ALEP

17

Aboriginal Landcare Education Program

OPERATE BASIC MACHINERY & EQUIPMENT

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CONTENTS

PUBLICATION NOTES

BHP Billiton Iron Ore is proud to support Greening Australia to provide valuable conservation and land management training to communities throughout the Pilbara through the Indigenous Training Program.

This Learning Guide series has been developed as part of our partnership of the program.

Gavin Price, Head of Environment, BHP Billiton Iron Ore

Greening Australia is proud to produce and provide the comprehensive suite of new ALEP Learning Guides. The guides are compatible with the new horticulture and conservation industries training package and suited to developing skills in Indigenous communities within remote areas of the country where employment opportunities are limited. We would like to thank BHPBIO for their generous support in the development of the guides.

Brendan Foran, National CEO Greening Australia

The second series of ALEP Guides is aligned with a number of units of competence from the *Training Package AHC10 – Agriculture, Horticulture and Conservation and Land Management* (Release 8.0). The units selected are frequently used within Certificates I to III in Horticulture and Conservation and Land Management. As such they cover, where possible, the elements, performance criteria and required skills and knowledge of each unit.

The principal goal of these resources is to support the learning process; the learning activities may complement a trainer's assessment plan. The intent is that they will be used in an interactive manner with learners rather than as self-paced study guides. The structure and sequence have been designed to follow the logical steps of the practical tasks wherever possible. Concepts are introduced and then consolidated with discussion and/or practical activities.

The writers consider that these guides can provide a sound technical foundation but also strongly encourage trainers to complement the guides with additional, authentic resources from relevant industry texts and websites. The guides can be used in part or in their entirety but should always be linked to practical activities to strengthen the teaching and learning.

Genuine consideration was given to the level of language used in the guides. The goal has been to find a balance between simplifying the language to an accessible level and ensuring that the vocational concepts are addressed. The writers contend that with appropriate support these texts can provide an opportunity for students to strengthen their language, literacy and numeracy skills, which may be required for pathway progression.

A number of Aboriginal people have been involved in developing this ALEP Guide, which is considered suitable for use within a program based on Aboriginal pedagogies.

INTRODUCTION

Welcome to *Operate basic machinery and equipment*. This learning guide covers information about using a range of equipment commonly used in horticulture and conservation and land management (CLM). The machinery and equipment you use will depend on your workplace and the jobs you need to do.

It is intended that learners study the equipment they will need to use in their workplace. As such, it is advised to refer to the relevant topics in *Section 3* of this guide. If you would like to look at other basic equipment or machinery that is not covered, you can use the 'Worksheet for other kinds of equipment or machinery' template on page 26 in the *Resources* section.

This guide provides some information about machinery and equipment, but a lot of the learning for this unit will be done practically using the equipment alongside a trainer.

Much of the training for this unit should be completed on the job.

EQUIPMENT REQUIRED

To complete this training you will need the following:

1. Appropriate Personal Protective Equipment (PPE)
2. Safety gear, including first aid kit and drinking water
3. Machinery and equipment used in your workplace
4. Supplies for basic servicing, e.g. oil, fuel, spare blades
5. Manufacturer's instructions for each piece of equipment

LEARNING ACTIVITIES

There are five kinds of activities to complete. These activities may go toward your final assessment.

SECTION	ACTIVITY	SATISFACTORY (Y/N)	DATE
RESEARCH ACTIVITY			
1	Codes of Practice		
PRACTICAL ACTIVITIES			
3.3–3.9	Pre-start check		
5	Maintain machinery and equipment		
DISCUSSION ACTIVITIES			
2.7	Standard Operating Procedures (SOPs)		
3.2	Different types of motors		
WORKBOOK ACTIVITIES			
Throughout	Written responses to workbook questions (Conducted verbally where appropriate)		
PROJECT			
6	Complete a workplace job using machinery and equipment: getting ready, doing the job and finishing up		

1 WHS – WORKPLACE HEALTH & SAFETY

REMEMBER

A hazard is anything that can cause injury, or damage the health of a person or animal.

WHS legislation tells you that, as an employee, you have a 'duty of care'.

Duty of care means that you must look after your own safety and that of others.

Legislation tells you what you have to do to meet your duty of care. Legislation is the law.

When using machinery and equipment the best way to follow the law is to:

- Wear the appropriate PPE
- Do the necessary training
- Be drug free and have a zero alcohol blood level
- Follow all safety signs, including no smoking signs
- Tell your supervisor about anything that could make the workplace unsafe for you or anyone else
- Report any work-related injury that happens to you or to someone else, including details about any medication you are taking that could affect your work

You need to understand the hazards present when working with these tools so you can plan to reduce the risk of injury.

