

TO: Customers, Service Providers and EnergyAustralia Staff

Amendments to EnergyAustralia's Network Standard NS 0126, *Specification for High Voltage Overhead Conductors*, February 1998.

Introduction

This Customer Installation Advice (CIA) amends Network Standard (NS) 0126, *Specification for High Voltage Overhead Conductors*, which will be updated in due course.

These amendments are necessary to indicate vegetation clearance requirements.

Refer also to:- CIA 1074, dated 20/9/99, for amendments 1 to 4 inclusive, and
CIA 1085, dated 22/11/99, for amendments 5 to 9 inclusive.

Amendment 10.

Add the following paragraph to the *Summary* on the page prior to the *Contents* page:-

This document also covers vegetation clearance requirements for all lines operating at system voltages above 1000 Volts, including tower lines.

Amendment 11.

Add the following clause after *Disclaimer* on the page prior to the *Contents* page:-

INTERPRETATION

In the event that any user of this Standard considers that any of its provisions is uncertain, ambiguous or otherwise in need of interpretation, the user should request EnergyAustralia to clarify the provision. EnergyAustralia's interpretation shall then apply as though it were included in the Standard, and is final and binding. No correspondence will be entered into with any person disputing the meaning of the provision published in the Standard or the accuracy of EnergyAustralia's interpretation.

Amendment 12.

Add a new clause (4.3.6) to page 8, as follows, and add a reference heading in the *Contents* table:-

4.3.6 Vegetation Clearances

Accredited Service Providers designing new high voltage overhead lines must comply with the requirements of the Electricity Association of NSW document ISSC 3 – *Guide to Tree Planting and Maintaining Safety Clearances Near Power Lines*.

Prior to energising any new high voltage overhead line, vegetation clearances must be in accordance with the requirements of Appendix B of this Network Standard, as amended by this CIA. The clearances indicated in Appendix B are to prevail over the clearances indicated in document ISSC 3. (Appendix B also shows clearance requirements for new low voltage overhead lines.)

Vegetation clearance work must be carried out in accordance with EnergyAustralia's Electrical Safety Rules.

Amendment 13.

Add the following paragraphs after the first paragraph of Section 5, page 29, *High Voltage Aerial Bundled Cable*.

When erecting ABC through trees, consider:

- the risk of abrasion of the ABC by trees,
- sag variations and the effect of wind loading,
- the effect of wind loading on trees or branches bearing on the ABC, and
- the danger of trees providing access for unauthorised climbing.

Branches which may exert excessive pressure on the ABC must be removed.

Whether a particular branch will bear onto the ABC system under the effects of foliage or wind can only be judged by taking into account the individual circumstances and whether the branch can deflect enough to be a danger.

Where unauthorised access is a potential problem, consideration should be given to the possible danger of children climbing the trees.

Amendment 14.

Add the new Appendix B on pages 4 to 10 inclusive of this CIA, and change the heading reference in the Contents table.

