

ISSC 3

GUIDELINE FOR MANAGING VEGETATION NEAR POWER LINES



*Integrating Community, Safety
and Environmental Values*

December 2005

INDUSTRY SAFETY STEERING COMMITTEE (ISSC) GUIDELINES

In New South Wales, statutory safety requirements for electricity transmission, distribution and utilisation are contained in the Electricity Supply (General) Regulation 2001 and the Electricity Supply (Safety and Network Management) Regulation 2002. The Network Management Plans and other Safety Plans required under the latter regulation are prepared by the five NSW Network Operators. The regulation specifies the safety outcomes to be achieved. The means of achieving those outcomes are matters to be determined by each Network Operator.

The NSW electricity supply industry has traditionally published an extensive series of guideline documents. These set out the industry's view of minimum practices, which would enable an organisation, or individual, to fulfil the regulatory requirements.

Whilst compliance with the Plan is mandatory, organisations or individuals may choose to depart from the recommendations of the guides provided that the necessary duty of care is exercised and the regulatory requirements are fulfilled.

REVISION HISTORY

This Guideline was first published by the Department of Minerals and Energy as the "Guidelines for Tree Planting and Maintaining Safety Clearances Near Power Lines". The Electricity Council of New South Wales updated the Second Edition 1990 in February 1992: "Guide to Tree Planting and Maintaining Safety Clearances Near Power Lines - EC 3".

The Electricity Association of NSW (EA of NSW) published a revised guide ISSC3 on behalf of The Industry Safety Steering Committee (ISSC) in October 1996. A further review was conducted in 2001 under the auspices of the EA of NSW, but that review did not reach the publication stage.

In July 2002, the Minister for Energy reconstituted the ISSC following the 'winding up' of the EA of NSW, and the newly formed ISSC, under the secretariat and chairmanship of the Department of Energy, Utilities and Sustainability, conducted this latest revision.

DISCLAIMER

While due care has been exercised in the compilation of this Guideline, much of the content has been sourced externally to the ISSC and the Department of Energy, Utilities and Sustainability. Thus the Department of Energy, Utilities and Sustainability cannot accept responsibility for the content.

This Guideline is designed on the basis that it will be used in its entirety, and persons who use or observe parts of the publication without paying heed to the entirety of the publication do so at their own risk.

This Guideline has been prepared on the basis that the user will be appropriately trained, qualified, authorised and competent. This Guideline is not intended for use by untrained or unqualified persons, and anyone in that category using the guide does so at his/her own risk.

This Guideline does not purport to ensure compliance with all relevant statutes and regulations, such as occupational health and safety laws. Users must satisfy themselves as to the requirements of all relevant laws.

PREFACE

This Guideline was reviewed by a Working Group of the Industry Safety Steering Committee of New South Wales (ISSC), and has been prepared for the benefit of the Community, Network Operators, Service Providers, Local Councils and other Government agencies.

The Working Group included representatives from many stakeholders, including the NSW Network Operators, the Department of Energy, Utilities and Sustainability, Department of Local Government, WorkCover, the NSW Heritage Office, Local Government and Shires Associations of NSW, the Electrical Trades Union and Local Councils.

NSW Network Operators and the community recognise the value of trees in the landscape. Trees and vegetation therefore should be retained wherever appropriate. This guideline will provide options in the management of vegetation primarily aimed at the long-term harmonious co-existence of vegetation and overhead power lines.

The Network Operators have an ethical, business and statutory obligation to keep their electrical assets safe and operable. To meet these obligations, vegetation near electrical assets requires management in order to maintain the safe and reliable operation of the electricity network. A reliable and safe power supply underpins the economy of NSW and our community life.

It is recognized that the management of vegetation in the vicinity of power lines can be a sensitive and emotional issue with the community.

TABLE OF CONTENTS

	Page
OBJECTIVE	1
SCOPE	1
APPLICATION	1
DICTIONARY	2
1. OVERVIEW OF RELEVANT LEGISLATION	6
1.1 General	6
1.2 Part A: Network Activities and Environmental Obligations – Reference Table	7
1.3 Part B: Major Environmental Laws	8
1.3.1 Waste Management	8
1.3.2 Land Contamination	9
1.3.3 Air Pollution	10
1.3.4 Hazardous Substances	10
1.3.5 Water Pollution	10
1.3.6 Noise Pollution	11
1.4 Part C: Relevant Legislative Provisions	12
1.4.1 Environmental Planning and Assessment Act 1979	12
1.4.2 Vegetation Clearance	13
1.4.3 The Threatened Species Conservation Act 1995	14
1.4.4 Electricity Supply Act 1995	14
1.4.5 National Electricity Network Safety Code	14
1.4.6 Electricity Supply (Safety and Network Management) Regulation 2002	15
1.4.7 The Electricity Supply (General) Regulation 2001, Part 11	16
1.4.8 Other Bodies Responsibilities and Requirements	17
1.5 Part D: Occupational Health and Safety Obligations	20
2. SAFETY AND CLEARANCES BETWEEN VEGETATION AND POWERLINES	21
2.1 General	21
2.2 Tree Clearances for Conductors	21
2.3 Vegetation Management for Crane and Plant Operations (also refer to Industry Guide ISSC 26)	21
2.4 Additional Safety Requirements	22
2.5 Occupational Health and Safety Act (2000) and Regulations (2001)	22
3. VEGETATION MANAGEMENT	23
3.1 General	23
3.2 Recognition of Land Types	24
3.3 Community Consultation	24
3.4 Factors Influencing Vegetation Management Options	25
3.5 Vegetation Management Options	26
3.6 Vegetation Management Agreements	27
4. DRAWINGS AND TABLES	28
4.1 Drawing 1: “Clearances for Bare Conductors and Covered Conductors”	29
4.2 Table 1: Minimum Safety Clearance Radius for Bare and Covered Conductors (CC)	30
4.3 Drawing 2: “Clearances for Aerial Bundled Cable and Covered (Insulated) Conductors” ..	31
4.4 Table 2: Minimum Safety Clearance radius for ABC and Covered Conductors (Insulated)	32
4.5 Drawing 3: “Clearances from Streetlights”	33
4.6 Drawing 4: “Clearances from Tower Structures”	34
4.7 Table 3: Minimum Safety Clearances from Poles & Tower Structures	35
4.8 Table 4. Regrowth allowances	35
4.9 Additional clearances in Non-Urban / Bushfire Prone areas	35
5. APPENDIX A: NSW HERITAGE REGISTER CRITERIA	36
6. APPENDIX B: ADDITIONAL READING	38

OBJECTIVE

Safety and environmental management is of concern to, and the responsibility of, all members of society including individuals, community groups, special interest groups, private sector and public sector organisations. The management of vegetation near power lines is a critical environmental and safety issue for the community. The responsibility for vegetation management near power lines does not lie solely with the electricity industry and this is reinforced in the current NSW legislation that sets out the responsibilities of network operators, owners of private property and others for the management of trees near power lines.

