

# **OUTDOOR POWER EQUIPMENT ASSOCIATION (OPEA)**

**June 2002**

## **OCCUPATIONAL HEALTH AND SAFETY**

### **- RISK ASSESSMENT REPORT - BRUSH CUTTERS**

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## **WARNING**

**DO NOT OPERATE OR WORK ON THIS MACHINE  
UNLESS YOU HAVE READ & UNDERSTOOD  
THE INSTRUCTIONS & WARNINGS IN THE  
OPERATION & MAINTENANCE MANUALS.  
FAILURE TO FOLLOW INSTRUCTIONS &  
WARNINGS COULD RESULT IN DAMAGE  
TO THE MACHINE, INJURY OR DEATH**

**PLANT SAFETY REVIEW – RISK ASSESSMENT PROGRAMME**

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**REPORT FOR:** OUTDOOR POWER EQUIPMENT ASSOCIATION

**DATE ASSESSED:** 28<sup>TH</sup> May 2002

**PLANT ASSESSED:** BRUSH CUTTERS

**PREPARED BY:** ROGER LIM, MIEAust, CPEng, MSIA

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Update/Reviewed by: .....

(Name)

.....

(Date)

.....

(Edition No.)

**Plant:** Brush cutters.....

**Model:** .....

**Serial No:** .....

**Attachments  
To Plant:** .....

**Customer Name:** .....

**Customer Address:** .....

**Customer Contact Person:** .....

**Information and  
Instructions Provided:** Instruction Manual No. ....

Plant Safety Risk Assessment Report No. ....

**Customer  
Acknowledgement:** .....

(Signed and Dated)

.....  
(Name & Position)

**OPEA Representative:** .....

(Signed & Dated)

.....  
(Name & Position)

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## 1.0 PREAMBLE

The National Standard for Plant 1994 has been adopted as the national model where all State regulations relating to plant safety are developed. All States, Territories and Comcare (Commonwealth Employees) have these regulations in place.

These regulations specify some specific duties for designers, manufacturers, importers, suppliers, employers and self-employed persons in relation to risk management processes involving hazard identification, risk assessment and the application of appropriate risk controls for plant.

These regulations require the designers and manufacturers to identify the hazards, assess the risks and control the risks, as far as is practicable and provide the relevant information about the plant to the importer/supplier and employer.

The employer must also carry out the hazard identification, risk assessment and risk control for the use of the plant in the work environment. These assessments must be carried out for all existing plant as soon as is practicable and for all new or modified plant before use.

## 2.0 SCOPE

As designer, manufacturer and supplier of plant in Australia, OPEA is providing this information, regarding hazard identification, risk assessment and make appropriate recommendations where required on risk controls. Since the plant can be installed and used in different environments, it is necessary that this risk assessment be reviewed by the employer/user at the site to ensure that the risk control is appropriate so as to minimise the risk of injury.

The information provided in this document is sourced from the manuals provided by OPEA (the designer/manufacturer/importer/supplier), and from the experience of technical personnel from OPEA and industry consultants.

Whilst the information is not exhaustive in every possible risk, OPEA believes that they provide practical guidance to safe operation of plant, provided that the plant is used in accordance with the designers/manufacturer's recommendation for which the plant is designed and manufactured.

OPEA members should review these assessments and ensure that the relevant risk controls recommended are in place for the different models and add or modify the risks where appropriate.

### 3.0 METHODOLOGY

The different models of brush cutters and its attachments have been methodically reviewed and assessed in accordance with the requirements of the National Standard for Plant and the relevant State plant regulations.

A generic assessment has been developed for the brush cutters that have similar functions and productive capacity and the procedures carried out for these machines do not result in any person being subject to a different risk than if the procedures were carried out for each individual machines.

The elements of risk assessments are:

- frequency of exposure
- likelihood of hazard causing injury
- severity of injury

from a designer/manufacturer's (including importer/supplier's) point of view, it is often difficult to determine the frequency of exposure to the potential hazards because of their limited control in the final use of the machines and the types of environment they are going to be used in.

