be energy safe

Trees and powerlines

Office of the Technical Regulator

For more energy information:

Web: sa.gov.au/energysafe

Phone: 8226 5500

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Powerlines are an important part of our everyday lives, bringing electricity to our homes and businesses.

Vegetation needs to be cleared from powerlines to avoid power outages, damage to the lines, fires or risks to people's safety.

It is a legal requirement that electricity network operators and occupiers of private property maintain safe clearance distances between vegetation and powerlines.

Government of South Australia

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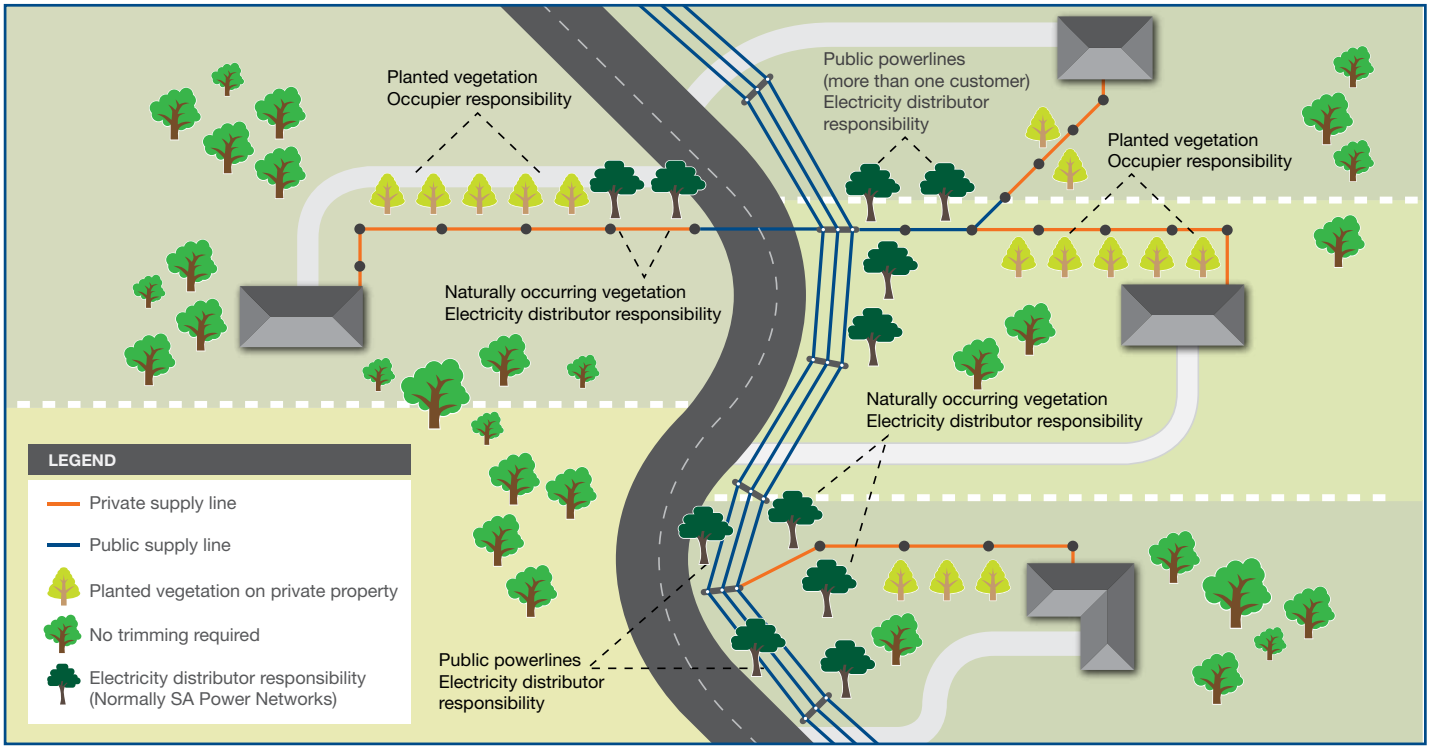


Image 1: Pruning responsibilities

Maintaining clearance zones around powerlines – who is responsible?

The clearance distances between vegetation and powerlines are legal requirements outlined in the *Electricity (Principles of Vegetation Clearance) Regulations 2010*.

The responsibility for pruning vegetation usually lies with the electricity network operator – usually SA Power Networks or, for the large transmission powerlines on steel towers, ElectraNet.

On private properties, the occupier of the property may be legally responsible for managing vegetation near powerlines, however, it depends on the type of powerline and vegetation.

See image 1 and the following explanations for more details.

Responsibilities of the occupier

The occupier of a private property is responsible for keeping the required clearance zone free of planted or nurtured vegetation around the powerlines that supply their property.