This document seeks to provide guidance to network operators and the community generally in the safe and environmentally responsible management of vegetation near power lines by integrating community, safety and environmental values.

SCOPE

This guideline applies to any vegetation management work conducted near existing electricity assets. Community, safety and environmental values covered include:

- public and employee health and safety;
- the separation required between vegetation & electricity assets to ensure a safe environment;
- other relevant NSW and Federal codes, standards, legislation and regulations;
- the application of sound horticultural practices in vegetation management work;
- the protection of all assets, including trees, from unnecessary damage;
- the reduction of fire risk caused by contact of vegetation with electricity assets;
- the methods of restricting future planting of inappropriate vegetation and
- advice on development of tree management plans.

The requirements for the establishment of new overhead power lines are addressed in industry guide "*Guidelines for the Development of Electricity Systems Community and Environmental Considerations*" (ISSC22). The requirements regarding the maintenance of electricity easements are addressed in industry guide "*Guidelines for the Management of Electricity Easements*" (ISSC20).

In reviewing and further developing this guideline, the working group has considered the following:

- the current Australian standard for pruning amenity trees AS 4373-1996;
- practices in other States;
- other relevant NSW codes, standards and legislation;
- maximising the reliability of the electrical network;
- the principles of environmentally sustainable development and responsible environmental management;
- the 'essential service' function of the electricity network and the need to maximise its reliability;
- vegetation management requirements in relation to heritage areas and heritage listed, significant, protected and private trees and
- the need to enhance community awareness of the issues surrounding vegetation management and electricity assets.

APPLICATION

This guideline shall be read and applied in conjunction with any other codes, guides, standards and legislation relevant to NSW.

DICTIONARY

For the purpose of interpretation, the following definitions apply:

- * Means consent or permission is usually required from the appropriate authority to prune/remove trees listed/protected under these provisions. Early contact should be made with the appropriate authority to clarify any necessary prior approvals and information required before proceeding with works.

Aerial Bundled Cable (ABC)	Two or more cores twisted together into a single bundled Cable assembly. Two types of aerial bundled cable are used: <ul style="list-style-type: none"> • Low Voltage Aerial Bundled Cable (LVABC) – means a cable which meets the requirements of AS3560. • High Voltage Aerial Bundled Cable (HVABC) – means a cable which meets the requirements of AS3599 Part 1 or AS3599 Part 2
Clearances	Refer to Clearing Space or Inspection Space.
Clearing Space (Minimum Safety Clearance)	Space surrounding the overhead power line conductors and other electrical equipment, which is to be maintained clear of any foliage. The extent of this space is dependent on the maximum sag, the voltage of the conductors, the regrowth characteristics of the trees, the period till the next planned inspection, and type of power lines.
Covered Conductor	A conductor around which is applied a specified thickness of insulating material. AS3675 specifies two types of covered conductor: <ul style="list-style-type: none"> • CC where the nominal covering thickness is independent of working voltage. • CCT where the nominal covering thickness is dependent on the working voltage.
Customer Connection Service	Means any of the following services: <ol style="list-style-type: none"> a. The connection of any premises to an electricity distributor's distribution system, or b. An increase in the maximum capacity of any premises' existing connection to an electricity distributor's distribution system.
Electricity Asset	Any component of the electricity transmission or distribution network. Assets typically relevant to vegetation management are overhead lines, poles, towers, substations, access tracks, streetlights, warning signs, etc.
Electricity Distributor	This term also refers to and can be read to mean Energy Distributor.
Energy Distributor	A corporation constituted by the <i>Energy Services Corporation Act 1995</i> whose corporate name is listed in <i>Schedule 1 of the Act</i> . For the purposes of the guideline the term applies to Country Energy, EnergyAustralia, Integral Energy and TransGrid.
Environmental Factors	Those components of the environment that are to be considered concerning the impact of activities on the environment. The factors are prescribed in the <i>Environment Planning and Assessment Regulation 2000 Part 14 Division 1</i> .

Fire Hazard Area	An area where, in the opinion of the delegated officer of the electricity distributor in consultation with bush fire management committees established under <i>the Rural Fire Service Act 1997</i> , or representatives of the Rural Fire Service, and the local council, the combination of the normal build up of vegetation, excessive fuel levels and general weather conditions in the area would constitute a high probability of extending a fire ignition into a large fire or potential to increase the probability of damage to electricity assets from a fire.
* Heritage Listed Tree	Means any tree listed as having heritage value to the local area or to the state either individually as an item or as part of a group (e.g.: street trees, avenue, group) on any of a Local Government Authority's Local Environmental Plan or a Regional Environmental Plan (including exhibited draft versions) made under <i>the Environmental Planning & Assessment Act 1979</i> , on the State Heritage Register, or subject of an Interim Heritage Order or subject of an order made under <i>section 136 of the Heritage Act 1977</i> . Heritage listing of a property containing one or more trees deems that tree or trees to also be heritage listed or to have heritage value. Properties with trees may be listed individually as items or collectively as heritage conservation areas. Trees may be part of a larger place listed as a heritage item, area or heritage conservation area (for instance street trees within a conservation area, or an avenue of trees within a park or reserve).
Inspection Space	Space additional to the clearing space in which further clearing may be required where, in the opinion of the delegated officer of the electricity distributor, a part of a tree constitutes a serious hazard to bare or insulated aerial conductors or other electrical equipment under extreme storm or wind conditions.
Insulated Aerial Conductors	Aerial conductors which are continuously covered with fully rated insulation material of the appropriate grade of the voltage at which the overhead line is operated.
Local Councils	The councils constituted pursuant to <i>the Local Government Act 1993</i> .
Natural Tree	Tree(s) that have grown by natural seeding.
Network Operator	The holder of an Electricity Network Operators licence as provided for under NSW legislation. There are currently five NSW Network Operators: - EnergyAustralia, Integral Energy, Country Energy, TransGrid and RailCorp.
Non Urban	The areas outside urban areas.
Overhead Power Line	An aerial conductor together with towers, poles, insulators, hardware, cross arms, substations or other associated electrical equipment erected or in the course of erection for the purpose of supplying electricity.
Planted Tree	Tree(s) other than those that have grown by naturally seeding.
Private Overhead Line	Any electricity assets on private property beyond the "point of supply" of the network operator. These lines can be of any voltage, insulated or otherwise, and are the responsibility of the landowner/occupier.
Private Tree	Tree(s) on private property that are either natural or planted.

