

Guidelines for the management of vegetation near power lines



Information for:
Local Government bodies
Landowners / occupiers
State Government agencies

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Preface

Fires or electrical hazards and accidents can occur if vegetation is not controlled or cleared around overhead power lines, resulting in serious risks to people and property and significant costs to the community.

The purpose of this document is to clarify the responsibilities for controlling and clearing vegetation around overhead power lines. Management includes pruning, cutting and trimming, removing vegetation and disposing of vegetation endangering power lines.

EnergySafety, as the State's energy industry technical and safety regulator, has developed these guidelines with the network operators in Western Australia. The requirements apply to power lines owned and operated by network operators throughout the State.

The responsibilities set out in these guidelines are based on the policy framework developed through extensive community consultation prior to being enacted in legislation.

This publication has been produced by EnergySafety, a division of the Department of Mines, Industry Regulation and Safety. However, for enquiries about vegetation control around overhead powerlines, telephone the relevant network operator: Western Power on 13 13 51 or Horizon Power on 13 23 51.



Introduction

Energy*Safety* is the State Government regulator responsible for, among other functions, the technical and safety regulation of electricity transmission, distribution and utilisation in Western Australia, for the purpose of ensuring the safety of the public, energy workers and consumers.

Serious fires, accidents and loss of (or unstable) electricity supply can occur when vegetation is not controlled or kept clear of overhead power lines. In many cases, these incidents have occurred because of misunderstandings or the lack of knowledge on responsibilities for vegetation control.

The responsibilities are set out in these guidelines and depend on:

- the type of power lines ie whether distribution (voltages of 240/415 volts to 33,000 volts), or transmission (voltages of 66,000 volts to 330,000 volts);
- the location of the vegetation that could interfere with the power line; and
- whether the vegetation is naturally occurring or has been planted or cultivated.

Tree pruning near power lines

Tree clearing safety

For safety reasons, tree pruning near power lines should only be carried out by competent vegetation control people who have been trained to:

- recognise the voltages involved;
- understand what vegetation types conduct electricity; and
- know which conductors do not need to be physically touched for a flashover to occur.

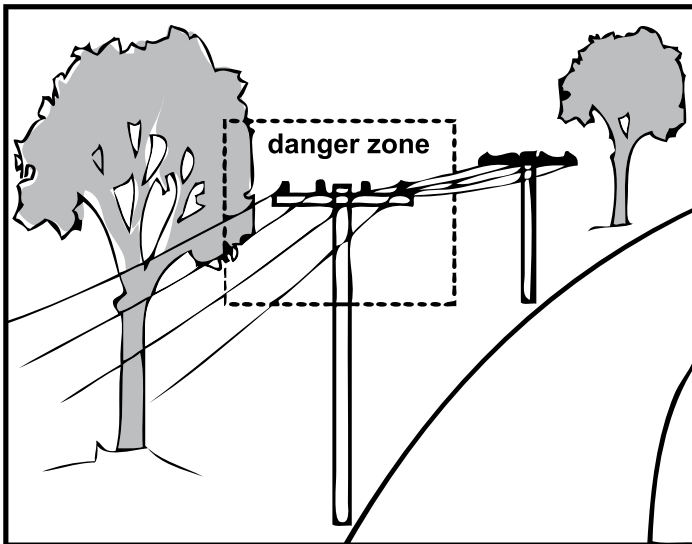
If any vegetation control person or any tool, equipment or vehicle used by that person is likely to come within the 'danger zone' (see diagram on page 5), by law the person must comply with the requirements of the EnergySafety publication *Code of Practice for Personnel Electrical Safety for Vegetation Control Work Near Live Power Lines*. This includes the extensive training and work experience requirements, which are graduated according to the voltages involved.

When engaging a contractor to control vegetation around power lines, it is important to check they have the skills and knowledge to carry out the work. Vegetation control contractors are listed in Yellow Pages under "Tree...." related services or you can contact the Tree Guild of WA.