This responsibility does not apply to naturally occurring vegetation.

If the powerlines supply electricity to more than one property then it is the electricity network operator's responsibility to trim the vegetation along the section of powerline which services those properties.

If you are considering planting new trees near powerlines, see page 6.

Responsibilities of the electricity network operator

In South Australia the electricity network operator is responsible for maintaining the clearance zone around all public powerlines including trees hanging onto the road reserve from private property.

On private land, the network operator is responsible for keeping naturally occurring vegetation away from powerlines.

Where a powerline crosses private land and supplies electricity to more than one property, it is deemed to be a public supply line and vegetation clearance is the responsibility of the network operator.

In some circumstances a local council may agree with the network operator to take over the responsibility for pruning.

Determining required clearance distances between vegetation and powerlines – advice for occupiers

To determine the required clearance distance of vegetation from a powerline you need to know:

- if the powerline is located in a defined bushfire risk area
- the voltage of the powerline
- the type of conductor – i.e. fully insulated or uninsulated
- the span, or distance, between stobie poles or transmission towers – powerlines with greater span length can swing and sag further under windy and hot conditions and require greater clearance distances.
- the location of vegetation in relation to the closest stobie pole – powerline movements are greater midway between stobie poles and a greater clearance zone is needed.

Which areas are defined as bushfire risk areas?

The Adelaide Hills and most regional areas are considered bushfire risk areas. Most of the Adelaide metropolitan area and many developed townships are non-bushfire risk areas under the regulations.

Find out if your property is in a bushfire risk area by contacting the Office of the Technical Regulator or refer to Schedule 4 of the *Electricity (Principles of Vegetation Clearance) Regulations 2010*.

Determining the voltage and type of powerline

Find out the voltage of the powerlines by:

- visiting sa.gov.au/energy/powerlinesafety
- contacting the Office of the Technical Regulator on 8226 5500
- contacting SA Power Networks on 1300 650 014.
- High voltage powerlines are those of more than 1,000 V (1 kV) of electricity. Low voltage powerlines refer to lines of less than 1,000 V.

Images 2 and 3 show common types of powerlines in South Australia.

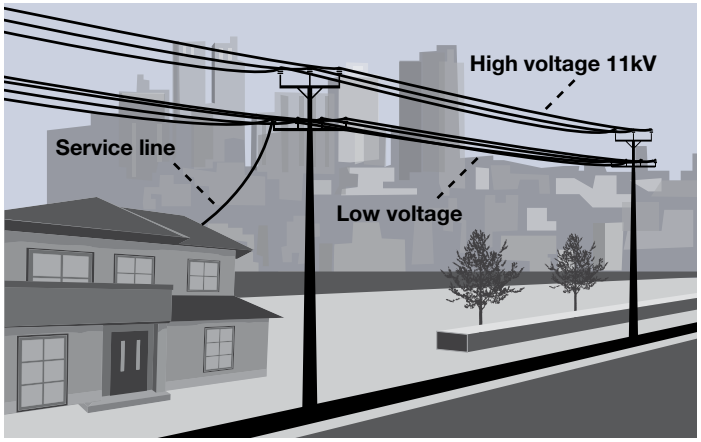


Image 2: Typical powerlines in built up areas

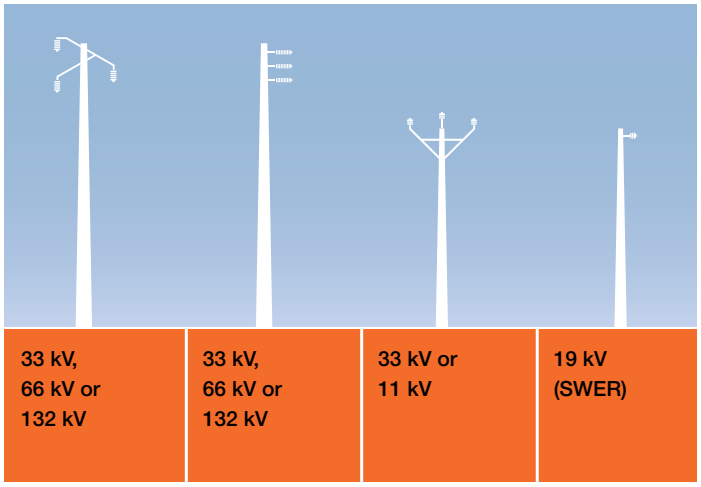


Image 3: Most common powerlines in South Australia

Clearance zones

A clearance zone is the minimum safe distance between vegetation and powerlines. It allows the powerlines to safely swing in windy conditions without being damaged or starting fires.

It is a legal requirement for the clearance zone to be kept free of vegetation at all times.

Buffer zones

A buffer zone is an additional area around a clearance zone.