Protected Area	Means any area within a national park or nature reserve within the meaning of the <i>National Parks & Wildlife Service Act 1974</i> , or <ul style="list-style-type: none"> a. land that is reserved or zoned for environmental protection purposes under the <i>Environmental Planning & Assessment Act 1979</i>; or b. a public reserve within the meaning of <i>the Local Government Act 1993</i>.
Protected Land	<ul style="list-style-type: none"> a. land identified on a map a copy of which has been deposited in the office of a district soil conservationist in accordance with section 21B; or b. any land (not being land referred to in paragraph (a)) that is situated within, or within 20 metres of, the bed or bank of any river or lake which (with reference to the Water Act 1912) was listed in the Gazettes referred to in the Sixth schedule. <p>but does not include:</p> <ul style="list-style-type: none"> c. any State forest, national forest, timber reserve or flora reserve, within the meaning of the Forestry Act 1916; or d. any national park, historic site, nature reserve or state game reserve, within the meaning of the National Parks and Wildlife Act 1974.
* Protected Tree	Protected tree means a tree that is the subject of or within the area, as defined in section 48 of the <i>Electricity Supply Act 1995 (NSW)</i> ; that is subject of an Interim Heritage Order, is listed on the State Heritage Register, is subject of an order in force under section 136 of the <i>Heritage Act 1977</i> ; is subject of an <i>Interim Protection Order under the National Parks & Wildlife Service Act 1974</i> ; is listed individually or as part of a place or area listed on a Local Government Authority's Local Environmental Plan or a Regional Environmental Plan made under the <i>Environmental Planning & Assessment Act 1979</i> ; or a protection conferred by any similar law. It includes trees subject to a Local Government Authority Tree Protection Order (TPO). Size and age criteria differ between Local Government Authorities, and these should be checked in the first instance. It also means a tree within a protected area.
Pruning	All forms of pruning as defined by AS4373-1996.
Regrowth Allowance	The trimming of vegetation in addition to the minimum safety clearances detailed in Tables 1 and 2 dependant on environmental considerations and trimming cycles.

* Significant Tree	Significant tree means any tree classified by the National Trust of Australia (NSW) as significant, recognised by a Government Authority or by a recognised Community Group, or listed by a Local Government Authority on a Significant Tree Register (STR). Significant trees may be individually heritage listed, or form part of a larger place listed as a heritage item, area or heritage conservation area (for instance street trees within a conservation area). Significance is generally in relation to one or more of historic, aesthetic, scientific (e.g.: botanical, ecological or horticultural value) or social value. Heritage significance in NSW is defined in reference to the NSW State Heritage Register criteria, a copy of which is at Appendix A, along with other criteria.
Tree	Tree means a tree taller than 3 metres, or having a canopy of more than 3 metres in maximum diameter or having a trunk with a circumference at a height of 1 metre from the ground of more than 0.3metres. Trees can include shrubs and other plants for the purposes of the <i>Electricity Supply Act 1995 (NSW)</i> .
Urban Area	A built-up area as designated by street lighting, or subdivision into small allotments or other areas agreed to by the Network Operator and the local council.
Vegetation	All plant life including, but not limited to <i>trees</i> , palms, vines, shrubs, and grasses such as bamboo but excluding lawns.
Water Crossing Sign	A notice located adjacent to bodies of water, warning of the presence of overhead or underground electricity powerlines crossing the body of water.

1. OVERVIEW OF RELEVANT LEGISLATION

1.1 General

Land use controls in Australia are principally governed by the laws of individual States and Territories. Particular federal laws also apply in all areas of the Commonwealth. The *Environment Protection and Biodiversity Conservation Act 1999 (Biodiversity Act)*, replaced five federal environment statutes. Approval will be required to take any action that will have, or is likely to have, a significant impact on areas and attributes for which the Commonwealth is responsible. These 'triggers' include actions affecting World Heritage properties, Ramsar wetlands, listed threatened species, listed migratory species and Commonwealth marine areas. Obligations and penalties differ substantially between jurisdictions. Where the corporation conducts business or carries out activities in several States or Territories, the statutory requirements of each must be complied with.

This section of the guideline is arranged in four parts. ***Each provides a different means of accessing information about the environmental laws that affect network operators.***

Part A provides access to the environmental legislative requirements through an activity table. The table allows cross-referencing of major activities undertaken by network operators, such as line maintenance, with specific environmental aspects of those activities and the applicable legislation.

Part B provides a broad overview describing the basic environmental performance and reporting obligations imposed on network operators under NSW and Commonwealth law. It is structured to provide a synopsis of the major environmental laws that affect network operators' activities under the following subject headings:

- waste management;
- land contamination;
- air pollution;
- water pollution;
- noise pollution; and
- hazardous substances.

Part C details the relevant legislative provisions and their implications for the network operators. The part contains the following information:

- the Act name and section;
- a summary of the obligation or offence imposed;
- identification of the appropriate regulatory authority;
- the relevance of the provision to the corporation;
- identification of the parties who may be liable in the event of a breach;
- the maximum penalties which may be imposed for failure to comply with the provision; and
- any defences that may be available to the corporation in the event of a breach of the provision.

Part D provides access to the Occupational Health & Safety legislative requirements through an activity table. The table allows cross-referencing of major activities undertaken by network operators with specific occupational health and safety obligations and the applicable legislation.

1.2 Part A: Network Activities and Environmental Obligations – Reference Table

This table may not cover all activities pertaining to vegetation management, however it would include:

- **Line maintenance trimming;**
- **Access track maintenance;**
- **Easement/corridor cleaning;**
- **Re-growth control; and**
- **Emergency maintenance.**

Specific Management Issues	Environmental Aspects	Relevant Legislation or Regulations
Line Maintenance – Specific Vegetation Management Issues		
Vegetation Management (trees)	Controlling overgrowth of trees and other vegetation	<ul style="list-style-type: none"> ◆ <i>Electricity Supply Act 1995</i> ◆ <i>Electricity Supply (General) Regulation 2001 Part 11</i> ◆ <i>Native Vegetation Conservation Act 1997</i> ◆ <i>Heritage Act 1977</i> ◆ <i>Rural Fires Act 1997</i> ◆ <i>Rural Fires Regulation 1997</i> ◆ <i>Environmental Planning and Assessment Act 1979</i> ◆ <i>SEPPs 14, 19, 26,44,46,56, 58C and 71</i> ◆ <i>World Heritage Properties Conservation Act 1984</i> ◆ <i>Environment Protection & Conservation of Biodiversity Act 1999</i>
Vegetation Management (use of herbicides)	Risk of escape during transportation, due diligence required in applying herbicide (e.g., Tordon TCH, Access)	<ul style="list-style-type: none"> ◆ <i>Protection of the Environment Operations Act 1997</i> ◆ <i>Environmentally Hazardous Chemicals Act 1985</i> ◆ <i>Scheduled Chemical Wastes Chemical Control Order 1994</i> ◆ <i>Occupational Health and Safety Act 2000</i> ◆ <i>Occupational Health and Safety Regulation, 2001</i> ◆ <i>Pesticides Act 1999</i> ◆ <i>Dangerous Goods Act 1975 and Regulation 1999</i>
Vegetation Management (noxious weeds)	Managing noxious weed growth in areas containing electricity powerlines	<ul style="list-style-type: none"> ◆ <i>Noxious Weeds Act 1993</i> ◆ <i>Noxious Weeds Regulation 1993</i>