HAZARDS WORKING WITH MACHINERY AND EQUIPMENT

USE OF POWER TOOLS

Can cause:
Injury or electrocution

MANUAL HANDLING

Can cause:
Injury to muscles or bones through strain or crushing

NOISY EQUIPMENT

Can cause:
Damage to hearing

CORDS, ROCKS, SPILT OILS

Can cause:
Slips, trips and falls

FATIGUE

Can cause:
Muscle strain and injury from mistakes

SUN EXPOSURE

Can cause:
Dehydration and sunburn

VIBRATION

Can cause:
Hand-arm vibration syndrome and nerve damage

FLYING DEBRIS

Can cause:
Eye injury, cutting and bruising

SHARP EDGES

Can cause:
Cuts

FLAMMABLE FUEL

Can cause:
Explosions and burns

RESEARCH ACTIVITY

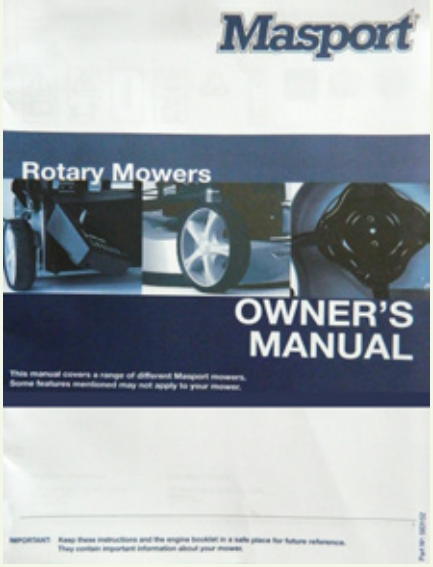
Go to the Safe Work Australia website and search for 'Model Codes of Practice'. Find codes for the hazards you will need to manage working with machinery and equipment.

For example:

- Managing risks of hazardous chemicals in the workplace
- Managing electrical risks in the workplace
- Hazardous manual tasks

These are generally designed for use by an employer, but it is useful for you to know what is recommended.

2 GET READY



In the workplace your supervisor will tell you the machinery or equipment you need to use to do a particular job.

When you know the job that you are going to do you can identify the hazards and prepare to do the job safely.

2.1 READ MANUFACTURER'S INSTRUCTIONS

Machinery and equipment will always come with instructions from the manufacturer. Even if you have used similar equipment before, you still need to read the book for the equipment you are using.

These books will tell you about:

- Safety
- Operation
- Maintenance
- Servicing

NOTE

If you lose the instructions, you can usually download a copy from the internet.

2.2 SAFETY SYMBOLS

Safety symbols give you information that can help you stay safe. You might see these:

- On the equipment and machinery
- In the manufacturer's instruction book
- On signs around your workplace

The symbol for a hazard is a yellow triangle.

The symbol to tell you to do something is a blue circle. This is a **mandatory** instruction.

WORKBOOK ACTIVITY What do each of the following symbols mean?

2.3 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) is needed when using any machinery or equipment. What you use will depend on the hazards of each type of equipment.

PPE USED WITH MACHINERY AND EQUIPMENT			
Long cotton shirt and trousers; use high-visibility clothing as required		Broad-brimmed hat	
Steel-capped boots		Hearing protection	
Gloves		Face shield or mesh visor	
Safety glasses (clear or tinted)		Machinery harness	

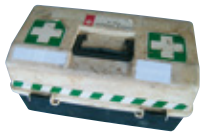
WORKBOOK ACTIVITY

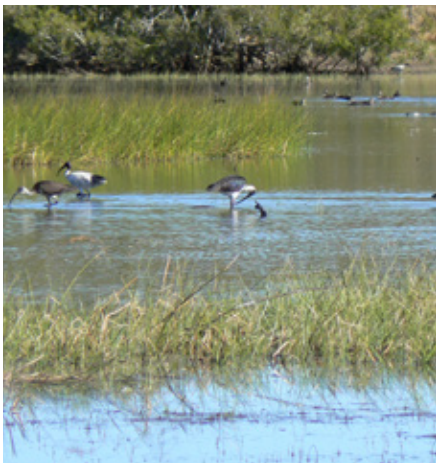
Look through the manufacturer's instructions for three pieces of machinery or equipment you use in your workplace. List the PPE you will need to use this.

TYPE OF EQUIPMENT	PPE REQUIRED

2.4 SAFETY EQUIPMENT & ACTIONS

Depending on the conditions where you are working, you might need to have other safety equipment with you as you work and take some other actions to look after your safety.