The probability or likelihood of hazard causing injury will depend on the adequacy of the risk controls such as the integrity of the safeguards provided. Therefore a machine with identified hazards that are not appropriately guarded will increase the likelihood of injury and therefore the level of risks in the use (including maintenance) of the machine.

A **risk assessment priority matrix** is therefore used in determining the risk rating for each of the identified potential hazards.

### 4.0 RISK ASSESSMENT WORKSHEETS

- The risk assessment worksheets attached in Appendix 3 lists the potential hazards (including the sources of potential hazards) and risk controls that should be observed when operating or maintaining these machines.
- Make sure you fully understand these points before you start work and observe them to work safely. Read and understand the **Instruction Manual and risk assessments**.
- **The user should re-evaluate the site condition because the working environment may influence the risks associated with the use of the plant.**
- Manufacturer's manual specify that only qualified persons should operate, maintain and repair the machine. The term "qualified person" is intended to be consistent with the definition of a 'competent person' as defined in the

National Standard for Plant as meaning a person who has acquired through training, qualification, or experience, or a combination of these, the knowledge and skills enabling that person to perform the task.

- Ensure the plant is used in accordance to the manufacturer's recommendations and what it is designed for.

## **5.0 REFERENCES**

### **5.1 Plant Safety Legislation**

- The National Standard for Plant and the following States and Territories proclaimed regulations relating to 'Plant Safety'
- Victoria - Occupational Health & Safety (Plant) Regulations 1995.
- Queensland - Workplace Health and Safety Act and Regulations 1995 and Code of Practice for Plant 1993.
- South Australia - Occupational Health, Safety and Welfare Regulations 1995.
- Western Australia - Occupational Safety and Health Regulations 1996.
- Northern Territories - Work Health (OHS) Regulations in place in February 1996.
- New South Wales – OH&S Regulations 2001 based on National Standard for Plant.
- Tasmania - Workplace Health and Safety Regulations.
- OH&S (Commonwealth Employment) (National Standards) Regulations 1996.

### **5.2 Safety Standards**

- AS4024.1 Safeguarding of Machinery, Part 1: General Principles
- AS1270 Hearing Protection Devices
- AS1337 Eye Protection for Industrial Applications
- AS2210 Occupational Protective Footwear

**APPENDIX 1**

**Similar “Plant Safety” Regulations applying to or about  
to apply to all States and Territories**

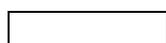
**APPENDIX 2**  
**RISK ASSESSMENT PRIORITY MATRIX**

**APPENDIX 3**  
**RISK ASSESSMENT WORKSHEETS**

### RISK ASSESSMENT PRIORITY MATRIX

PROBABILITY	SEVERITY			
	Catastrophic (4)	Critical (3)	Marginal (2)	Negligible (1)
Frequent (A)	High (4A)	High (3A)	High (2A)	Medium (1A)
Probable (B)	High (4B)	High (3B)	Medium (2B)	Low (1B)
Occasional (C)	High (4C)	High (3C)	Medium (2C)	Low (1C)
Remote (D)	High (4D)	Medium (3D)	Low (2D)	Low (1D)
Improbable (E)	Medium (4E)	Low (3E)	Low (2E)	Low (1E)

#### CODE



Highest Risk:



Medium Risk:



Lowest Risk:

#### PROBABILITY

The probability of a hazard actually occurring within the life of the plant can fall within one of the following categories -

#### Single Event

#### Multiple Events

#### Frequent (A)

Likely to occur frequently.

Continuously experienced

#### Probable (B)

Likely to occur several times.

Likely to occur frequently.

#### Occasional (C)

Likely to occur sometime.

Likely to occur several time.

#### Remote (D)

Unlikely but possible.

Unlikely but can reasonably be expected to occur.

#### Improbable (E)

So unlikely it can be assumed occurrence may not be experienced.