Specific Management Issues	Environmental Aspects	Relevant Legislation or Regulations
Vegetation Management (endangered species)	Effect of physical clearing methods and herbicide use on endangered species / critical habitat	<ul style="list-style-type: none"> ◆ <i>National Parks and Wildlife Act 1974</i> ◆ <i>National Parks and Wildlife (Land Management) Regulation 1995</i> ◆ <i>Threatened Species Conservation Act 1995</i> ◆ <i>Native Vegetation Conservation Act 1997</i>
Vegetation Management (soil)	Soil erosion arising from clearing of vegetation	<ul style="list-style-type: none"> ◆ <i>Soil Conservation Act 1938</i> ◆ <i>EP&A Act 1979</i> ◆ <i>Heritage Act 1977 (relics / archaeology provisions)</i>

1.3 Part B: Major Environmental Laws

The main pollution control statute in New South Wales is the *Protection of the Environment Operations Act 1997 (Operations Act)*, which commenced on 1 July 1999. This Act replaced the *Environmental Offences and Penalties Act 1989*, the *Pollution Control Act 1970* and other specific legislation such as the *Clean Air Act 1961*.

The *Operations Act* contains the following key elements:

- an integrated licensing system, under which a single licence can cover emissions in multiple media from a site or activity;
- administrative enforcement through environment protection notices (clean up, prevention, prohibition and compliance cost notices);
- environment protection offences graded into three tiers and covering offences of air, water, noise, and land pollution;
- a duty to report any pollution incident which threatens material harm to the environment where the corporation occupies relevant land or employs relevant persons;
- directors and managers are made personally liable for offences committed by the corporation;
- provision for voluntary and mandatory environmental audits of the corporation to be conducted; and
- authority for appropriate officers to perform a range of actions, such as questioning persons, requiring information or records and entering and searching premises.

The *Operations Act* is supplemented by other regulatory instruments that address issues of relevance to network operators as follows:

1.3.1 Waste Management

The Environment Protection Authority (*EPA*) regulates the handling, transportation and disposal of wastes under the *Operations Act*.

Under s48 of the *Operations Act*, a person who is the occupier of any premises at which a scheduled activity is carried on must hold a licence that authorises that activity to be carried on at those premises. One of these activities is the generation or storage of hazardous, industrial or Group A wastes.

A licence is required under s49 of the *Operations Act* for activities listed in Schedule 1 that are not premises based (such as mobile waste processing). This category includes the use of mobile plant to recycle oil in transformers.

An environment protection licence as a *waste facility* is *not* required if hazardous, industrial or Group A waste is treated, processed or reprocessed by a mobile plant which is licensed.

The reporting and storage obligations under the *Protection of the Environment (Waste) Regulation 1996 (Waste Reg)* apply only to non-licensed landfill sites, non-licensed waste activities or non-licensed waste transporting.

A *non-licensed waste activity* means an activity, carried on for business or other commercial purposes, that involves the generating or storage of hazardous waste, industrial waste, Group A waste but which is not licensed under the *Operations Act*.

The Appendix to Schedule 1 of the *Operations Act* describes various types of waste as being industrial, hazardous, Group A etc.

Additional licences are required for the storage and disposal of certain scheduled chemicals and chemical wastes under the *Environmentally Hazardous Chemicals Act 1985 (EHC Act)*.

The primary responsibility of the network operator is to classify the waste properly (irrespective of whether it is going to be disposed of or reprocessed), to use a licensed transporter and to ensure that the wastes are taken to suitable mobile waste processors or waste facilities. Liquids that cannot be lawfully discharged directly to sewer may be subject to licensing under the *Operations Act*. Legislation dealing with discharges to sewer include the *Sydney Water Act 1994*, *Hunter Water Act 1991*, s68 of the *Local Government Act 1993* and clause 55 of the *Protection of the Environment (General) Regulation 1998* and the *Local Government (Water Services) Regulation 1999*.

Vegetation management by products are recycled wherever possible and only treated as waste only after all other options have been considered.

The *Waste Avoidance and Resource Recovery Act 2001* provides for the most efficient use of resources, including the recovery of organic matter for processing and reuse. Local Governments are required to develop strategies for dealing with the recovery of organic matter, including vegetative matter from the pruning or removal of street trees and trees/shrubs from public land and private property. Waste facility operators are similarly required to provide receival facilities for organic material that is free from non-organic contamination. Further information on the recycling and reuse of organic material can be found from the websites www.compostaustralia.com , www.recycledorganics.com and www.bioenergyaustralia.org or the relevant local government.

1.3.2 Land Contamination

The *Contaminated Land Management Act 1997 (CLM Act)* is the principal statute governing the use, occupation and ownership of contaminated land in New South Wales. Whilst the *Operations Act* deals generally with prevention of land contamination by pollution, the *CLM Act* regulates contaminated land after the actual contamination has taken place.

It is a major offence under the *Operations Act* to wilfully or negligently dispose of waste in a manner which harms or is likely to harm the environment. There are also prohibitions against transporting waste to a place that cannot lawfully be used as a waste facility, or permitting land to be used as a waste facility when it cannot lawfully be used for that purpose.

The *CLM Act* is primarily directed at instances where the EPA believes it needs to intervene due to the significant risk of harm to human health or to the environment from contaminated land. The EPA can order the investigation and remediation of a site. It regulates the management of contaminated land using the *National Guidelines for the Assessment and Management of Contaminated Sites* developed by the Australian and New Zealand Environment Conservation Council and the National Health and Medical Research Council.

The *CLM Act* also imposes a duty to report upon landowners and other persons whose activities have contaminated land. Responsibility for the contaminated land always remains with those persons responsible for contamination. Where, however, the polluter cannot be located, or is insolvent, the owner of the land or the *notional owner* will become responsible for remediation. In general terms, the notional owner is a person (not being the owner of the land or the Crown or a body representing the Crown) who is entitled to a freehold interest in the land.

State Environmental Planning Policy No. 55 - Remediation of Land prevents changes to land usage until the relevant consent authority has considered whether the land is contaminated and whether remediation is necessary in order to accommodate the proposed use. Remediation work must be performed in accordance with EPA standards and *Planning Guidelines for Contaminated Land*.