It defines the maximum extent to which the vegetation may be trimmed. Trimming beyond the buffer zone is not permitted.

Trimming vegetation within the buffer zone will usually allow the clearance zone to remain clear until the next trimming is due.

For private properties in non-bushfire risk areas, the buffer zone surrounding a clearance zone is:

- 2 metres for distribution powerlines (low voltage)
- 3 metres for high voltage transmission powerlines (normally on steel towers).

Image 5 shows an example for the shape of the buffer zone that applies to uninsulated distribution powerlines in bushfire risk areas.

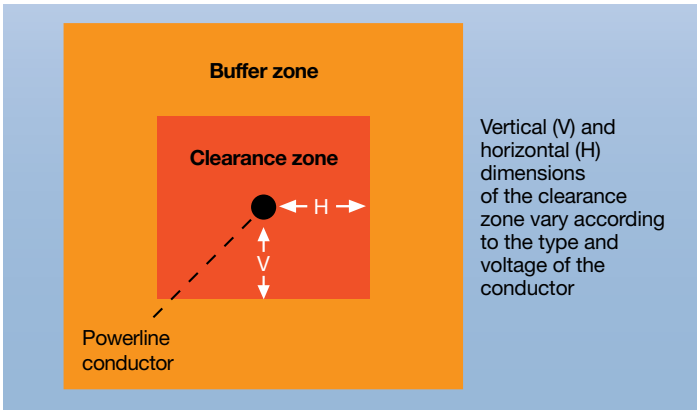


Image 4: Cross section of a powerline showing the clearance and buffer zone

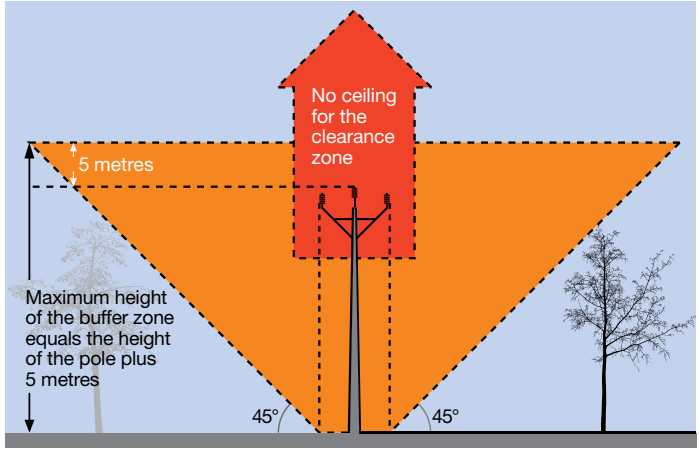


Image 5: Buffer zone for uninsulated powerlines in bushfire risk areas

Clearance zone dimensions

Dimensions for clearance zones vary according to the type of conductor and its location.

Images 6, 7, 8 together with table 1 below show the requirements for the most common scenarios as described below.

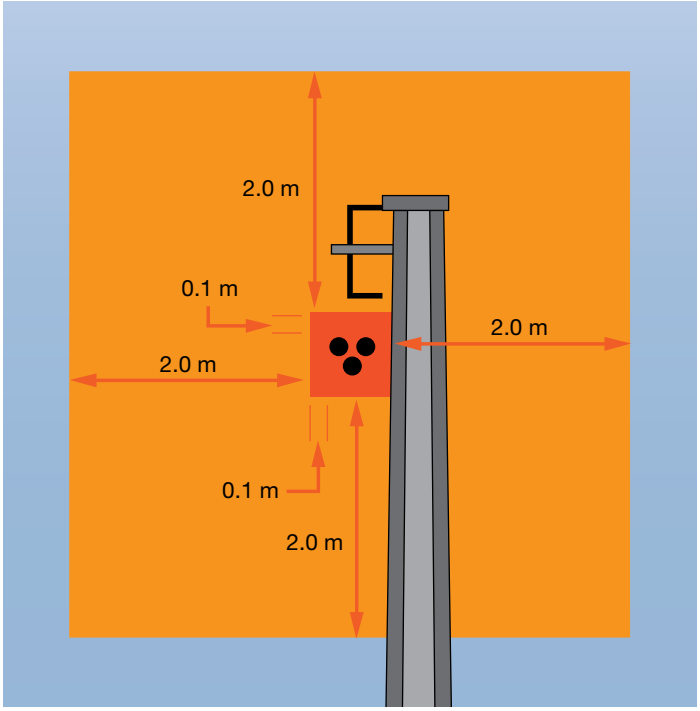


Image 6: Fully insulated powerlines in all areas and low voltage powerlines in non-bushfire risk areas

Non-bushfire risk areas

Fully insulated powerlines (all voltages) and uninsulated low voltage powerlines

A clearance zone of 0.1 metre is required.