The danger zone for work purposes

The 'danger zone' for work purposes is defined as the area:

- above any power line; and
- within 3.0 metres of a power line of a voltage up to and including 33,000 volts; or
- within 6.0 metres of a power line of a voltage exceeding 33,000 volts.



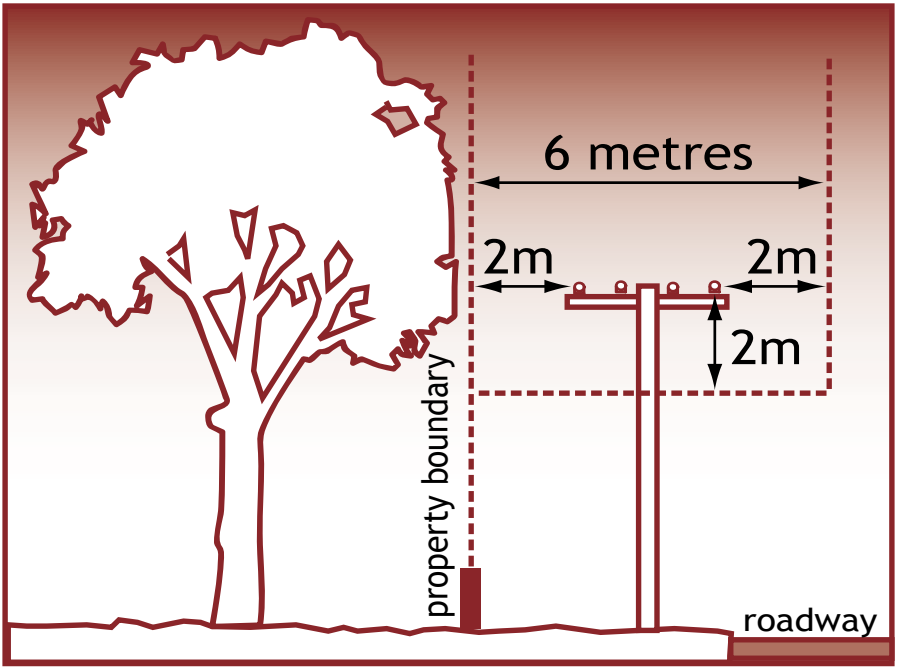
Tree pruning near power lines

Clearances required from power lines

The basic rule for the most common situation in urban areas is that vegetation needs to be kept at least two metres clear to the side, and below of electricity conductors of **distribution** power lines. Vegetation should not overhang the conductors.

Larger clearances apply to **transmission** power lines and these are managed by the network operator.

Refer to the Appendix on page 16 for details of minimum vegetation clearances to be maintained around different types of voltages and conductors. Seek advice from the network operator before attempting to apply these clearances in a particular situation.



Typical vegetation clearance zones in urban areas

Responsibility for control of vegetation near power lines up to 33,000 volts

(a) Network operator power lines in urban streets

(refer to diagram page 9)