1.3.3 Air Pollution

The *Operations Act* incorporates provisions dealing with the general minimisation of air pollution, pollution by fires and motor vehicle emissions. In relation to network operators, the most relevant provisions of the *Operations Act* are the duties to maintain and operate plant, and to deal with any materials, in a proper and efficient manner so as to avoid causing air pollution.

1.3.4 Hazardous Substances

The *EHC Act* contains provisions to control the effect of chemicals and chemical wastes on the environment. It provides for the declaration of chemical wastes and the creation of Chemical Control Orders (**CCOs**) and declared chemical wastes.

There are CCOs for dioxin-contaminated wastes, aluminium smelter wastes, polychlorinated biphenyls (**PCBs**), organotin wastes and scheduled chemical wastes. Most CCOs require licences to be held by people engaging in prescribed activities with respect to the environmentally hazardous chemical. Prescribed activities are manufacturing, processing, keeping, distributing, conveying, using, selling or disposing of the chemical waste, or any act related to those activities. The keeping and transportation of dangerous goods is regulated by the *Dangerous Goods Act 1975 (DG Act)*, which requires licences and authorisations for dealing with dangerous goods of various classes. The *Road and Rail Transport (Dangerous Goods) Act 1997 (RRT(DG) Act)* prescribes separate licensing obligations for the transport of dangerous goods by road or rail.

Pesticides are regulated specifically under the *Pesticides Act 1999*, which sets out various offences relating to the misuse of pesticides. The Occupational Health and Safety Regulation, 2001 contains provisions relating to hazardous substances. Chapter 6 of the Regulation sets out specific risk control measures for hazards arising from the manufacture, supply and use of hazardous substances. The need for employers to carry out health surveillance on employees exposed to hazardous substances and the need for employers and medical practitioners to retain records is also covered in this Chapter.

1.3.5 Water Pollution

The *Operations Act* prohibits any person from causing or permitting water pollution except in accordance with the regulations or a licence held by the person. Water pollution is defined very broadly to include anything that produces a change in the physical, chemical or biological condition of any waters. It is sufficient for a conviction that the substance was placed in a position from which it was likely to end up in the receiving waters.

1.3.6 Noise Pollution

This environmental aspect is also regulated by the *Operations Act*. Occupiers of premises are required to maintain plant in an efficient condition, operate plant properly and efficiently and to deal with materials in a proper and efficient manner so as not to cause noise emissions from the premises.

1.4 Part C: Relevant Legislative Provisions

1.4.1 Environmental Planning and Assessment Act 1979

The *Environment Planning and Assessment Act 1979 (EPA Act)* provides the primary source of obligations with respect to development activity in NSW. Part 4 of the EPA Act applies where a State Environmental Planning Policy (**SEPP**), Regional Environmental Plan (**REP**) or a Local Environmental Plan (**LEP**) requires a consent to be obtained before carrying out a development. *Development* is defined to include: the use of land; subdivision of land; erection of a building; carrying out of a work and the demolition of a building.

Where development consent is not required for a proposal (relevant to vegetation), the proposal may still need to be assessed under Part 5 of the *EPA Act* and specifically with a project under Part 3A of the EPA Act. The network operator, as the *determining authority*, will be required to consider the potential environmental impacts of any activity proposed to be carried out by it or on its behalf. The network operator must decide in accordance with the test laid down in s112 whether the proposal “is likely to significantly affect the environment”. Furthermore, the network operator must not carry out an activity in respect of land that is a critical habitat, or is likely to significantly affect threatened species, populations or ecological communities, or their habitats, unless a species impact statement (**SIS**) has been prepared under the *Threatened Species Conservation Act 1995*.

Where the proposal is decided to be significant an Environmental Assessment is required under the provisions of Part 3A of the EPA Act.

Most NSW Councils now have or are moving towards making Local Environmental Plans (LEPs) made under the EP&A Act. In addition Planning NSW has made Regional Environmental Plans (REPs) and State Environmental Planning Policies (SEPPs) under this Act. (See **Part B**, earlier for more). Heritage listed trees, plantings and areas have usually been identified by a local heritage study, then leading to their listing as local heritage items or areas on the LEP. Local Councils are responsible for the protection and management of local heritage items in NSW, under amendments to the *Heritage Act 1977* and *EP&A Act 1979*.

In addition, many NSW Councils have conducted specific tree surveys leading to Tree Protection Orders, covering all trees over a set size in the Local Government Area, or Significant Tree Registers, or protected tree listings on their LEP. Trees or vegetation may be listed singly, in groups, as part of areas such as parks or reserves, or as street plantings in residential or village conservation areas.

Electricity distributors planning pruning operations must consult with Local Councils to identify any heritage listed, protected or significant trees in that Local Government Area, before finalising pruning plans. Appropriate prior community consultation and Council consents may be required before pruning occurs.

Under 1999 and 2002 amendments to the *Heritage Act 1977* delegations of Heritage Council powers were made to Local Government, giving Councils powers to defer development and move to assess or protect potential or actual heritage items which may include trees or vegetation of local significance. All non-metropolitan Councils have delegations to place Interim Heritage Orders preventing works or harm to potentially significant trees or vegetation.

In many cases the current LEP listings do not reflect the full extent of significant trees or vegetation and it is thus important to consult Councils for the most up to date information on LEP listings and proposed listings.

In addition Councils should be asked about any Tree Protection Order or Significant Tree Register in existence, and what that means for proposed tree or vegetation pruning operations in that area. Any necessary prior consents must be obtained before proceeding to undertake pruning. In some cases exemptions from normal consents may be negotiated to expedite pruning in appropriate circumstances.

1.4.2 Vegetation Clearance

There are various regulatory instruments that deal with land clearing activities. The core legislative obligations are contained in the *Native Vegetation Act 2003 (NV Act)*. Under this statute, the network operator may be required to obtain a development consent before clearing native vegetation. There is a specific exemption for public utilities and emergency work, but this only operates in respect of land which has yet to become subject to a property vegetation management plan. Where the exemption remains available, it applies to clearing that is to a minimum extent for the maintenance of public utilities (e.g., the provision of power lines and the transmission of electricity) or where native vegetation may reasonably be thought likely to be at risk of causing personal injury or damage to property.

Certain types of land and clearing are excluded from the operation of the *NV Act*, including:

- land zoned as 'residential', 'village', 'township', 'industrial' or 'business';
- land subject to *State Environmental Planning Policy No. 14 - Coastal Wetlands (SEPP 14)*;
- land subject to *State Environmental Planning Policy No. 26 - Littoral Rainforests (SEPP 26)*;
- clearing authorised by the *Rural Fires Act 1997*;
- clearing authorised by the *Noxious Weeds Act 1993*.