Very unlikely but possible.

#### SEVERITY

Severity categories provide a qualitative measure of the credible 'worst case' impact of a hazard.

#### Catastrophe (4)

Deaths, system loss, or severe environmental damage.

#### Critical (3)

Severe injury, several occupational illness, major system or environmental damage.

#### Marginal (2)

Minor injury, minor occupational illness, minor system or environmental damage.

#### Negligible(1)

Less than minor injury, occupational illness, or less than minor system or environmental damage.



**PLANT SAFETY**  
**JANUARY 2002**

<b><u>STATE</u></b>	<b><u>APPLICABLE LEGISLATION</u></b>	<b><u>STANDARD CODE OF PRACTICE</u></b>	<b><u>STATUTORY AUTHORITY</u></b>
VICTORIA	Occupational Health and Safety (Plant) Regs 1995 based on National standard - operative 1/7/95.	Code of Practice for PLANT No.. 19, July 1995.	Victoria WorkCover Authority, Health and Safety Division. (03) 9641 1555.
QUEENSLAND	Workplace Health and Safety Act 1995 and Regulations 1995 Sections dealing with plant generally similar to previous Regs.	Code of Practice for plant operating from 30/4/93 made under the workplace Health and Safety Act 1989. Not based on National standard but similar, as a risk management approach is adopted.	Division of workplace Health and Safety. Department of Employment, Vocational Education, Training and Industrial Relations. (07) 3247 4711.
SOUTH AUSTRALIA	Occupational Health, Safety and Welfare Regs 1995 contain Part 3 Plant-operation 3/4/95. Based on National Standard.	Part 3 of the Occupational Health Safety and Welfare (OHSW) Regs lists Australian Standards adopted as Codes of Practice.	Occupational Health and Safety Division. Workcover Corporation. (08) 8303 0400
WESTERN AUSTRALIA	Occupational Health and Safety Regulations 1996 in operation in October 1996.	No code of practice at present. Likely to adopt WorkSafe Codes of Practice.	WorkSafe Western Australia (08) 9327 8777
TASMANIA	Draft Workplace Health and Safety Regulations expected in 1999.	New Act states mandatory requirements. Descriptive detail to come from codes of practice.	Division of Safety and Mines. Tasmania Development and Resources (03) 6233 8333.
NORTHERN TERRITORY	Work Health (Occupational Health and Safety) Regs is based on the National Standard. New Regs in place on 14/2/96.	Will utilise WorkSafe codes of practice.	Workplace Health Authority. Darwin. (08) 8999 5010
NEW SOUTH WALES	OHS Regulations 2001 -based on the National Standard for Plant	Regulations will be supported by codes of practice from WorkCover and others as appropriate.	WorkCover Authority. Sydney,NSW (02) 9370 5000

**Plant: Brush cutters**

Assessor/s: R. Lim, A. Wilson

Date: 28/5/2002

POTENTIAL HAZARDS (including sources of potential hazards)	Probability	Severity	Risk Rating (1)	RISK CONTROL MEASURES TO ELIMINATE / REDUCE RISKS AS FAR AS PRACTICABLE	Residual Risk (2)
<b><u>TRANSPORTATION</u></b> 1. Spilling of fuel.	C	2	Medium	<ul style="list-style-type: none"> <li>• Ensure engine and fuel are switched off.</li> <li>• Ensure fuel in the tank is empty or minimal amount.</li> </ul>	Low (2D)
<b><u>FILLING FUEL</u></b> 2. Fire and health hazard from fumes.	D	3	Medium	Ensure fuel filling is carried out in a well ventilated space, away from ignition sources. Engine must be switched off and cooled. Be aware of hot exhaust system.	Low (3E)
<b><u>STARTING THE MACHINE</u></b> 3. Cutting by blades of machine and fumes from petrol powered machines.	C	3	High	<ul style="list-style-type: none"> <li>• Ensure machine is on stable and level ground. Do not start the unit in the air or from the harness as it could swing into your leg or loss of control.</li> <li>• Ensure engine does not leak fuel.</li> <li>• Ensure all guards are in place and attachments are securely tightened.</li> <li>• Ensure silencer is in good condition.</li> <li>• Ensure adequate ventilation.</li> </ul>	Low (3E)