Water		Fire extinguisher	
First aid kit		Recovery gear, such as shovel and mattock	
Sunscreen		Safety cones and tape	
Insect repellent		Two-way radio, satellite or mobile phone	
Eyewash bottle		Notify others of your plans	



2.5 ENVIRONMENTAL IMPACTS

When using machinery and equipment you need to think about the impact on the environment. You then need to plan your work so that you reduce the risk of harm to the area where you are working.

- Make sure there are no oil or fuel leaks
- Store old oil in drums and then take them to a recycling facility
- Be aware of nesting and animal habitat and plan not to disturb
- Don't cause major tracks or disturbance that might lead to erosion
- Be careful not to spread weed seeds with machinery

2.6 PRE-START CHECKS

You must do a pre-start check on machinery and equipment before you use it. This ensures the equipment:

- Is safe to use
- Will do the job
- Is kept in good working order
- Will last longer

The things you check will depend on the particular piece of equipment. The manufacturer's instruction book is the best place to find this.

R2

See *pre-start checklist Resource R2*, page 27

GENERAL PRE-START LIST FOR FUELLED EQUIPMENT	
No obvious faults or damage	☑
Fuel level is okay and not leaking	☑
Oil level is okay and not leaking	☑
Air filter is clean	☑
Nuts and bolts are tight	☑
Muffler is secure, with no holes and spark arrester is in place	☑
Covers and/or guards are in place and in good condition	☑
GENERAL PRE-START LIST FOR ELECTRIC EQUIPMENT	
No obvious faults or damage	☑
Electrical cords are not damaged	☑
Screws and fittings are tight	☑
Safety guards are in place and in good condition	☑

If you can't tick off an item you should try to fix the problem. If you are unsure, then ask a colleague or your supervisor for help.

If there are any items that you can't tick and you can't fix, then you can't use the equipment.

You need to report the equipment as faulty. You can do this in a few ways.

- Put an out-of-service tag on it
- Let your supervisor know
- Raise it at a toolbox meeting
- Write it in the work diary or on the notice board

Don't return the equipment to the storage area if it is not working.

2.7 STANDARD OPERATING PROCEDURES

Standard Operating Procedures (SOPs) are workplace documents that tell you how to use equipment safely. These must be followed to ensure your safety and that of others. Some workplaces use a Safe Work Method Statement (SWMS) instead. These are very similar and do the same job. They both identify hazards and controls to minimise the risks.

If your workplace has a SOP for doing a particular job then you must follow it.

On the next page there is a sample of a SOP for using a push lawn mower.

REMEMBER

Risk is the chance of a hazard causing injury to a person or animal.

A control is something you do or use to reduce the risk of a hazard causing an injury.

DISCUSSION ACTIVITY

Find your workplace SOPs for using machinery and equipment. Read through these as a group and discuss.

OR

If you do not have any safety documentation for your workplace, then as a group read the sample on the next page. Would this suit your workplace? What could you change to make it more relevant?

Work together as a group to write another SOP for a piece of equipment you use regularly.

2.8 REPORTING PROBLEMS

It is really important that you communicate with your team and supervisor to let them know about any problems. You must let someone know if:

- You have not been trained
- You do not have the correct PPE
- You are under the influence of drugs or alcohol
- The equipment is faulty
- You don't feel safe

You might also need to check if:

- You need a permit to work in the area
- It is a suitable time to do the work

STANDARD OPERATING PROCEDURE – PUSH LAWN MOWER

PRE-START SAFETY CHECKS

1. Check all safety guards, switches and shields are fitted, secure and in working order.
2. Check all cutting blades are secure and in good condition.
3. Check the height adjustment lever is working properly.

Faulty equipment must not be used. Report all faulty equipment immediately.

SAFETY DURING OPERATION

1. Clear sticks, stones and rubbish from the area to be mowed to minimise the risk of flying debris.
2. Make sure you have secure footing and balance when starting the mower.
3. Keep clear of moving machine parts.
4. Operate the mower in the full throttle position and walk at a steady speed so that you can keep control over unexpected hazards.
5. Only mow in a forward direction.
6. Avoid steep slopes. On gentle slopes mow across the slope. This means the mower is less likely to run over you in case of a slip.
7. Be aware of the potential for flying debris, and make sure that no person or animal is nearby or in danger when operating the mower.
8. Bring the machine to a complete standstill and ensure the blades have stopped rotating before making any adjustments.
9. Never leave the machine unattended while it is running.
10. Always shut off the mower and bring it to a complete standstill before adjusting the height or clearing any clogged grass.
11. Allow the mower to cool before refuelling. Use only approved safety containers to store fuel.
12. Turn off the fuel supply when you have finished mowing.