(i) Where the vegetation has been planted or cultivated – within a street verge

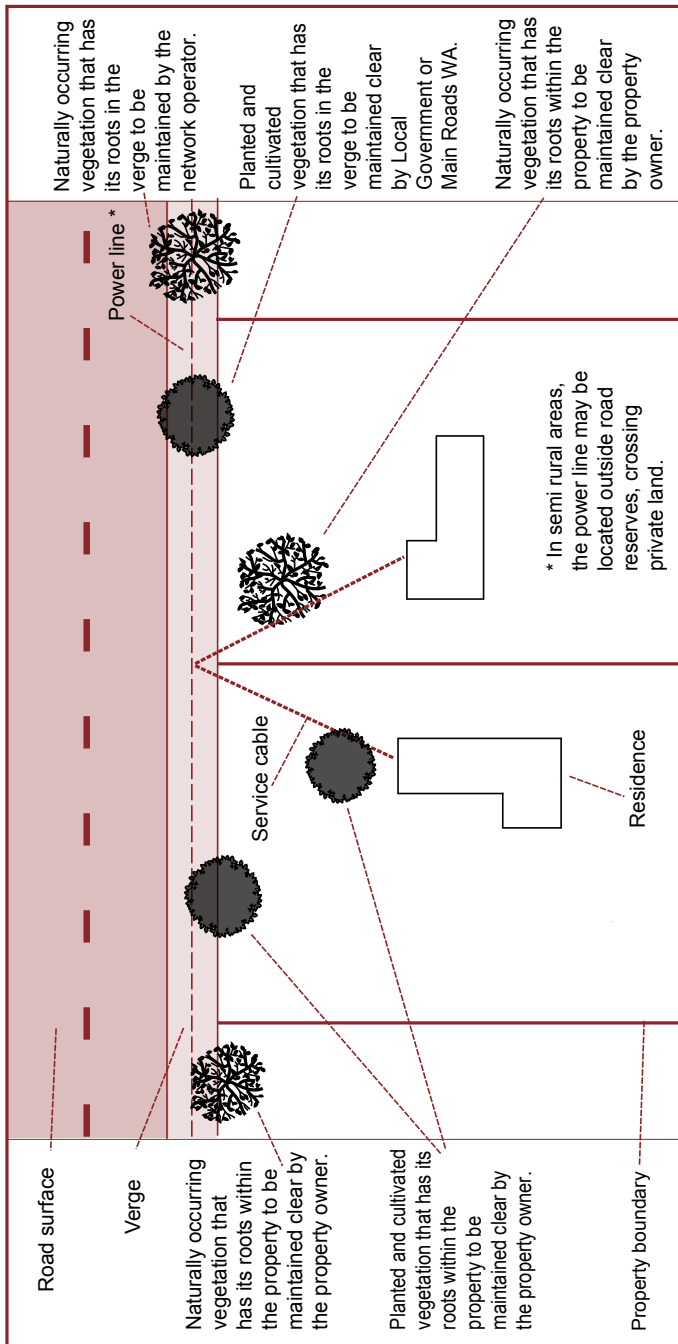
Control of planted or cultivated vegetation within a street verge is the responsibility of the local government body for that area (city, town or shire council), or Main Roads WA, as the relevant landowner/occupier.

(ii) Where the vegetation is naturally occurring – within a street verge

Control of naturally occurring vegetation that has not been planted or cultivated within a street verge is the responsibility of the network operator.

(iii) Where the vegetation is in property (of any ownership) adjacent to a street verge with power lines

It is the responsibility of the owner/occupier of property adjacent to the verge to ensure the vegetation within the property, whether naturally occurring, planted or cultivated, is kept well clear of power lines in the street verge.



Suburban and semi rural areas

(b) Network operator power lines located on farms, crown land or reserves

(refer to diagram page 11)