Note: (1) Refer to Risk Matrix  
(2) Residual Risk following implementation of Risk Control measures

**Plant: Brush cutters**

Assessor/s: R. Lim, A. Wilson

Date: 28/5/02

POTENTIAL HAZARDS (including sources of potential hazards)	Probability	Severity	Risk Rating (1)	RISK CONTROL MEASURES TO ELIMINATE / REDUCE RISKS AS FAR AS PRACTICABLE	Residual Risk (2)
<p><b><u>SAFE OPERATION</u></b></p> <p>5. Various potential hazards such as –</p> <ul style="list-style-type: none"> <li>• Cutting by blade attachment or rotating nylon lines.</li> <li>• Entanglement from rotating head</li> <li>• Impact by debris, etc.</li> <li>• Burn from hot parts</li> <li>• Repetitive stress injuries (RSI)</li> </ul>	C	3	High	<ul style="list-style-type: none"> <li>• Ensure all guards, fixtures and warning labels are in place. Additional hazard warning labels/symbols should be fitted on guards, near the hazard points.</li> <li>• Ensure appropriate PPEs are used (e.g. protection for eyes, hearing, gloves, footwear and long trousers).</li> <li>• Prior to commencing work, inspect work area and remove debris, sticks, etc. Inspect wire fence lines for damaged or broken wires. Secure or remove damaged fence wires.</li> <li>• Ensure stable footing when working.</li> <li>• Do not raise cutting attachment above knee height to minimise risk of impact to face and eyes by ejected debris.</li> <li>• Do not allow any one to be within 15 m of the operating zone. Stop the engine before leaving the machine or when approached by another person.</li> <li>• Cut in the direction where the debris is thrown away from the operator. Use extreme caution when operating over bare spots and gravel. Operate at reduced speed when near people or vehicle.</li> <li>• Stop engine when attempting to remove a jammed attachment.</li> <li>• Do not transit between work areas with machine running.</li> <li>• Keep hands and body away from silencer to prevent heat injury while the engine is hot.</li> <li>• Shut down immediately if the unit starts to shake or vibrate due to damaged or loose parts.</li> <li>• Always use both hands on the handles. Do not operate using one hand.</li> <li>• Keep body warm and limit number of hours of operation to minimise risk of RSI.</li> </ul>	Low (2D)

Note: (1) Refer to Risk Matrix  
(2) Residual Risk following implementation of Risk Control measures

**Plant: Brush cutters**

Assessor/s: R. Lim, A. Wilson

Date: 28/5/2002

POTENTIAL HAZARDS (including sources of potential hazards)	Probability	Severity	Risk Rating (1)	RISK CONTROL MEASURES TO ELIMINATE / REDUCE RISKS AS FAR AS PRACTICABLE	Residual Risk (2)
6. Noise	C	3	High	Ensure machines are appropriately labelled and meet the relevant State legislative requirements. Normally a 75dBA label is affixed. Hearing protection must be used.	Low (2D)
<b><u>STOPPING</u></b>					
7. Cutting and entanglement from run down time of attachments (lines, blade and cultivator and hedge trimmer).	D	3	Medium	Attachments may have long run down time. Ensure guards are in place.	Low (2E)
8. Burns from hot parts.	C	2	Medium	Hot parts that require access should be guarded if practicable. Hazard warning labels may be used to warn of residual risks.	Low (2D)
9. Fumes (from petrol)	C	2	Medium	Ensure the machine is used in well ventilated place.	Low (2D)
<b><u>STORAGE</u></b>					
10. Fire from leaking fuel	D	3	Medium	Ensure regular maintenance and store fuel away from ignition sources.	Low (3E)