STOPPING THE MOWER

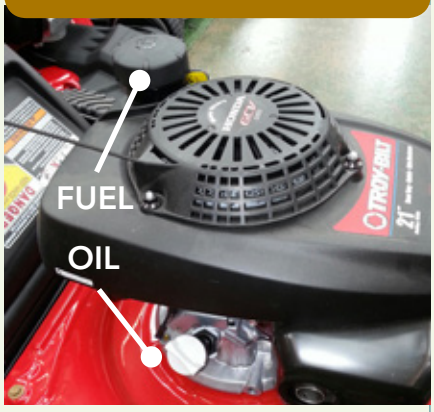
Stop the mower by moving the throttle lever to the fully upward (OFF or STOP) position.

MAINTENANCE

Clean away any debris in and around the engine, blades, axles and the catcher.

HAZARDS	CONTROL
Rapidly rotating cutting blades	Increase awareness, obey all warnings, keep clear Use PPE: steel-capped boots
Noise	Use PPE: ear protection
Flying debris	Clear debris before mowing, increase awareness, obey all warnings, use signage to keep others clear Use PPE: eye protection, steel-capped boots, long trousers
Flammable fuel	Avoid spillage, use a funnel, let engine cool down before fuelling

3 USE MACHINERY & EQUIPMENT



The equipment and machinery you use might be powered by fuel (diesel or petrol) or by electricity. You will learn more about the way these engines work if you study the unit *Undertake operational maintenance of machinery*.

3.1 FUEL ENGINES

There are two different kinds of fuel engines that might power the machinery you use in your workplace. These are two-stroke engines and four-stroke engines.

Four-stroke engines need you to refuel and top up the oil separately.

Two-stroke engines are generally smaller and more powerful for their size. They are often used on hand-held machinery that needs to be lighter, such as brushcutters, blowers and chainsaws.

Two-stroke engines need you to mix the oil and fuel together before you fill up the engine. You must read the manufacturer's instructions to find out the fuel/oil ratio. This tells you how much oil you need to mix with a certain amount of fuel. The ratio might be different for different kinds of machinery. When you know the ratio you can use the following table to work out how much oil you need, depending on the size of the fuel container you are using.

Two-stroke fuel can go stale if stored too long. This can happen in the fuel container or the engine. If fuel goes stale your engine won't run properly.

FUEL/OIL RATIO TABLE

Fuel/Oil Ratio	ml oil per 1 L of fuel	ml oil per 5 L of fuel	ml oil per 10 L of fuel	ml oil per 20 L of fuel
25:1	40	200	400	800
50:1	20	100	200	400
100:1	10	50	100	200

WORKBOOK ACTIVITY

A. The brushcutter needs a fuel-to-oil ratio of 50:1. We have a 5 litre fuel container. Use the table above to work out how many millilitres of two-stroke oil we need to add to the fuel container before refuelling.

B. The mower needs a fuel to oil ratio of 25:1. We have a 20 litre container of fuel. How much two-stroke oil will we need?

3.2 ELECTRIC MOTORS

Equipment and machinery can also be powered by electric motors. These run from an electricity source by:

- Plugging a cord into a power point
- Using a rechargeable battery

Rechargeable batteries are recharged using a charger that plugs into a power point.

ADVANTAGES

- The motor can be very small and light compared with a fuel engine
- No need for refuelling
- Cordless equipment is portable (as long as your battery is charged)

DISADVANTAGES

- You need to be near a power source
- The cords can be hazardous
- More difficult to repair
- Light-duty equipment can overheat and burn out quickly

DISCUSSION ACTIVITY

The photo on the left shows two lawn edgers.

As a group, discuss the differences between them.

3.3 LAWN MOWERS

Lawn mowers are designed to cut grass or turf on a fairly flat surface. They are best for looking after managed areas such as parks, gardens, ovals, etc. There are other kinds of more heavy duty machines that are designed for cutting grass in rough and less well-maintained areas.

TYPES OF MOWERS

What sort of mowers do you have in your workplace: push, self-propelled, ride on? Are they two-stroke or four-stroke?

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HAZARDS

Write down the hazards that mowers present. You can look at *Section 1*.

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READ THE INSTRUCTIONS

Find the manufacturers' instructions for the mowers in your workplace and the relevant SOP. Find a copy of the instructions on the internet if necessary. You can use the SOP in *Section 2.7* if your workplace doesn't have one. Look through the instructions as a group and take note of the information about using the equipment. Your trainer might do this with you using the whiteboard.

PRE-START CHECK

The things you need to check will depend on the type of mower you have. Look at the information about pre-start checks. Are there any extra checks that you need to add to the list in *Section 2.6?* Write them here.