SEPP 14 restricts land clearing without consent on certain land designated as coastal wetland. Such development requires concurrence from the Director General of Department of Planning (NSW).

SEPP 19 Bushland in Urban Areas permits disturbance of urban bushland to occur without consent provided it is for the purpose of bushfire hazard reduction; or constructing, operating or maintaining lines for electricity or telecommunication purposes.

SEPP 26 also creates a more rigorous consent procedure where the subject land is designated as littoral rainforest. The Minister administering the *EP&A Act* must concur in granting consent and is required to consider any representation made by the Department of Planning as well as public interest factors.

Unless a licence has been obtained under the *National Parks and Wildlife Act 1974 (NPW Act)* or the *Threatened Species Conservation Act 1995 (TSC Act)* it is an offence under the *NPW Act* to harm any threatened species, population or ecological community. Additionally, the network operator must not, by act or omission, damage any critical habitat. There is also an offence under the *NPW Act* of harming protected fauna.

It is a defence in each of these provisions if the act or omission was essential for the carrying out of development under an *EPA Act* Part 4 development consent or an activity complying with *EPA Act* Part 5. There is provision in the *NPW Act* for the Minister administering the Act to grant an easement or right of way in relation to electricity transmission lines. The Department of Environment and Conservation (NPW Division) maintain two databases which should be consulted on threatened species, the NSW Atlas of NSW wildlife, and the Rare or Threatened Atlas of Plants.

In contrast to the above regulatory instruments, the *Noxious Weeds Act 1993 (NW Act)* imposes a positive duty on the network operator to control noxious weeds on land occupied by it, to the extent necessary to prevent the weeds spreading to any adjoining land.

Other State Environment Planning Policies to consider in managing vegetation are:

- 44 Koala Habitat Protection;
- 56 Sydney Harbour Foreshores and Tributaries;
- 58C Protecting Sydney's Water Supply; and
- 71 Coastal Development.

1.4.3 The Threatened Species Conservation Act 1995

It is the Electricity Distributors responsibility to ensure activities are assessed to determine whether there is an impact on threatened species. This is particularly relevant for proposed developments or activities.

The Department of Environment and Conservation maintains two databases for threatened species:

- Atlas of NSW Wildlife
- ROTAP database

1.4.4 Electricity Supply Act 1995

Section 48 of this Act refers to "Interference with electricity works by trees". This section sets out a Network operator's rights and obligations to require the owner of a premises to trim or remove a tree on those premises which could interfere with that Network operator's electricity works.

Under emergency or failing action of the owner of the premises, the Network operator may carry out the tree trimming work itself.

Other than for trees on easements, or trees planted in a way, which would interfere with electricity works, the Network operator must meet reasonable costs. This is specified where notices have been served on owners of premises to remove or trim trees. Network operators can also carry out the work and recover the costs from owners of premises. Costs incurred by Network operators are recoverable through court jurisdictions. The requirement for the work to be carried out safely by qualified persons always applies.

1.4.5 National Electricity Network Safety Code

The National Codes NENS 01 and 04 in conjunction with the NSW Code of Practice for Electricity Transmission and Distribution Asset Management and HB C(b) 1-2003 'Guidelines for Design and Maintenance of Overhead Distribution and Transmission lines' provide information on safety clearances from overhead power lines. These guidelines state that trees should be kept away from overhead to achieve the following:

- Ensure public safety;
- Minimise the risk of fire caused by the contact between trees and overhead lines;

- Reduce the number of interruptions to supply caused by trees and
- Protect the distributor's assets from damage.

When determining the amount of clearance between trees and power lines consideration should be given to the following:

- Type of line ---- whether it is bare, covered or insulated overhead conductors;
- Conductor sag and swing;
- Tree movement, soundness and regrowth; and
- Overhang of branches.

1.4.6 Electricity Supply (Safety and Network Management) Regulation 2002

This regulation has been enacted to ensure Network Operators under the Electricity Supply Act develop and implement various plans in respect to the operation of adequate, safe and reliable transmission and distribution systems.

The regulation requires the following four (4) plans be lodged with the Director General and implemented by the Network Operator:

- 1 A network management plan, for the purpose of ensuring that transmission or distribution systems provide an adequate, reliable and safe supply of electricity of appropriate quality.
- 2 A customer installation safety plan, for the purpose of ensuring the provision of safe electrical installations and connections.
- 3 A public electrical safety awareness plan, for the purpose of providing a warning to the public of the hazards associated with electricity networks.
- 4 A bush fire risk management plan, for the purposes of ensuring public safety and for other related purposes (fire risk).

Clause 18 of the Regulation requires that "a person must not carry out work on or near a network operator's transmission or distribution system and a network operator must not allow a person to carry out work on or near its transmission or distribution system unless:

- (a) The person is qualified, under the relevant requirements of the network operator's network management plan to carry out the work, and
- (b) The work is carried out in accordance with the relevant requirements of that plan.

Generally, the network management plans require that persons are:

Trained – in accordance with Industry Guideline EA18 "Guide to the Training of Personnel Working on or near Electricity Works (October 1999).

Qualified – hold appropriate formal qualifications issued by a Registered Training Organisation (RTO) under the National Training framework.

Authorised - have been formally authorised in writing by the relevant network operator to work on or near its network, and received instruction in any local rules, procedures, precautions, hazards etc. Persons who work across various networks (e.g. Accredited Service Providers) will need to be authorised by each network operator.

Competent – employers have an obligation to ensure employees retain their skills in order to carry out their duties. This may include persons demonstrating their ability to carry out such tasks as Pole Top or EWP Rescue, Control Descent Device, Expired Air Resuscitation, Confined Spaces Rescue etc.

1.4.7 The Electricity Supply (General) Regulation 2001, Part 11

This regulation enables an Electricity distributor to develop a tree management plan in consultation with the relevant local authority and the community at large.

The regulation is seen as a way to ensure the management and protection of trees in accordance with the expectations of the community.

The relevant sections of this regulation are reproduced below:

Clause 102 Preservation of trees

- 1) A service provider must not remove any tree, or trim any tree in a way that substantially damages the tree, unless:
 - a) It is of the opinion that it is necessary to do so to protect its powerlines or the safety of persons or property under or near its powerlines; and
 - b) It has considered alternative methods and is of the opinion that none of those methods are feasible in the circumstances (including economically feasible); and
 - c) The service provider is acting in accordance with a tree management plan.
- 2) Alternative methods include, but are not limited to, the use of aerial bundled cables, the controlled trimming of trees and the appropriate location or relocation of powerlines (including placing them underground).

