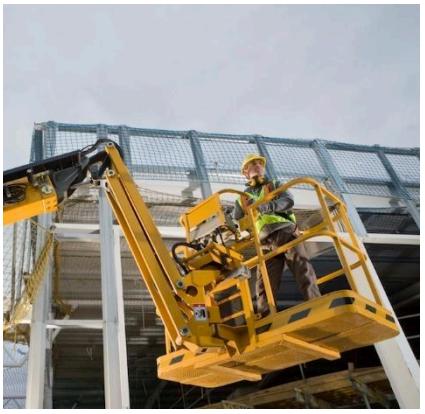
1. Warn others to stay away.
2. Try to break contact with the power lines.
3. Stay on the platform if it is safe to do so. If you have to leave the platform make sure you can jump clear without touching the ground and the EWP at the same time. Land with your feet together and jump or shuffle with your feet together until you at least 8 meters away from the EWP.
4. Report the situation to management, power company and the safety regulator.
5. Make sure the EWP is checked properly before it is used again.

3.3.2 Collapse of Personnel in the Basket

If you are on the ground and your workmate up in the basket appears to have fainted and has slumped down inside the basket, you should:

- Try to make contact with the person (yell out to them or try to contact them through the communication equipment being used).
- If you get no response, call for first aid or ask someone else to go for first aid assistance.
- Check for hazards in or around the work area, such as power lines or dangerous materials that might have caused asphyxiation.
- If no hazards are found and the machine is safe, switch it to ground controls and lower the person down.
- If there is an electrical hazard, do not touch the machine. Call the electrical authority to have the electricity supply shut down and the problem rectified.

3.3.3 EWP Starts to Tilt to One Side



If the EWP begins to tilt to one side:

- Stop work immediately and lower the platform to the ground.
- Get out of the platform, alight from the machine and check out why there is a lean (e.g. packing sinking into a soft or unstable ground surface, or an outrigger hydraulic ram slowly leaking internally).
- If you are not sure, seek advice from a competent person before any attempt is made to elevate the platform again.
- In most cases you will need to relocate the EWP to stable ground.

3.3.4 Motor Cuts Out

If the motor of the EWP cuts out or the controls fail the platform must be lowered to the ground. This can be done by:

- Communicating with personnel who are on the ground to assist in lowering the EWP.
- Using the hydraulic accumulator, if the EWP is fitted with one, which would have enough pressure to slew if needed and then lower the platform.
- Using the battery-operated electro-hydraulic emergency lowering device, if the EWP is fitted with one, which will allow the platform to be lowered even if the motor has cut out.
- If the EWP is not fitted with the above options or they haven't worked, the hydraulic bleed valves, or pump down mechanisms, can be used for emergency lowering.

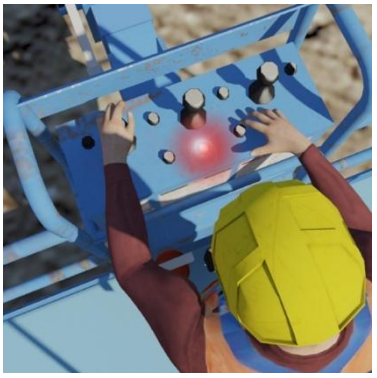
3.3.5 Abnormal Noises and Movements

If at any time during the operation of the EWP there is an abnormal movement of the boom or abnormal noises you should immediately stop using the EWP, tag it out of service and report the fault to the appropriate person as per site procedures.

If you hear a loud noise or feel vibrations coming from the boom section whilst operating the EWP you should:

- Stop work.
- Notify all people in the immediate vicinity.
- Investigate the cause of the problem.
- Resolve the issue if possible, or lower the EWP platform.
- Tag out the EWP.
- Record the details in the logbook and report it to an authorised person.
- Have an inspection carried out to identify whether damage has occurred.
- Do not use the EWP until any defects have been fixed.

3.3.6 Warning Lights, Cut-Outs and Alarms



If during the operation of the EWP you observe any defects through warning lights, cut outs or alarms you should:

- Stop work.
- Identify what the problem is, if possible.
- Lower the platform (where applicable).
- Tag the EWP out of service.
- Record the details in the logbook.
- Report the issue to the appropriate person as per site procedures.
- **DO NOT** use the EWP until the defect has been identified and repaired.

3.3.7 Platform Drops, Moves or Tilts

If during the operations of the EWP you feel the EWP platform drop, move or tilt you should:

- Cease all work with the EWP immediately.
- Tell others in the immediate area what you are doing.
- Inspect the EWP for defects and check the set up positioning – to see if the EWP has shifted.
- Lower the platform to the ground.
- Tag the EWP out of service.
- Record the details in the logbook and report it to an authorised person.
- Have an inspection carried out to identify whether damage has occurred.

Please complete section 3 review questions 4 and 5.

3.4 Shut Down EWP

Once you have completed the EWP task and are closing down operations for the day, you need to follow the shut down procedures outlined by the manufacturer. Here is an example of a shut down procedure.

1. **Check that there are no hazards below the platform and lower the boom safely.**
2. **Conduct a post-operation inspection of the equipment.**
3. **Record the details of any defects in the logbook and apply an out of service tag if required.**
4. **Complete any other details required in the logbook.**
5. **Report any defects to an appropriate person.**
6. **Position and secure the platform in accordance with manufacturer's specifications.**
7. **Remove the keys.**
8. **Secure all tools and your harness.**
9. **Make sure the EWP is safe.**
10. **Recharge or refuel the EWP if needed.**

3.4.1 Shut Down a Trailer or Truck-Mounted EWP

When shutting down a trailer or truck-mounted EWP ensure that you follow the manufacturer's and site instructions. The steps to closing down a trailer or truck-mounted EWP includes:

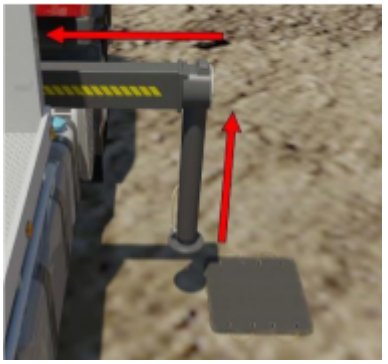
1. Checking to make sure no hazards are below the boom. Retract and fold the boom/jib into the transport position or cradle.
2. Idle the engine to stabilize the temperature.
3. Remove your safety harness, stow it in the cylinder provided in the corner of the basket and refit the lid on the cylinder.
4. Disembark from the platform and gather and stow your tools.
5. Retract/raise the outriggers and pin them (where required).
6. Gather up any packing materials and place them in the designated area.
7. Install the boom locking pin or strap.
8. Turn off the motor or (for a truck-mounted machine) disengage the Power Take Off (PTO). Remove the key from ignition.

Please complete section 3 review questions 6 to 8.

3.5 Post-Operational Checks

Check the machine for breakages, other damage or leaks. More specifically, you need to check:

- All the hydraulic arms, to make sure they have not been damaged or bent during the machine's operation.
- The boom, for dents or cracks in its welds and joints.
- The slew ring, for any bending or other damage.
- The basket, to make sure it is in good working order and has not been damaged.
- The outriggers/stabilisers, to make sure they are in good order.
- All safety devices, to make sure that they are intact and operational.



Report any faults or damage to your supervisor/manager immediately, make sure they are noted in the log for corrective action and, where necessary, make sure warning tags are attached to the machine.

Please complete section 3 review questions 9 and 10.