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PPE

Think about the hazards when using a mower and look at the manufacturer's instructions. Work out what PPE you will need to safely operate the mower in your workplace. You can also check *Section 2.3*.

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PRACTICAL ACTIVITY

Do a pre-start check on a mower in your workplace.

What will you do if there is something wrong and you can't fix it?

3.4 WHIPPER SNIPPER, BRUSHCUTTER

A whipper snipper and a brushcutter are very similar. A whipper snipper has a thick nylon line that can be used to cut long and tough grass. A brushcutter has a metal or hard nylon blade and can be used on cane grasses and small woody plants.

HAZARDS

Write down the hazards that a whipper snipper and brushcutter present. You can look at *Section 1*.

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READ THE INSTRUCTIONS

Find the manufacturer's instructions for the whipper snipper and/or brushcutter in your workplace and the relevant SOP. Find a copy of the instructions on the internet if necessary. Look through the instructions as a group and take note of the information about using the equipment. Your trainer might do this with you using the whiteboard.

PRE-START CHECK

Look at the information about pre-start checks. Are there any extra checks that you need to add to the list in *Section 2.6?* Write them here.

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PPE

Think about the hazards of using a whipper snipper or brushcutter and look at the manufacturer's instructions. Work out what PPE you will need to safely operate this equipment in your workplace. You can also check *Section 2.3* and interpret these symbols that appear on the pole of a whipper snipper.

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PRACTICAL ACTIVITY

Do a pre-start check on a whipper snipper or brushcutter in your workplace.

What will you do if there is something wrong and you can't fix it?

OPERATOR/ OWNER MANUAL

- Safety Precautions
- Assembling
- Operating and Edging Instructions
- Maintenance and Workshop Manual

PRACTICAL ACTIVITY

Do a pre-start check on an edger in your workplace.

What will you do if there is something wrong and you can't fix it?

3.5 LAWN EDGER

A lawn edger is designed to give a clean line to the edge of lawns so it looks neat. There are different kinds of edgers.

- Simple wheel edgers that you push
- Motorised edgers

What sort of edger do you have at your workplace?

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HAZARDS

Write down the hazards that a motorised edger presents. You can look at *Section 1*.

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READ THE INSTRUCTIONS

Find the manufacturer's instructions for the edger in your workplace and the relevant SOP. Find a copy of the instructions on the internet if necessary. Look through the instructions as a group and take note of the information about using the equipment. Your trainer might do this with you using the whiteboard.

PRE-START CHECK

Look at the information about pre-start checks. Are there any extra checks that you need to add to the list in *Section 2.6*? Write them here.

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PPE

Think about the hazards when using an edger and look at the manufacturer's instructions. Work out what PPE you will need to safely operate this equipment in your workplace. You can also check *Section 2.3*.

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3.6 ROTARY HOE & TILLER

Rotary hoes and tillers are used to cultivate the topsoil to use as a garden bed. They can also be used to mix in manure and compost.

HAZARDS

Write down the hazards that a rotary hoe presents. You can look at *Section 1*.

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READ THE INSTRUCTIONS

Find the manufacturer's instructions for the rotary hoe in your workplace and the relevant SOP. Find a copy of the instructions on the internet if necessary. Look through the instructions as a group and take note of the information about using the equipment. Your trainer might do this with you using the whiteboard.

PRE-START CHECK

Look at the information about pre-start checks. Are there any extra checks that you need to add to the list in *Section 2.6?* Write them here.

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PPE

Think about the hazards when using a rotary hoe and look at the manufacturer's instructions. Work out what PPE you will need to safely operate this equipment in your workplace. You can also check *Section 2.3.*

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PRACTICAL ACTIVITY

Do a pre-start check on a rotary hoe in your workplace.

What will you do if there is something wrong and you can't fix it?

3.7 BLOWER

A blower is used to clear away leaves and other debris.

HAZARDS

Write down the hazards that using a blower presents. You can look at *Section 1*.

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READ THE INSTRUCTIONS

Find the manufacturer's instructions for the blower in your workplace and the relevant SOP. Find a copy of the instructions on the internet if necessary. Look through the instructions as a group and take note of the information about using the equipment. Your trainer might do this with you using the whiteboard.

PRE-START CHECK

Look at the information about pre-start checks. Are there any extra checks that you need to add to the list in *Section 2.6*? Write them here.

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PPE

Think about the hazards when using a blower and look at the manufacturer's instructions. Work out what PPE you will need to safely operate this equipment in your workplace. You can also check *Section 2.3*.

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PRACTICAL ACTIVITY

Do a pre-start check on a blower in your workplace.