Note: (1) Refer to Risk Matrix

(2) Residual Risk following implementation of Risk Control measures

**Plant: Brush cutters**

Assessor/s: R. Lim, A. Wilson

Date: 28/5/2002

POTENTIAL HAZARDS (including sources of potential hazards)	Probability	Consequence	Risk Rating (1)	RISK CONTROL MEASURES TO ELIMINATE / REDUCE RISKS AS FAR AS PRACTICABLE	Residual Risk (2)
<b><u>MAINTENANCE</u></b> 11. Cutting, entanglement, burns and fumes from moving and hot parts during maintenance.	D	3	Medium	<ul style="list-style-type: none"> <li>Remove spark plug lead.</li> <li>Follow manufacturer's recommendation.</li> <li>Ensure machine is securely mounted to minimise risk of it falling.</li> </ul>	Low (3E)
12. Cutting and impact from blades or parts flying off if not properly installed.	D	4	High	Ensure all mechanical devices are properly installed to manufacturer's recommendations. Do not operate with damaged blades or excessive vibration.	Low (3E)
<b><u>PROVISION OF INFORMATION</u></b> 13. Lack of relevant operation and maintenance instructions.	C	3	High	Ensure all relevant operation and maintenance instructions are provided in accordance with the relevant State Occupational Health and Safety Plant Regulations.	Low (2D)
<b><u>ELECTROMAGNETIC COMPATIBILITY (EMC)</u></b> 14. Interference from electromagnetic radiation	D	3	Medium	Ensure electrical equipment comply with the EMC regulatory requirements and carry "C tick" marking or provided with EC Declaration of Conformity with EMC Directive.	Low (2E)

Note: (1) Refer to Risk Matrix  
(2) Residual Risk following implementation of Risk Control measures

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POTENTIAL HAZARDS (including sources of potential hazards)	Probability	Severity	Risk Rating (1)	RISK CONTROL MEASURES TO ELIMINATE / REDUCE RISKS AS FAR AS PRACTICABLE	Residual Risk (2)
<b><u>ATTACHMENTS - BLADES</u></b> In addition to items 1-13 above – 15. Cutting by blade	C	3	High	<ul style="list-style-type: none"> <li>Use only recommended blades designed for the purpose to avoid injury due to kickback or blade fracture. If in doubt, seek advice from the manufacturer or qualified person. Use circular saw blades to cut brush or small trees.</li> <li>Do not use cracked or damaged blades to minimise the risk of broken blade flying off. Inspect regularly.</li> </ul>	Low (3E)
<b><u>ATTACHMENTS – HEDGE TRIMMER</u></b> In addition to items 1-13 above - 16. Electrocution from contact with overhead wires	D	4	High	Do not use unit closer than 4.5 m to overhead wires.	Med (4E)
17. Cutting by hedge trimmer	C	3	High	All adjustments to hedge trimmer cutting devices must be carried out with the motor stopped and ignition switched off. Beware of sharp cutting edges.	Low (3E)
18. Cutting by broken blades	C	3	High	Check that the blade assembly is firmly attached and in safe operating condition. Dull, loose or damaged blades should not be used.	Low (2D)

Note: (1) Refer to Risk Matrix  
 (2) Residual Risk following implementation of Risk Control measures

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POTENTIAL HAZARDS (including sources of potential hazards)	Probability	Severity	Risk Rating (1)	RISK CONTROL MEASURES TO ELIMINATE / REDUCE RISKS AS FAR AS PRACTICABLE	Residual Risk (2)
<b><u>ATTACHMENT - CULTIVATOR</u></b>  In addition to items 1-13 above –  19. Hazards from cutting into underground utilities, eg. gas pipes and electricity cables.	C	3	High	Check for underground utilities before operation.	Low (2D)

Note: (1) Refer to Risk Matrix

(2) Residual Risk following implementation of Risk Control measures