Uninsulated high voltage powerlines

The clearance zone depends on the voltage and span of the powerlines, see image 7 and table 1 for the required distances.

The middle sections of a cable between two poles can swing or sag more than the sections closer to the poles and require greater vertical and horizontal clearances.

Bushfire risk areas

Fully insulated powerlines

A clearance zone of 0.1 metre is required.

Uninsulated powerlines

The clearance zone depends on the voltage and span of the powerlines, see image 8 and table 1 for the required distances.

There is no ceiling on the vertical clearance above the conductor.

The middle sections of a cable between two poles can swing or sag more than the sections closer to the poles and require greater vertical and horizontal clearances.

Table 1: Clearance zone dimensions for various types of powerlines in bushfire and non-bushfire risk areas

Insulation of powerlines	Voltage of powerlines	All spans	Span in metres, V=Vertical, H=Horizontal													
			0–50 m		50–100 m		100–150 m		150–200 m		200–300 m		300–400 m		Over 400 m	
		Pole, P	V	H	V	H	V	H	V	H	V	H	V	H	V	H
Insulated	All voltages in all areas	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-	-	-	-	-	-	-	-
Bare or partially insulated (covered)	Less than 1 kV in non-bushfire risk areas	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-	-	-	-	-	-	-	-
	Less than 1 kV in bushfire risk areas	0.5	1.0	1.0	1.5	2.5	1.5	3.5	-	-	-	-	-	-	-	-
	7.6 kV and 11 kV in all areas	0.5	1.5	1.5	2.0	2.5	2.5	3.5	2.5	4.5	2.5	6.0	2.5	6.0	2.5	6.0
	19k V in all areas	0.5	1.0	1.0	1.0	1.0	1.0	2.5	1.0	2.5	1.5	5.0	2.0	7.0	2.0	9.0