What will you do if there is something wrong and you can't fix it?

3.8 MINI-EXCAVATOR

These kinds of machines are used to load, dig and drill. They are used for jobs that are too hard to do by hand but don't need heavy machinery. There are many useful attachments available for this type of machinery.

Jobs that you might use a mini-excavator for are:

- Digging post holes
- Drilling holes for tree planting
- Trenching
- Shifting soil
- Mixing cement
- Rotary hoeing

HAZARDS

Write down the hazards that a mini-excavator presents. You can look at *Section 1*.

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READ THE INSTRUCTIONS

Find the manufacturer's instructions for the mini-excavator in your workplace and the relevant SOP. Find a copy of the instructions on the internet if necessary. Look through the instructions as a group and take note of the information about using the equipment. Your trainer might do this with you using the whiteboard.

PRE-START CHECK

Look at the information about pre-start checks. Are there any extra checks that you need to add to the list in *Section 2.6*? Write them here.

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PPE

Think about the hazards when using a mini-excavator and look at the manufacturer's instructions. Work out what PPE you will need to safely operate this equipment in your workplace. You can also check *Section 2.3*.

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PRACTICAL ACTIVITY

Do a pre-start check on the mini-excavator in your workplace.

What will you do if there is something wrong and you can't fix it?

3.9 POWER TOOLS

Some of the most common power tools used in horticulture and CLM are:

- Angle grinder
- Drill
- Power saw
- Jigsaw

Are there any other power tools you use in your workplace?

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HAZARDS

Write down the hazards that power tools present. You can look at *Section 1*.

EQUIPMENT		HAZARDS
Angle grinder		
Drill		
Power saw		
Jigsaw		

READ THE INSTRUCTIONS

Find the manufacturers' instructions for the power tools you use in your workplace and the relevant SOP. Find a copy of the instructions on the internet if necessary. Look through the instructions as a group and take note of the information about using the equipment. Your trainer might do this with you using the whiteboard.

PRE-START CHECK

Look at the information about pre-start checks. Are there any extra checks that you need to add to the list in *Section 2.6*? Write them here.

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PRACTICAL ACTIVITY

Do a pre-start check on a particular power tool in your workplace.

What will you do if there is something wrong and you can't fix it?

PPE

Think about the hazards when using each power tool and look at the manufacturer's instructions. Work out what PPE you will need to safely operate this equipment in your workplace. You can also check *Section 2.3*

EQUIPMENT		PPE REQUIRED
Angle grinder		
Drill		
Power saw		
Jigsaw		

IMPORTANT

If you see a tag like this on a piece of electrical equipment, it means it was tested on the date shown and was compliant.

Even if it has a tag, you still need to do a pre-start check.

4 FINISH UP

When you have completed the job using the equipment or machinery, you need to spend some time finishing up.

4.1 CLEAN UP WORKSITE

You need to leave the job site clean and safe.

- Take away any rubbish you have collected
- Remove prunings, grass clippings, etc.
- Sweep or blow clean pathways
- Take all tools and equipment back to your base

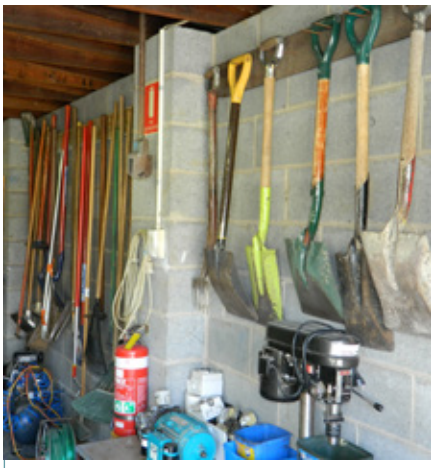
4.2 CLEAN EQUIPMENT

You can remove soil, grass clippings or weed seeds by using a hose or pressure cleaner in a wash-down area. You can also use an air compressor to blow the equipment clean. Always wear safety glasses when doing this.

Cleaning will make it easier to see if any part of the machinery is damaged or broken.

Always consider the environment when you are cleaning equipment. You don't want to be spreading weed seeds into waterways or blowing them into sensitive areas.

4.3 STORE & SECURE



It is important that you have a place to store and secure your equipment.

This helps to:

- Protect the equipment from damage
- Maintain a tidy workspace
- Keep untrained people from accessing the equipment
- Prevent injury to others

4.4 REPORT PROBLEMS

You need to let your supervisor know straight away if you noticed a problem with the equipment. You might have noticed this:

- While you were using it
- While you were cleaning it

Reporting the problem will make sure that it is:

- Not used by someone else
- Scheduled to be fixed

Your supervisor might ask you to attach an out-of-service tag to the equipment. This lets other people know not to use it. You can also let your work team know about the problem at the next toolbox meeting.