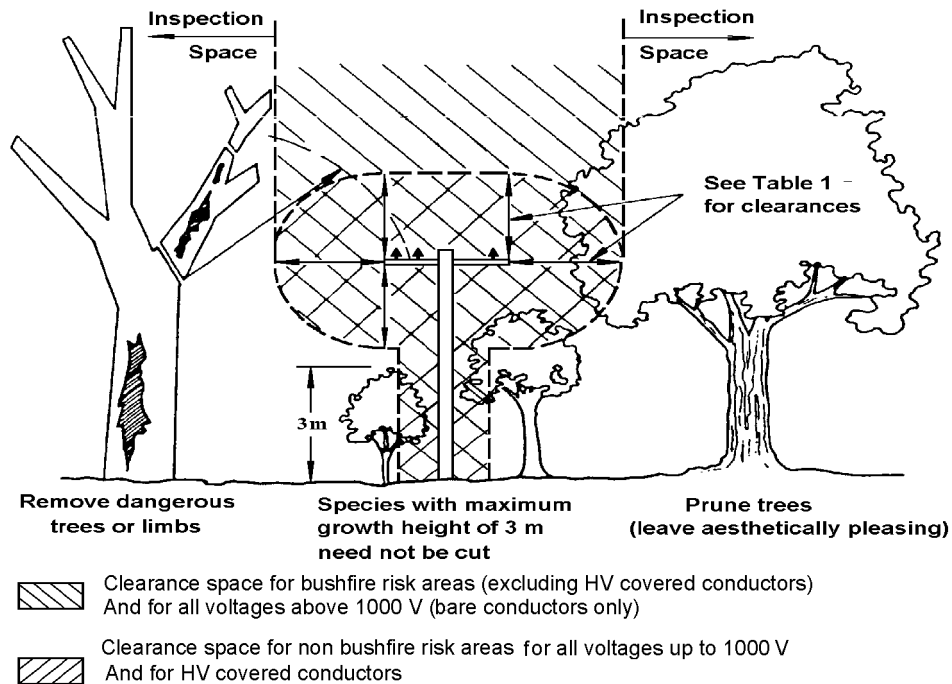
J Mackay

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Manager – Network Assets

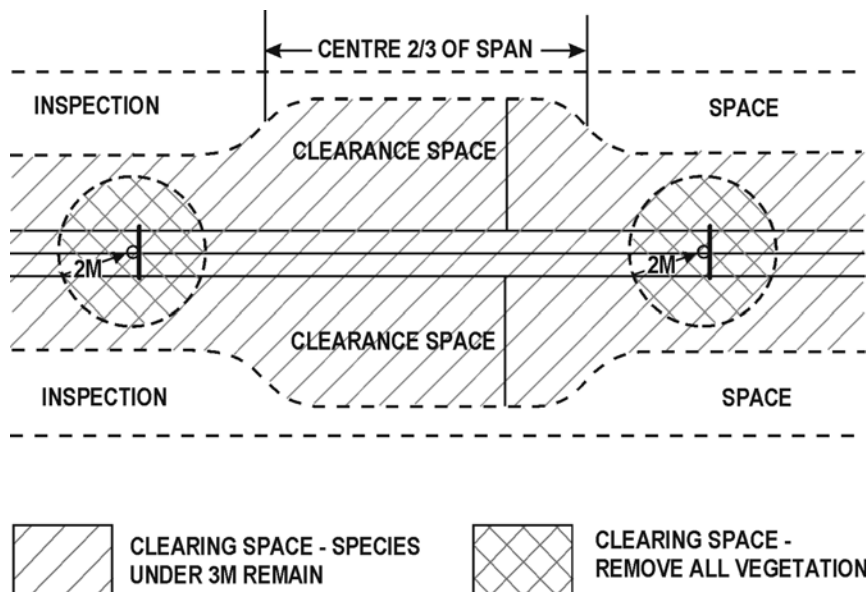
APPENDIX B VEGETATION CLEARANCE REQUIREMENTS

All vegetation management work must comply with all relevant legislation. Any work within 3 metres of EnergyAustralia's mains must only be performed by persons individually authorised by EnergyAustralia and in accordance with EnergyAustralia's *Electrical Safety Rules*.

Figure 1. Vegetation Trimming Clearances - Bare and Covered Conductors (Cross Sectional View)



Vegetation Trimming Clearances - Bare and Covered Conductors (Overhead View)



Notes for Figure 1:

1. It is desirable to always achieve the clearance requirements of Figure 1, especially the clear space above power lines in bushfire risk areas. If this is not practicable, a minimum of 3 metres is to be achieved, and all dead and obviously dying branches which may interfere with the mains, are to be removed.
2. Where the Contractor/Council/Owner/Occupier considers that by allowing tree trunks or major branches of large healthy trees to remain within the specified clearance area:
 - no one climbing the trunks or branches will be able to come into contact with the overhead construction, and
 - there will be no threat posed to the overhead construction, and
 - there will be no risk of bushfire being caused by the trunks or branches; the matter shall be referred to EnergyAustralia for written approval to leave the trunks or branches within the specified clearance area.
3. Where vegetation is interfering with a pole, standard or stay wire, or any attachment on a pole or standard, a minimum vegetation clearance of two metres is to be achieved in all directions around the pole, standard, stay wire and attachment. Where it is impractical for this clearance to be achieved, vegetation is to be trimmed so that the pole, standard, stay wire and any attachment on the pole or standard, can be safely accessed. Vegetation must be cleared to enable each pole to be safely accessed from a ladder facing oncoming traffic, without interference to pedestrians or vehicles. Trees and tree branches must be cleared where necessary to prevent unauthorised access to pole steps or other pole attachments which are normally out of reach.