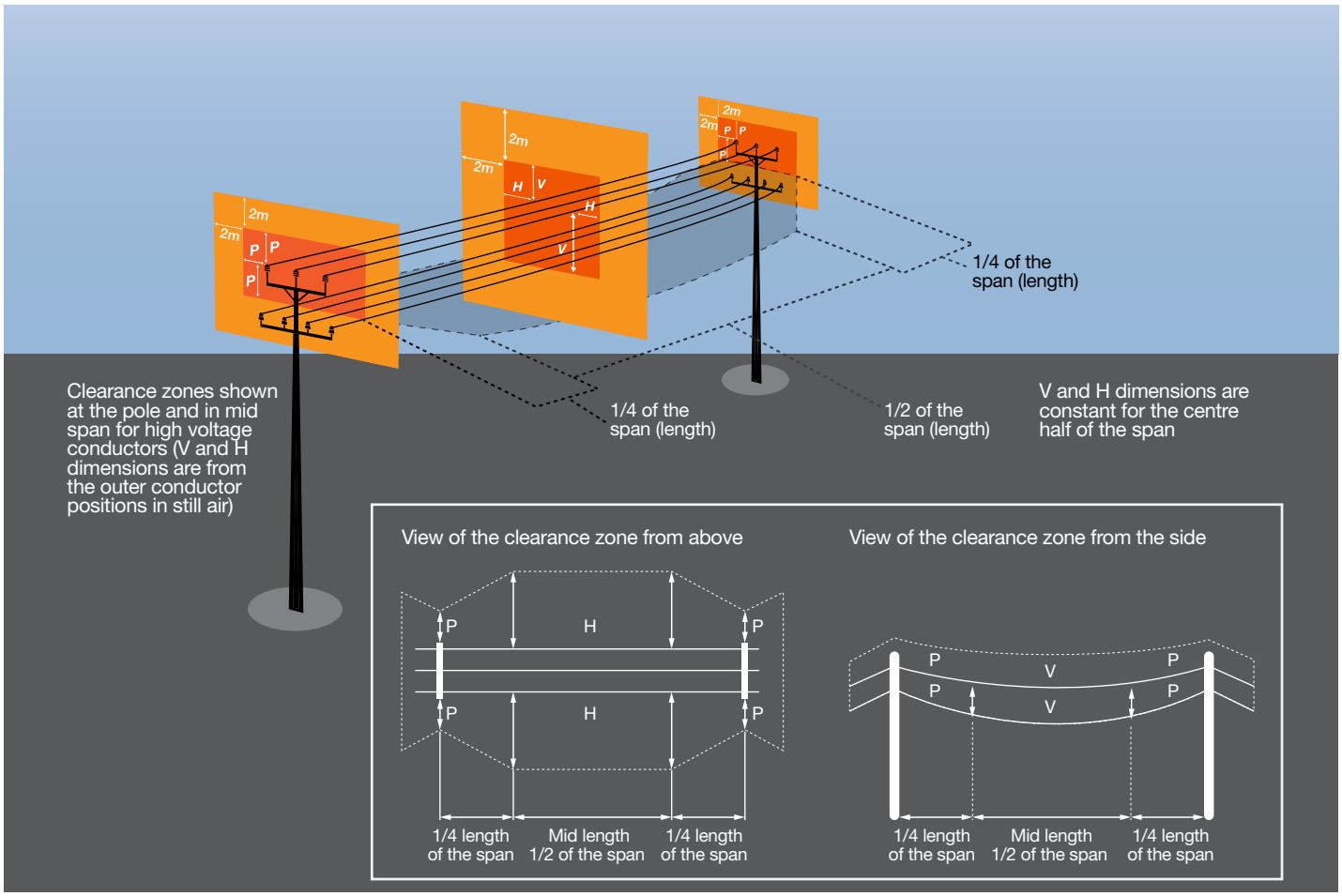


Image 7: Uninsulated powerlines in non-bushfire risk areas (private land)

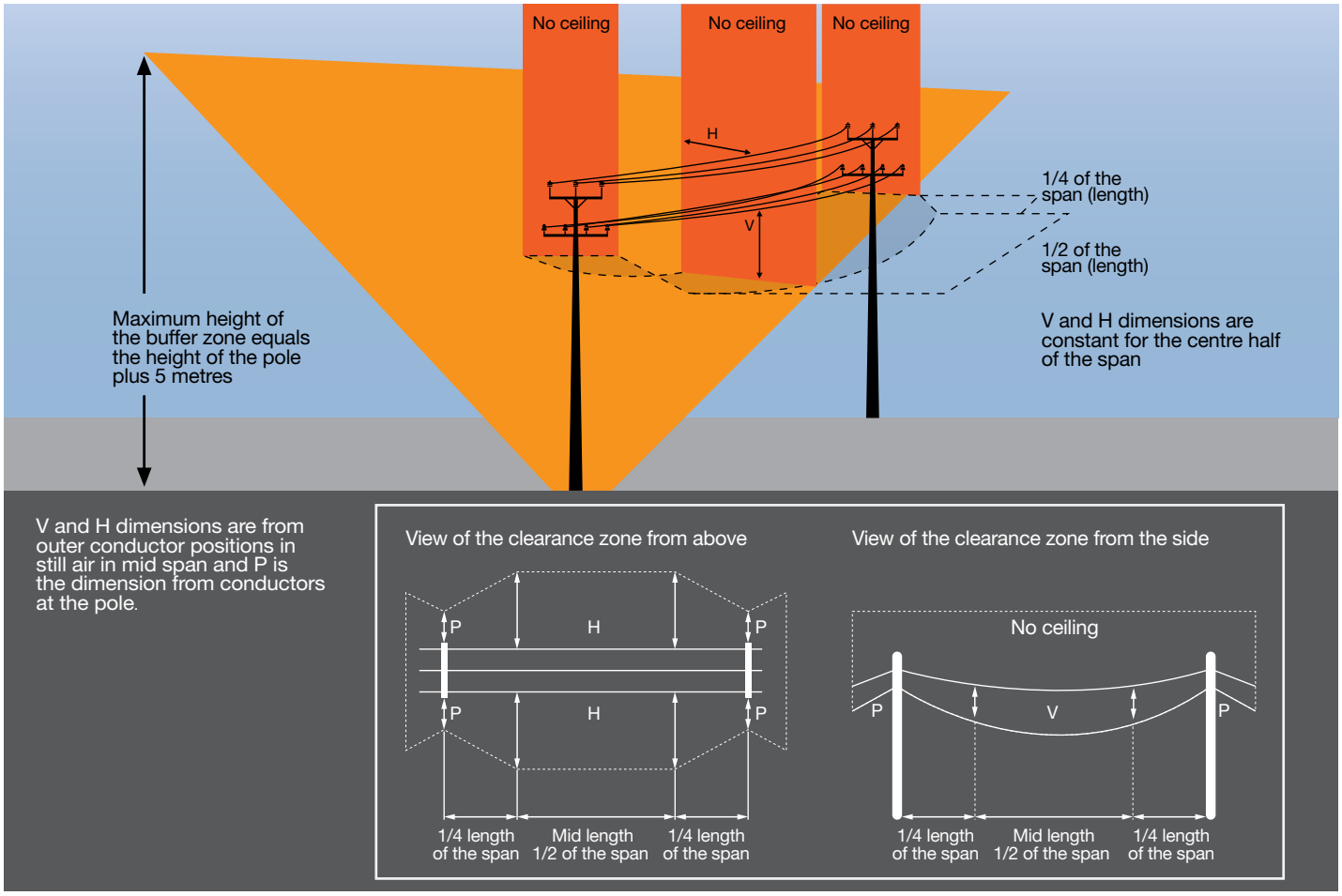


Image 8: Uninsulated powerlines in bushfire risk areas

Safety when working near powerlines

Working near powerlines can be dangerous. If you intend to carry out the vegetation clearance yourself, you need to be familiar with safety principles of working near powerlines.