Clause 103 Tree management plans

- 1) A service provider may establish a tree management plan for the trimming, or for the staged removal and replacement, of those species of trees that have a propensity to interfere with powerlines.
- 2) A tree management plan may contain (but need not be limited to) the following matters:
 - a) Lists of suitable species of trees for planting under or near powerlines in different localities or situations;
 - b) Plans for trimming or removing and replacing existing trees and for controlling future planting of suitable species of trees;
 - c) Trimming or removing trees in; an emergency;
 - d) Methods for trimming trees;
 - e) The use of accredited contractors for trimming trees;
 - f) The intended allocation of costs between the service provider and the relevant council or councils for the district in which the plan is to operate;
 - g) The environmental factors to be considered in trimming trees; and
 - h) The development of public education and publicity programs encouraging the selection of appropriate species of trees for planting under or near powerlines.
- 3) A tree management plan may make different provision with respect to public land, private land, urban land and rural land.
- 4) A tree management plan may be amended by a subsequent tree management plan.

Clause 104 Consultation with Councils and the public

A tree management plan is to be prepared in a way that gives an opportunity to comment on the proposed plan to the relevant council or councils for the district in which it is to operate, to the residents of the district and to local community groups.

1.4.8 Other Bodies Responsibilities and Requirements

In accordance with the provisions of the many pieces of legislation it is necessary to comply with the requirements of other bodies.

- **Rural Fires Service Act 1997**

Electricity distributors are represented on bush fire management committees, which have been established in local government areas outside Sydney and Newcastle. These committees are charged with preparing bush fire management plans that contain procedures for controlling fires and for managing fuel levels.

The committees are well placed to provide advice and the plans they prepare can provide statutory support for fuel management.

- **National Parks and Wildlife Act 1974**

Electricity distributors are required to comply with the provisions of the act particularly in regard to management issues of vegetation in land located in or administered by the Department of Environment and Conservation (DEC).

Particular attention needs to be given to Historic sites and items of European and Aboriginal archaeology.

A document called "Procedures for power line maintenance in lands administered by the National Parks and Wildlife Service of NSW" produced by the former 'Electricity Association of NSW' sets out the agreed practices between the parties in regard to the inspection and maintenance of powerlines.

The DEC (NPW) can be contacted on www.npws.nsw.gov.au

- **National Trust of Australia Act 1990 and Local Historical Societies**

To ascertain the location of important or significant trees, electricity distributors should also consult local or district historical societies, the National Trust of Australia (NSW) and local councils. The Trust will assist in the recognition and provision of advice on the handling of significant trees in any area and to give briefing and written material to any electricity distributor.

The National Trust can be contacted on www.nsw.nationaltrust.org.au

- **Sydney Water Catchment Management Act 1998**

Attention needs to be paid to areas that are deemed for the preservation of water supply in the special catchment areas.

Electricity distributors are required to make arrangements with Sydney Catchment Management Authority in regard to maintenance of powerlines and vegetation in the Special areas.

- **Trees and Plant Communities of Special Value**

Trees and plant communities of special value may be identified under any of the above statutes or instruments.

Special attention should be paid to botanically, ecologically or scientifically significant vegetation important or historically significant stands of trees, stands of special aesthetic significance, or rare and threatened plant species or ecological communities. Every endeavour should be made to ascertain where such important or significant trees are located.

In the first instance, electricity distributors should contact Local Council tree protection or heritage officers, the NSW National Trust, the State Heritage Inventory (www.heritage.nsw.gov.au) and the DEC for information on rare or endangered, significant, protected or heritage listed trees or vegetation areas.

See definitions at the beginning of the document for definitions and more information regarding the terms tree, significant tree, protected tree, heritage listed tree and protected area.

Several options may be exercised when trimming or pruning is required of trees of special value and agreement may be reached in reducing the regrowth allowance. The options could include the replacement of trees or the relocation of the power lines albeit these options are more suitable for inclusion in a tree management plan.

- **The Heritage Act 1977**

The *Heritage Act 1977* provides that where a place is subject to an interim heritage order issued by the Heritage Council or is listed on the State Heritage Register, it is an offence to damage the place, carry out any development on the land or damage or destroy any vegetation on the land without the prior approval of the Heritage Council.

Such places can include private gardens, public parks or reserves, residential streetscapes or districts, stock routes and colonial roads lined with trees or vegetation, natural areas such as forests, wetlands and human modified landscapes such as farming land with scattered woodland cover.

The list of places on the State Heritage Register can be accessed on www.heritage.nsw.gov.au by searching by Local Government Area or address or place name. In addition the State Heritage Inventory, listing all heritage items with statutory protection (e.g.: LEP heritage items, Interim Heritage Orders or listed on the State Heritage Register) in NSW. Further information is available on the same website, or by contacting the NSW Heritage Office on telephone 02 9873 8500.

The Minister responsible for Heritage has the power to make Interim Heritage Orders and stop work orders to protect places under threat, or defer development to allow assessment and appropriate protection of places with recognised or potential heritage values.

Unless specific exemptions from normal approval have been granted by the Minister responsible for the *Heritage Act 1977* over such areas for activities such as tree pruning, electricity distributors require specific prior approval from the Heritage Council of NSW under section 60 of the Act. Section 60 forms can be downloaded off the NSW Heritage Office website on www.heritage.nsw.gov.au. Specific approval exemptions to allow appropriate regular pruning in specific places or circumstances can be negotiated and agreed with the Heritage Office. The Heritage Act also requires prior Heritage Council approval of excavation permits when excavating in areas of known or potential archaeological resources.

- **State Emergency and Rescue Management Act 1989**

The SERM Act requires local government authorities to prepare Local Disaster Plans based on emergency risk management assessments conducted in accordance with AS/NZS 4360:2004. These assessments include the response measures required and agencies responsible for mitigating foreseeable risks caused by either natural or technological causes or events. Emergency means an emergency due to an actual or imminent occurrence (such as fire, flood, storm, earthquake, explosion, terrorist act, accident, epidemic or warlike action), requiring a coordinated emergency response.

The emergency risk assessments and Local Disaster Plans are developed in consultation with local communities and stakeholders and are required to be agreed to by the Local Council and successively the District and State Emergency Management Committees, on which Network Service Providers are represented.

These assessments may warrant the removal of vegetation near power lines that poses an identifiable risk to the power supply infrastructure, for example due to a severe weather event, earthquake or related infrastructure failure.