Table 1: Vegetation Trimming - Minimum Clearances

Conductor Type and Voltage	Clearances at pole to nearest conductor (metres)		Clearance along middle 2/3 of span to nearest conductor in rest position (metres)	
	Urban	Bushfire Risk	Urban	Bushfire Risk & Urban Spans > 100m
LV Aerial Bundled Cable (including XLPE Insulated Service Wires)	0.5 *	0.5 *	1.0*	1.5 *
HV Aerial Bundled Cable	0.5 *	0.5 *	1.0*	1.5 *
Up to and including 1000V - Bare and Covered Conductor	1.0	1.5	1.5	2.5#
>1000V to 33 kV Covered Conductor	1.0	1.0	2.0	2.5
>1000V to 22 kV Bare Conductor	1.5	2.0 @	2.5	3.5# @
>22 kV to 66 kV Bare Conductor	2.0	2.0	3.0	4.0#
> 66 kV to 132 kV Bare Conductor	3.0	3.0	4.0	5.0#
Around supports (such as poles) (all voltages)	2.0			
Around stay wires (all voltages)	2.0			

Notes for Table 1:

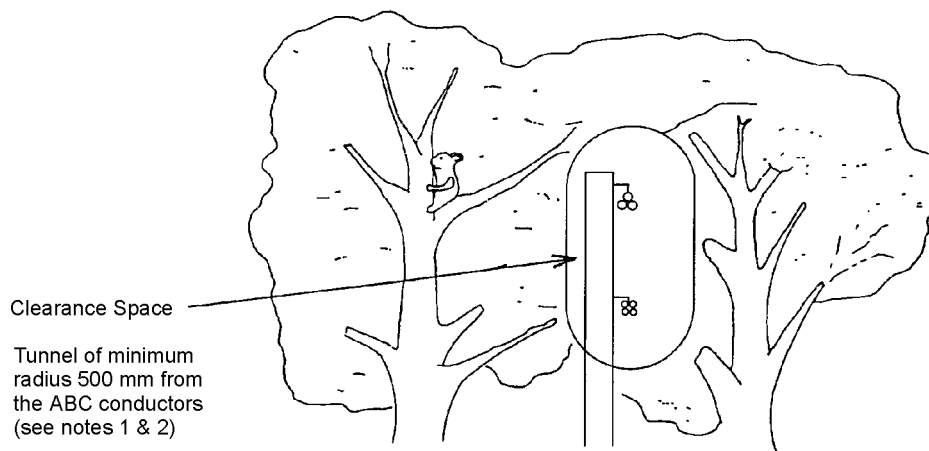
Trim any vegetation which is encroaching within the clearance envelope or will encroach within the growing/inspection cycle (typically 1 year).

* see Figure 2.

add 1.5 m for spans between 200m and 400m and 2.0 m for spans greater than 400m.

@ add 4.0 m for new construction – clearances must exist before the mains are erected.