Contact the Office of the Technical Regulator or visit sa.gov.au/energysafe for further details.

If you do not wish to carry out the maintenance yourself, consider hiring a professional contractor to clear the vegetation for you.

Emergency clearances during fire danger season

During fire danger season, vegetation that is too close to powerlines can be an extreme fire hazard.

If the occupier has not maintained the safe clearance zones around the private supply lines, the electricity network operator may clear the vegetation. The electricity network operator may also recover the cost of this work from the occupier.

If the electricity network operator is unable to clear the vegetation in time, the supply lines may be disconnected at the occupier's expense. The disconnection may affect other properties in the area.

Clearance objections and complaints

The electricity network operator has to give the occupier 30 days notice prior to commencing vegetation clearance on private property.

Emergency clearances are exempt from this requirement.

Any objection to the proposed clearance should be discussed with the electricity network operator. If the objection is unresolved, you may contact the Office of the Technical Regulator for further clarification.

You can also lodge a written objection with the Office of the Technical Regulator (within 21 days of receipt of the notice) about matters set out in the notice.

Please note that the Office of the Technical Regulator may not consider your objections if you have not attempted to discuss and resolve them with the electricity network operator.

Planting trees near powerlines

Planting limitations

To minimise the impact of trees growing too tall and into the clearance zone, the type and location of trees you can plant near powerlines is limited by legislation.

Which trees can I plant?

The mature height of a tree is the main criteria to determine how close it can be planted to particular types of powerlines.

There are two lists of trees that are permitted within certain distances to powerlines:

- list 1 – trees with mature height of 3 metres or less
- list 2 – trees with mature height of 3–6 metres

In addition to the trees on the two lists, all vegetation with a mature height of 2 metres or less is exempt from the planting restrictions.

Tree lists 1 and 2 are available from the Office of the Technical Regulator or online at sa.gov.au/energysafe.

Planting distances

Planting limitations only apply within a certain distance from the powerlines. This distance depends on the voltage and insulation of the powerlines and whether the powerlines are located in a bushfire risk area.

Table 2: Prescribed distances for planting near powerlines

Powerline voltage	**Prescribed distance** *in metres from the centre of the pole/tower*
275,000 V	12.5 m
132,000 V excl. single poles	15 m
132,000 V single poles	10 m
66,000 V	6.5 m
All other voltages	6 m

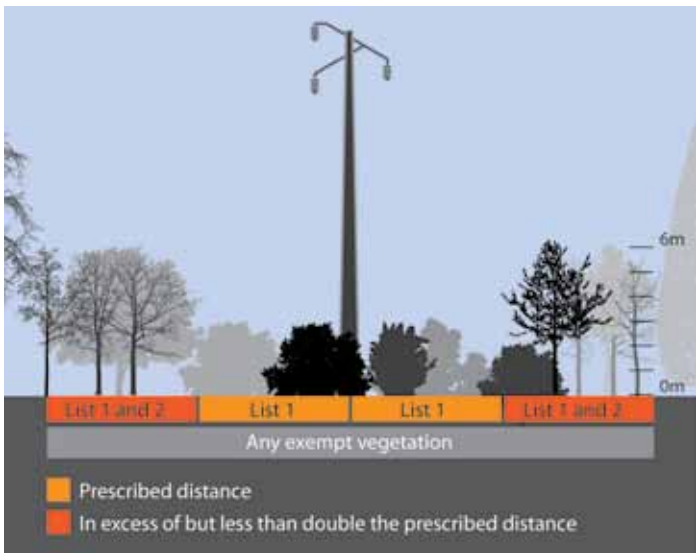


Image 9: Planting near uninsulated powerlines in bushfire risk areas

Planting within bushfire risk areas

Planting within the prescribed distance

Unless powerlines are fully insulated, only trees from list 1 and trees with a mature height of less than 2 metres can be planted.

For insulated powerlines, only trees from list 1, list 2, and trees with a mature height of less than 2 metres can be planted.

Planting within the area from the prescribed distance to double the prescribed distance

Only trees from list 1, list 2, and trees with a mature height of less than 2 metres can be planted.

Planting beyond double the prescribed distance

Any tree can be planted.