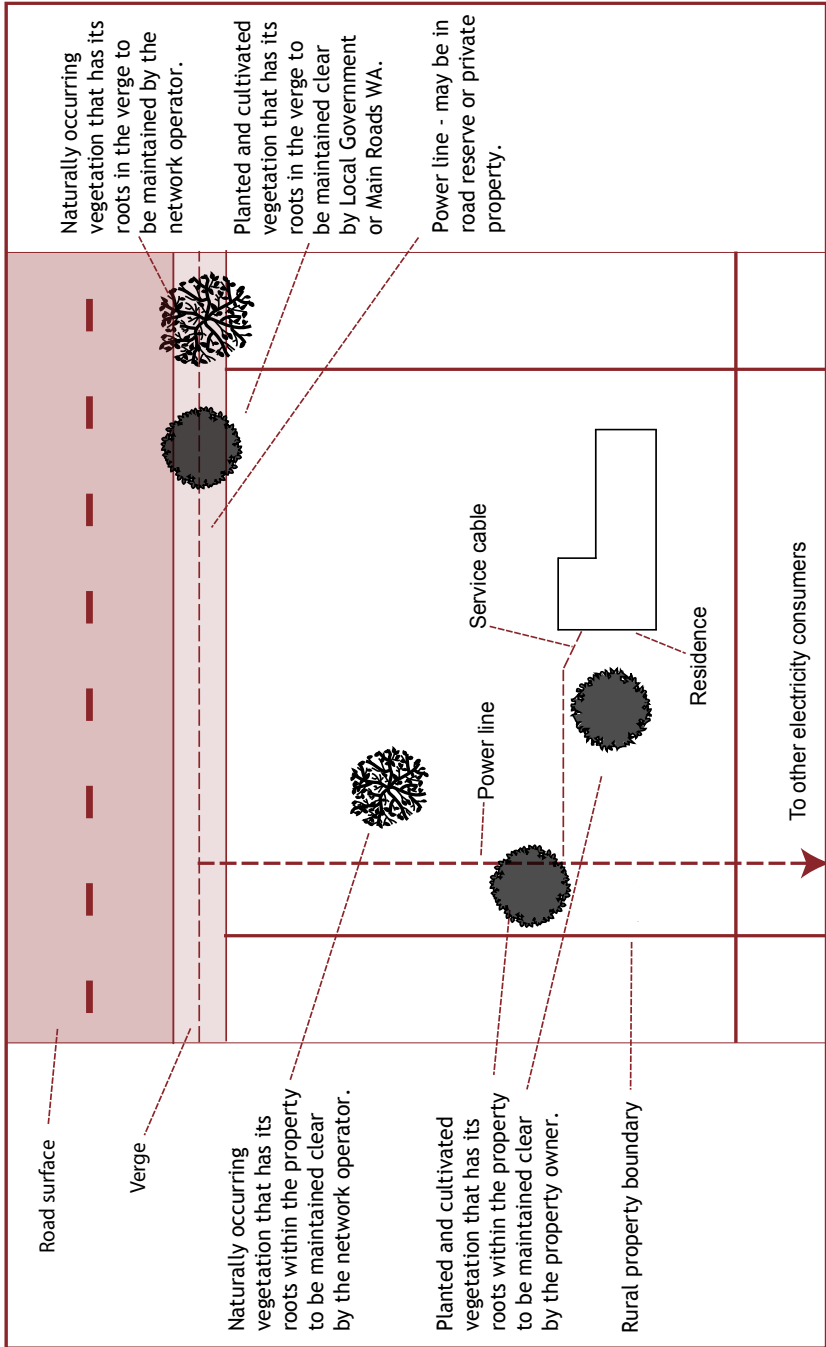
[subject to “Special network operators power line extension schemes” as covered on page 12]

(i) Where the vegetation has been planted or cultivated

Control of planted or cultivated vegetation is the responsibility of the owner/occupier of the property.

(ii) Where the vegetation is naturally occurring

Control of naturally occurring vegetation, such as on original bush land near power lines, is the responsibility of the network operator.



General rural areas (eg farms)

Special Western Power power line extension schemes

In these cases, the responsibilities for vegetation control may vary from those previously stated.