Figure 2. Vegetation Trimming Clearances - Aerial Bundled Cable Systems

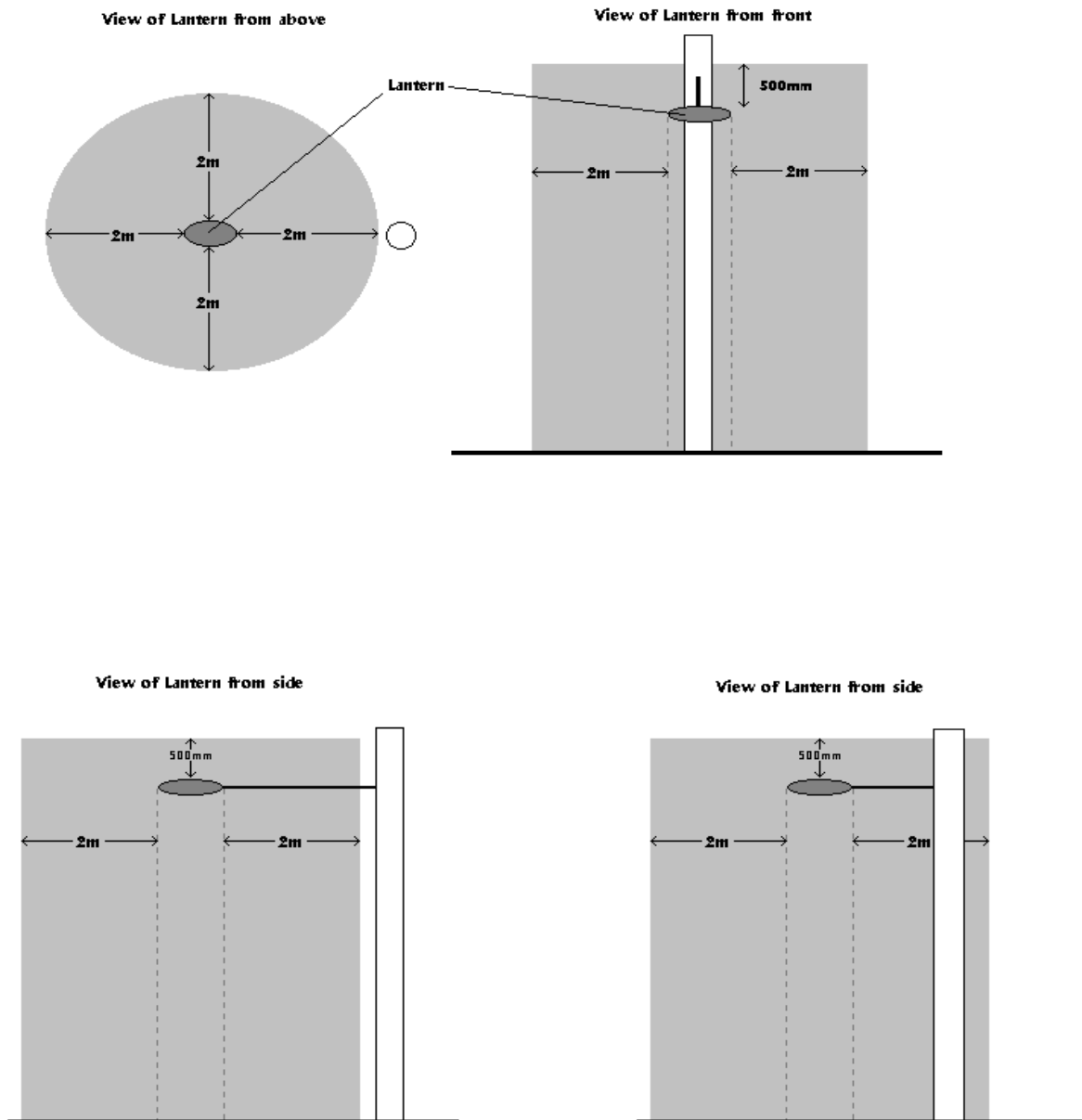


Notes for Figure 2.

Where Aerial Bundled Cables are installed, branches which are less than 15 mm in diameter and which are not in constant contact with the cables may remain within the specified clearance area.

1. Trim any branches or twigs in the aerial bundled cable clearance tunnel or which will encroach into the tunnel within the growing cycle (typically 1 year), which are thicker than 15 mm in diameter or where the branch or twig is in constant contact with the cables. The clearance tunnel should allow for variation in sag between support structures. See Table 1 for clearance requirements.
2. Leaves and twigs are otherwise allowed to remain in the clearance tunnel.
3. Vegetation and branches which overhang or nearly overhang the clearance tunnel and which are obviously likely to break and fall onto the conductors within the growing cycle (typically 1 year) should be trimmed and removed.
4. Access to support structures for construction and maintenance needs to be allowed, to ensure reliability and staff safety during operations and maintenance works.