Planting within non-bushfire risk areas or where powerlines are fully insulated

Planting within the prescribed distance

Only trees from list 1, list 2, and trees with a mature height of less than 2 metres can be planted.

Planting beyond the prescribed distance

Any tree can be planted.

All areas – planting near fully insulated powerlines

Planting within the prescribed distance

Only trees from list 1, list 2, and trees with a mature height of less than 2 metres can be planted.

Planting beyond the prescribed distance

Any tree can be planted.

Planting near underground powerlines

Near an underground powerline of 66 kV or more, only trees from list 1 and trees with a mature height of less than 2 metres can be planted within 3 metres of the centre of the underground powerline.

Applying for an exemption

The Technical Regulator may grant an exemption from planting restrictions.

If you intend to plant a tree that is not permitted by the regulations near a powerline, you must first apply for an exemption.

Except for timber plantations, the Technical Regulator may grant an exemption from planting restrictions following consultation with the electricity network operator.

The exemption typically includes conditions that a person must manage and maintain the vegetation and clearance distances and that it will be reviewed if the occupier or owner of the property changes.

Trees that are permitted to be planted under an exemption from planting restrictions will still need to be kept trimmed to the regulation distance from the powerlines.

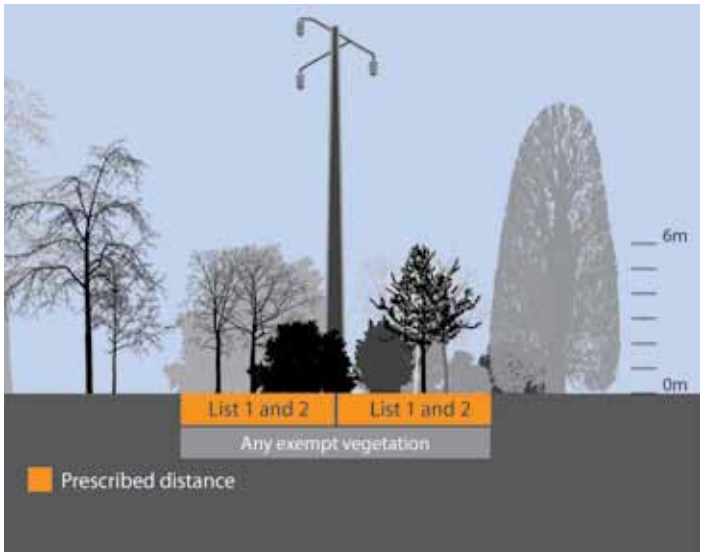


Image 10: Planting near all powerlines in non-bushfire risk areas or near insulated powerlines in all areas