4.5 FILL IN WORKPLACE REPORTS

Some workplaces use log books to record the number of hours a machine has been used. This is needed to schedule servicing.

If your workplace uses log books to record machinery, then you need to fill it out. Your supervisor will help you with this.

5 MAINTENANCE & BASIC SERVICING

Maintenance and servicing are the things you do to look after your equipment and machinery. They are important to ensure your equipment:

- Runs properly
- Is safe to use
- Lasts longer (saves money and protects the environment)

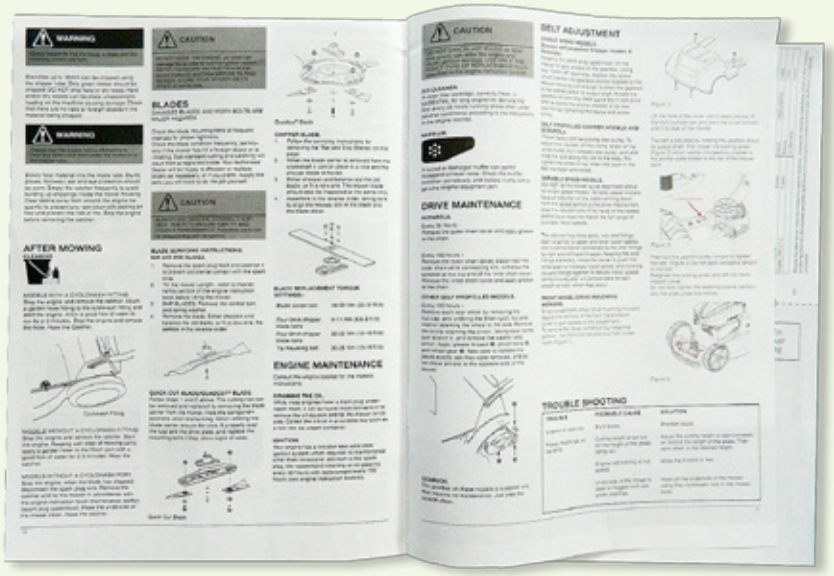
The kinds of tasks you will need to do are:

- Change engine oil
- Clean off oil, dirt and debris after use
- Sharpen or replace blades on lawn mowers, brushcutters and angle grinders
- Replace cords on whipper snippers
- Tighten nuts and bolts
- Change air filters

It is important to consider hazards to the environment when servicing machinery. Make sure you follow the instructions for disposal of waste oil.

The maintenance and servicing that you need to do for each piece of equipment will be written in the manufacturer's instructions. There is often a maintenance chart at the back of the instruction book. This will tell you how often you need to do each task. See the opposite page for an example.

Other more complex servicing should be done by someone who is suitably trained. You will learn more about maintaining and servicing machinery and equipment if you study the unit *Undertake operational maintenance of machinery*.



Source: Masport Limited (2013)

STIHL BRUSHCUTTER SAFETY CHECKLIST

Please note: Different models may have different parts and controls		before starting work	after finishing work or daily	after each refuelling stop	weekly	monthly	every 2 months	if problem	if damaged	as required
Complete machine	Visual inspection (condition, leaks)	X		X						
	Clean		X							
Control handle	Check operation	X								
Air filter	Clean							X		X
	Replace								X	
Filter in fuel tank	Check							X		
	Replace						X		X	X
Fuel tank	Clean					X		X		X
Carburettor	Check idle adjustment cutting tool must not turn	X		X						
	Readjust idle									X
Spark plug	Readjust electrode gap							X		
Cooling inlets	Inspect		X							
	Clean									X
Spark arresting screen in muffler	Inspect							X		X
All accessible screws and nuts (not adjusting screws)	Retighten									X
Cutting tool	Visual inspection	X		X						
	Replace								X	
	Sharpen metal cutting tool	X								X
	Check tightness of cutting tool	X		X						
Gearbox lubrication	Check				X					
	Top up									X
Antivibration system	Check							X		X

Source: Andreas Stihl AG & Co. KG (2003)

PRACTICAL ACTIVITY

With your supervisor, select one piece of equipment from your workplace. Use the manufacturer's instructions and log sheets to find out if maintenance and/or servicing needs to be done. With the support of your supervisor or trainer perform routine maintenance and servicing of the equipment.

6 PROJECT

PROJECT

With your supervisor or trainer, find an area that needs some work done. Examples:

- Mow and edge a lawn
- Whipper snip along a fence line
- Cultivate a garden or vegetable bed
- Move some soil to level an area

1. GET READY

With your supervisor, select the appropriate equipment or machinery for the job.