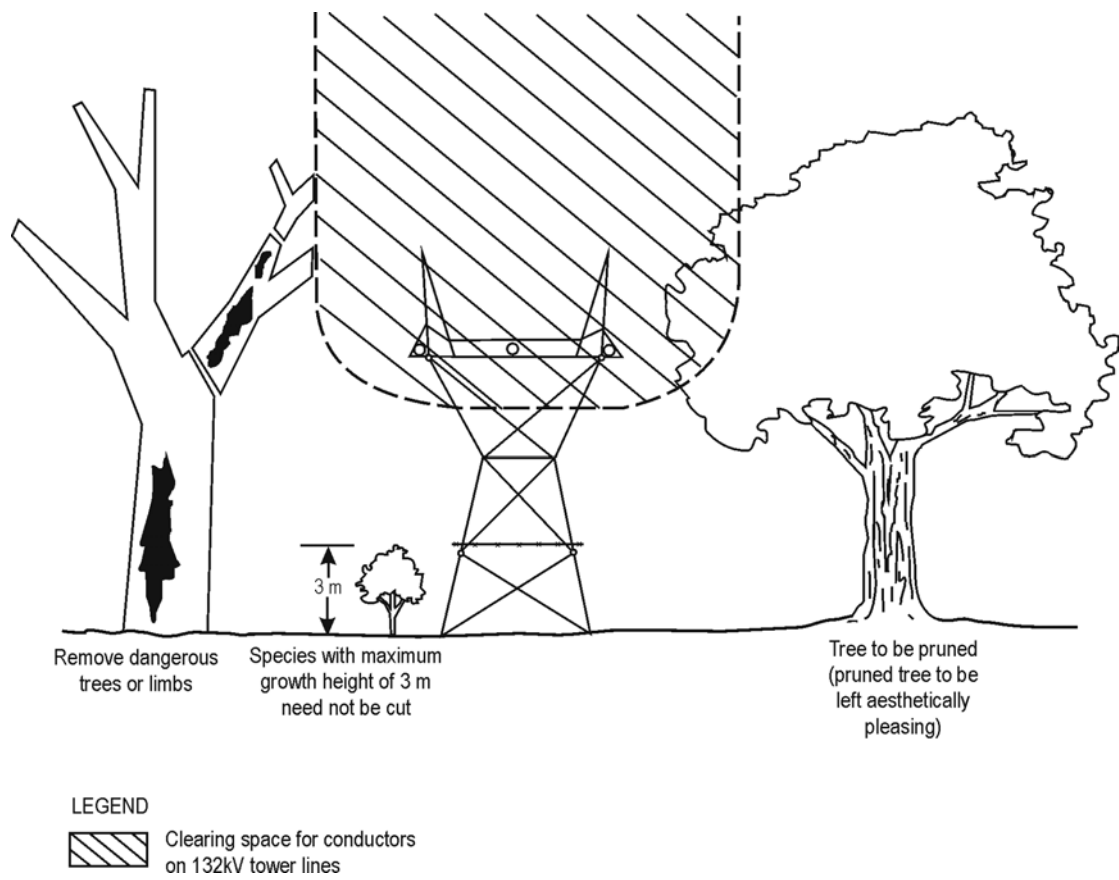
**Figure 3. Vegetation Trimming Clearances –
Street Lighting Luminaires (Lanterns)**



Notes for Figure 3.

Vegetation is to be trimmed to allow a minimum of 2 metres horizontal clearance from the head of the lantern and extending in the vertical plane from 500mm above the lantern to groundline.

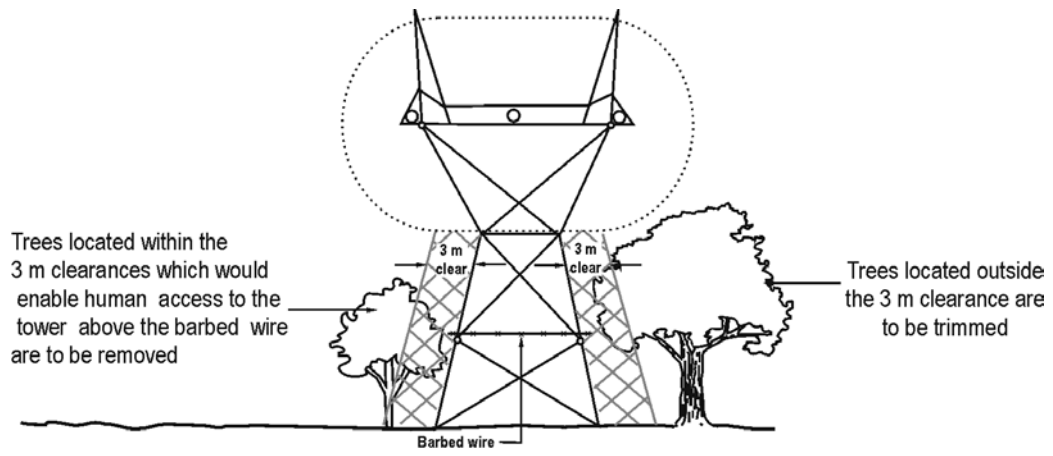
Figure 4A. Vegetation Trimming Clearances – Tower Lines




(Refer also to Figure 4B.)

Figure 4B. Vegetation Trimming Clearances –

Tower Lines.



LEGEND

 Clearing space to the steel tower