• **Contributory Extension Schemes**

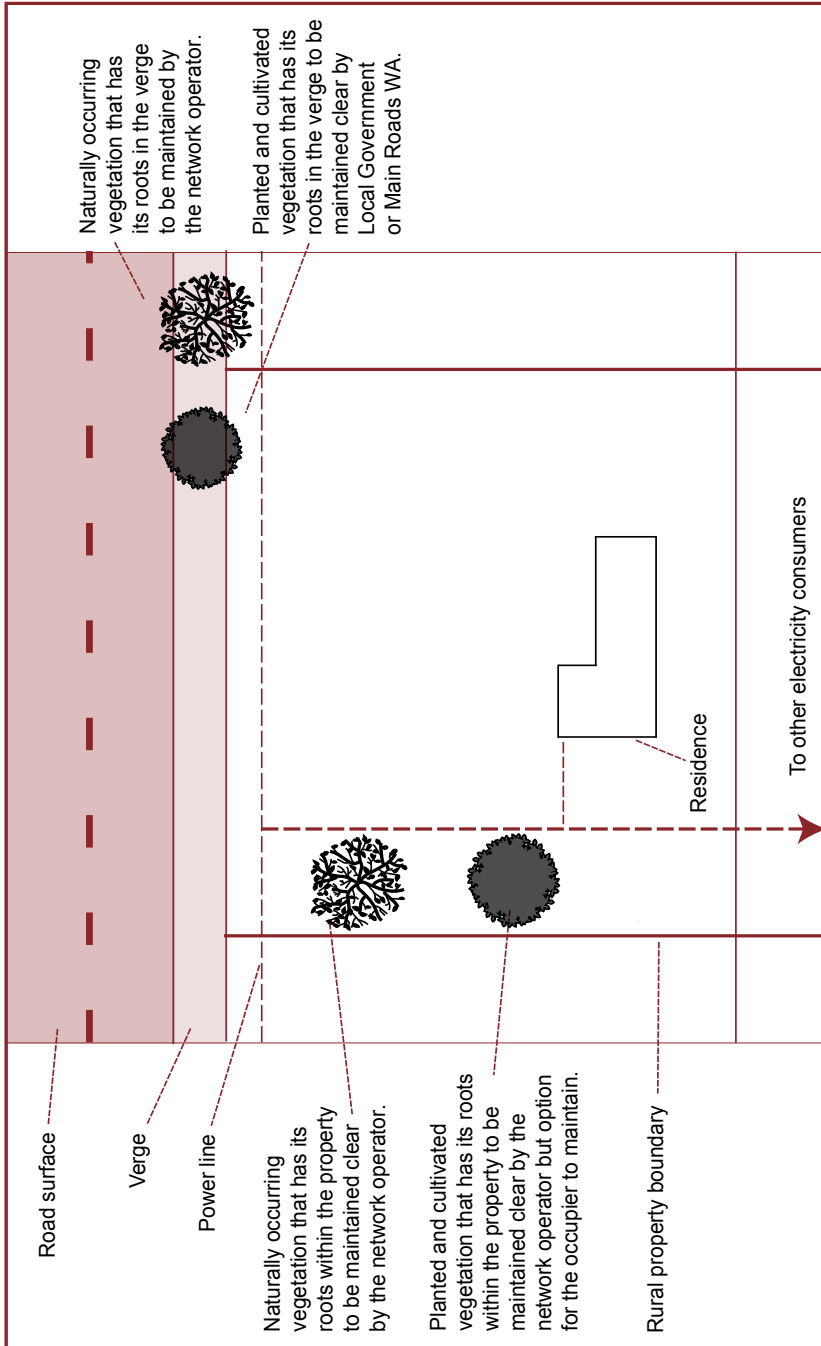
(refer to diagram page 13)

Network operator 'Contributory Extension Schemes' (CES), applicable to some rural areas, include a landowner/occupier maintenance component for which the network operator agrees to control all vegetation near power lines, whether naturally occurring, planted or cultivated, for the life of the agreement.

Where the vegetation is planted or cultivated, agreement may be sought between the network operator and the landowner/occupier as to the responsibilities for control of vegetation in those properties.

• **Supply Extension Schemes**

Network operator 'Supply Extension Schemes' (SES) were introduced to replace CES. Unlike CES, SES do not include a maintenance component. Therefore, responsibilities for vegetation control near power lines is the same as for normal power lines up to and including 33,000 volts, as detailed in these guidelines.



Rural areas - CES only

Control of vegetation - other situations

Control of vegetation near power lines energised at greater than 33,000 volts

Power lines with voltages greater than 33,000 volts are considered to be transmission lines and the network operator is responsible for control of vegetation near them. However, this may be varied when special vegetation management is required and is documented, or when special written agreements are reached between the network operator and the owners/occupiers of the land.

Control of vegetation near power lines under construction

The network operator is responsible for control of vegetation near its power lines under construction, up to the time of commissioning. For customer-funded power lines under construction, the proponent such as a mining company or developer is responsible for control of vegetation near those power lines.