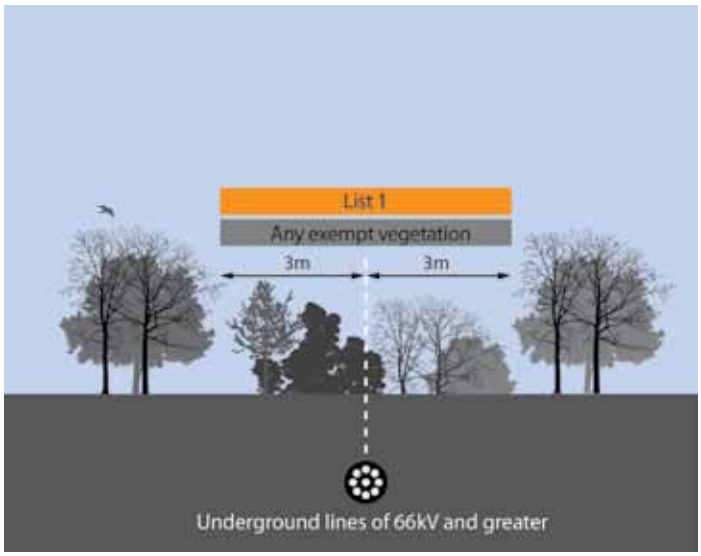
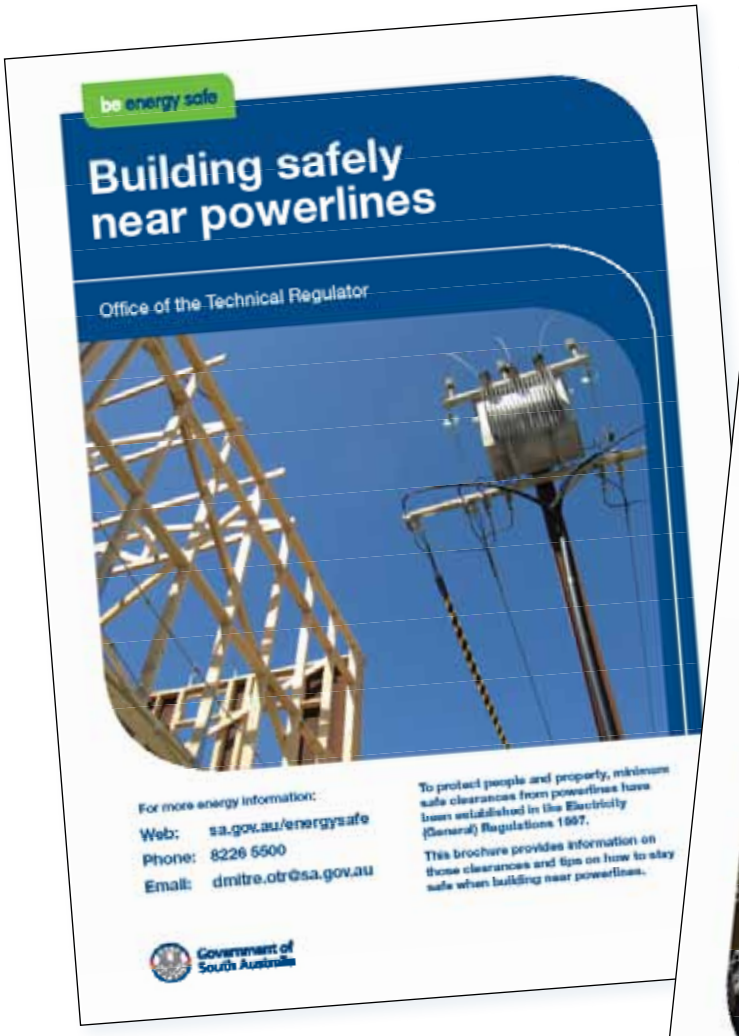
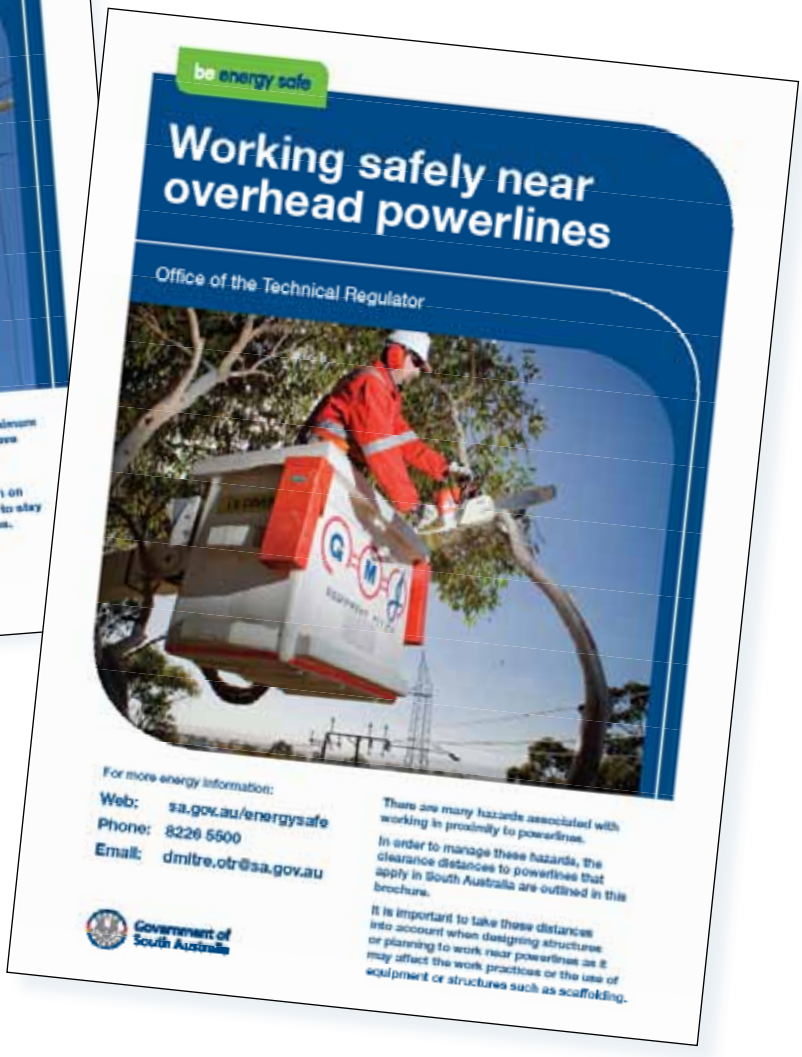


Image 11: Planting near 66 kV underground powerlines



See our "Building safely near powerlines" brochure for information on safe clearance distances.



See our "Working safely near overhead powerlines" brochure for information on the many hazards associated with working in proximity to powerlines and how to manage these hazards, including when trimming vegetation.

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