CONTRIBUTE TO A JOB SAFETY ANALYSIS (JSA)

You need to let your supervisor know about the hazards caused by the equipment, weather and terrain. Think about:

- The slope of the land
- How long the job will take
- Obstacles such as rocks, logs or uneven ground

With your work team, discuss any environmental concerns with the job and ways to avoid damage.

DO PRE-START CHECKS

Follow manufacturers' instructions and your workplace SOP to do pre-start checks on all equipment you will use. If the equipment needs refuelling or any minor maintenance, you should do that first.

PPE

Prepare and put on the PPE required for the job. Get any other safety equipment you might need.

2. DO THE JOB

Check with your supervisor that you understand what is required of you.

Remember the manufacturers' instructions and the training you have had.

While using the equipment you need to look out for safety hazards to yourself, other people and animals. You must let your supervisor know if you have any concerns or questions.

Check with your supervisor to see if you have finished the work satisfactorily.

3. FINISH UP

Clean up the worksite before returning to base. Then you will need to:

- Clean the equipment
- Store it securely
- Report anything that is broken or damaged
- Complete any other workplace reporting

Debrief with your work team and supervisor. You can discuss:

- Did it go to plan?
- What worked well?
- What would you do differently next time?

Remember to let your supervisor know if there is a problem with the equipment that you are not trained to fix.

R1 WORKSHEET FOR OTHER KINDS OF EQUIPMENT OR MACHINERY

TYPE OF EQUIPMENT

.....

PURPOSE: What is the equipment used for?

.....

HAZARDS: Write down the hazards that this equipment presents. Refer to *Section 1*.

.....

.....

.....

.....

READ THE INSTRUCTIONS: Find the manufacturer's instructions for the equipment and the relevant workplace SOP. Find a copy of the instructions on the internet if necessary. Look through the instructions as a group and take note of the information about using the equipment.

PRE-START CHECK: Look at the information about pre-start checks. Are there any extra checks that you need to add to the list? Refer to *Section 2.6*.

.....

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PPE: Think about the hazards when using this equipment and look at the manufacturer's instructions. Work out what PPE you will need to safely operate this equipment in your workplace. Refer to *Section 2.3*.

.....

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GENERAL PRE-START LIST FOR FUELLED EQUIPMENT

	☑
• No obvious faults or damage	
• Fuel level is okay and not leaking	
• Oil level is okay and not leaking	
• Air filter is clean	
• Nuts and bolts are tight	
• Muffler is secure with no holes, and spark arrester is in place	
• Covers and/or guards are in place and are in good condition	

GENERAL PRE-START LIST FOR ELECTRIC EQUIPMENT

	☑
• No obvious faults or damage	
• Electrical cords are not damaged	
• Screws and fittings are tight	

GLOSSARY

Habitat	The habitat of an animal is its natural home or environment. It is the broad area where the animal lives, not just the nest or burrow.
Mandatory	You must do things that are mandatory, because they are required by law.
Manufacturer	A manufacturer is a company that makes things and then sells them.
Terrain	Terrain is a stretch of land. We usually talk about terrain in relation to its physical features, e.g. rough terrain, gentle terrain.
Add your own words and meanings here	

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Published and distributed by
Greening Australia
1 Underwood Avenue
Shenton Park
Western Australia 6008
T: 08 9287 8300
E: per.general@greeningaustralia.org.au
W: www.greeningaustralia.org.au

ISBN: 978-0-9942059-2-6

Project Manager: Mike Clark
Authors and instructional designers: Catherine Ralston and Volker Mischker
Aboriginal advisors: Irene Jimbidie and Wayne Barbour
Technical advisors: Volker Mischker, James Gorrie and Wayne Barbour
Artwork photography: TASWA Training Consultants and Greening Australia, unless otherwise stated
Editing: Madelaine Dickie
Proof: Ruth Davies (centrEditing)
Graphic design: Square Peg Design

ALEP

Aboriginal Landcare Education Program

OPERATE BASIC MACHINERY & EQUIPMENT

This learning guide covers information about using a range of equipment commonly used in horticulture and conservation and land management (CLM).

Topics include:

- WORKPLACE HEALTH & SAFETY
- GET READY
- USE MACHINERY & EQUIPMENT
- FINISH UP
- MAINTENANCE AND BASIC SERVICING

ISBN 978-0-9942059-2-6 (2015)

For further information contact Greening Australia on
T: 08 9287 8300 E: per.general@greeningaustralia.org.au W: www.greeningaustralia.org.au

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