Control of vegetation on land managed by government State agencies

In February 2004, the WA Premier issued a circular setting out the Government's policy relating to the control of vegetation near power lines.

In most circumstances, there is a single agency responsible for the management of each area of State Government land.

However, where the control and management of the land including national parks, state forests, nature reserves, road reserves and vacant crown land is shared between government agencies, the agency that effectively owns (controls) the land must liaise with the network operator and any occupier of part of the land to ensure that clear arrangements are in place for the effective management of vegetation near power lines, in accordance with these guidelines.

Notice to control vegetation

If a landowner/occupier is issued with a notice from the network operator to clear vegetation around a power line, it is the landowner/occupier's responsibility to have the vegetation cleared.

If the work is not carried out in a reasonable time as set out in the notice, the network operator may enter the land and carry out the work in the interests of community safety and preventing power interruptions and interference.

The network operator may legally recover the associated costs from the landowner/occupier.

Appendix

Table: Details of minimum vegetation clearances to be maintained around different types of voltages and conductors.

Table A below specifies minimum clearance zones from low voltage conductors and high voltage conductors less than 66,000 volts. These clearances are minimum clearances. An additional distance must be added for vegetation growth during the period between pruning times.

In high fire risk areas a risk assessment is to be carried out in conjunction with the Network Operator to determine a greater clearance distance.

Table A
Minimum Clearance Zones - Low Voltage Conductors and High Voltage Conductors Less than 66,000 Volts

Power line type	Clearance Space Dimensions		Branches permitted above power line
	Horizontal clearance (m)	Vertical clearance (m)	
LV insulated cables eg service, communications and aerial bundled conductor (ABC)	0.3 ²	0.3 ²	Yes
HV - ABC, insulated unscreened conductor and bare running earth or return neutral conductor	1.0	1.0	See note 3
Bare street light wire	2.0	0.6	See note 3
Bare service cable			
Bare LV conductors, span ¹ up to 70m	2.0	2.0	See note 3
Bare HV conductors, span up to 70m	2.5	2.0	See note 3
Bare conductors - span from 70 up to 100m spans up to 70m in high fire risk areas	4.0	2.5	See note 3
Bare conductors - span from 100 up to 200m	5.0 ⁴	2.5	See note 3

Notes to Table A

1. A span is the distance between two poles or between two towers.
2. A network operator can require this distance to be increased to 0.6 metres in areas subject to cyclonic weather conditions.
3. Vegetation is only permitted above the clearance space of network operator power lines, subject to a formal risk assessment, considering as a minimum:
 - (a) if it is in a high fire risk area;
 - (b) an opinion on the condition and suitability of the species of the vegetation by a recognised tree expert (eg Tree Surgeon, Arborist, Forester);

and where an occupier is responsible for vegetation control the network operator may require the occupier to provide an opinion as in 3(b) and if granting permission, must do so in writing.
4. A formal risk assessment must be carried out where the conductor sag is greater than 4m, for spans above 200m.

EnergySafety

303 Sevenoaks Street (entrance Grose Ave)
Cannington, WA 6107

Telephone (08) 6251 1900
Facsimile (08) 6251 1901
National Relay Service 13 36 77

Mailing address:

Locked Bag 14 Cloisters Square WA 6850

www.energysafety.wa.gov.au

Email: energysafety@dmirs.wa.gov.au

Regional offices

Goldfields/Esperance (08) 9026 3250
Great-Southern (08) 9842 8366
Kimberly (08) 9191 8400
Mid-West (08) 9920 9800
North-West (08) 9185 0900
South-West (08) 9722 2888

This publication has been produced by EnergySafety, a division of the Department of Mines, Industry Regulation and Safety.

This publication is available on request in other formats to assist people with special needs.

For enquiries about vegetation control around overhead power lines, telephone

Western Power on **13 13 51** or

Horizon Power on **13 23 51**