▪ **Other Legislation**

Listed below are some of the major environmental or land management legislation Electricity distributors should have an understanding of:

- Rivers and Foreshores Improvement Act 1948
- Crown Land Act 1989
- Noxious Weeds Act 1993
- Fisheries Management Act 1994

1.5 Part D: Occupational Health and Safety Obligations

Activities of the Network Operators	Relevant Legislation, Regulations or Codes of Practice
General Occupational Health and Safety obligations	<ul style="list-style-type: none"> Occupational Health and Safety Act 2000
Specific Occupational Health and Safety obligations	<ul style="list-style-type: none"> Occupational Health and Safety Regulation 2001
Risk Management obligations, training, supervision, personal protective equipment, first aid facilities, amenities and emergency provisions	<ul style="list-style-type: none"> Chapter 2 OHS Regulation WorkCover Code of Practice – Risk Assessment
Workplace consultation	<ul style="list-style-type: none"> Chapter 3 OHS Regulation WorkCover Code of Practice - Consultation
Work premises and working environments	<ul style="list-style-type: none"> Chapter 4 OHS Regulation, Note: This chapter deals with a number of activities relevant to network operators for tree management, fall prevention, electricity, heat & cold, noise and manual handling WorkCover Code of Practice – Technical Guidance
Plant (Machinery, tools and equipment)	<ul style="list-style-type: none"> Chapter 5 OHS Regulation WorkCover Code of Practice – Risk Assessment WorkCover Code of Practice – Technical Guidance
Hazardous substances, MSDS, labelling, health surveillance	<ul style="list-style-type: none"> Chapter 6 OHS Regulation WorkCover Codes of Practice – Hazardous Substances (3 Codes)
Hazardous processes	<ul style="list-style-type: none"> Chapter 7 OHS Regulation WorkCover Codes of Practice – Technical Guidance WorkCover Code of Practice – Low voltage electrical work
Construction work	<ul style="list-style-type: none"> Chapter 8 OHS Regulation WorkCover Code of Practice – Technical Guidance
Certification of workers	<ul style="list-style-type: none"> Chapter 9 OHS Regulation
Accident Notifications	<ul style="list-style-type: none"> Chapter 12 OHS Regulation

Note 1: The above information must not be used as a substitute for the OHS Regulation or OHS Act. Employers should consult the full Act and Regulation to determine their OHS obligations and responsibilities.

Note 2: At the time of publication of this Guideline, WorkCover was developing the “Code of Practice-Work near Overhead Power Lines”, which will replace the ISSC 26 “Interim Guide for Operating Cranes and Plant in Proximity to Overhead Power Lines”. The new Code is expected to be gazetted in 2006.

2. SAFETY AND CLEARANCES BETWEEN VEGETATION AND POWERLINES

2.1 General

The clearing and pruning of vegetation should be carried out in a manner as to ensure the health and safety of all persons. Injuries (including electrical injuries) can be avoided if potential hazards are identified before work commences on a property or site. Before commencing work follow three basic steps,

- Identify all hazards;
- Assess the risks of the work; and
- Control any problems so it is safe to commence work.

Clause 64 of the Occupational Health and Safety Regulation 2001 requires that persons, their plant and tools must not come into close proximity with overhead power lines (except if the work is done in accordance with a written risk assessment and safe system of work and the requirements of the relevant network operator).

In addition to the above requirements all persons involved in tree trimming operations shall be appropriately supervised, trained, qualified, authorized and competent in the work to be performed.

In addition to the clearances to conductors discussed below, consideration must also be given to creating safe access to other electricity assets and within the power line corridors.

2.2 Tree Clearances for Conductors

The clearances stated in Table 1 “Minimum Safety Clearance Radius for Bare and Covered” and Table 2 “Minimum Safety Clearance Radius for ABC and Covered Conductors (Insulated)” are the clearances that should be achieved where possible. Negotiations with local Councils may be required where existing agreements are in place and the agreed clearances differ from those shown in the tables mentioned above.

2.3 Vegetation Management for Crane and Plant Operations (also refer to Industry Guide ISSC 26)

As required by the “Guide for Operating Cranes and Plant in Proximity to Overhead Power Lines” (ISSC26) the operator of the crane and the safety observer must have; and have documentary evidence of:

- a) Following completion or recognition of the “Crane and Plant Electrical Safety Course”, successfully undertaken a competency assessment in the “Crane and Plant Electrical Safety Course” at an interval no greater than twelve months from the previous assessment. This is necessary to operate cranes and plant in the vicinity of live overhead power lines.
- b) An Elevating Work Platform operator’s **Certificate of Competency** issued under the Occupational Health and Safety Regulation 2001, or be a trainee undertaking on-the-job training under the direct supervision of a qualified operator.
- c) Within the previous twelve months, demonstrated their ability to apply rescue procedure in the event of an accident associated with electrical apparatus and their ability to apply resuscitation procedure.
- d) Having undertaken annual training in Network Operator’s Safety Rules as required by the Electricity Supply (Safety and Network Management Plans) Regulation 2002;
- e) Worksite Risk and Hazard Assessment.

- f) Any Elevating Work Platforms and all tools must be insulated and tested every six months to the necessary voltage requirements in accordance with Industry Guideline EC14 "Guide to Electrical Workers Safety Equipment".

Note: At the time of publication of this Guideline, WorkCover was developing the "Code of Practice-Work near Overhead Power Lines", which will replace the ISSC 26 "Interim Guide for Operating Cranes and Plant in Proximity to Overhead Power Lines". The new Code is expected to be gazetted in 2006.

2.4 Additional Safety Requirements

- a) All persons must be authorised by the Network Operator, including where appropriate, authorisation to accept Access Permits for trimming in the vicinity of high voltage conductors.
- b) All safety clearances must be maintained in accordance with the Network Operator's and Industry requirements.
- c) Tree trimmers will have completed as a minimum qualification "Tree Care for Electricity Workers" or its equivalent. Other courses may be developed and National Competencies may be set.
- d) Where trees are being climbed, tree trimmers will be appropriately trained.
- e) Where trees are being trimmed around live conductors, tree trimmers will be appropriately trained, qualified, authorised and competent.
- f) Where traffic control measures are required, personnel will be appropriately trained to Roads and Traffic Authority requirements.
- g) Where persons are using chain saws and other powered equipment, they shall be trained in their safe use.
- h) All Personal protection equipment eg clothing, gloves etc will meet the requirements of "*Guide to Electrical Workers Safety Equipment*" (EC14) and the Network Operator's requirements.

2.5 Occupational Health and Safety Act (2000) and Regulations (2001)

In addition to the requirements outlined in Sections 1.5, 2.3 and 2.4 above, all general workplace safety measures required under the Occupational Health and Safety Act, 2000 and the Occupational Health and Safety Regulation, 2001 shall be complied with. These typically include the risk management provisions relating to hazard identification, risk assessment and risk control.

An employer must also consult with their employees to enable the employees to contribute to the making of decisions affecting their health, safety and welfare at work. Other provisions relating to plant safety, workplace amenities, first aid kits, accident notification, etc are also covered by the OHS Act and the OHS Regulation.

3. VEGETATION MANAGEMENT

3.1 General

Network operators have statutory obligations to maintain electrical assets in a safe and operable condition. However providers have in the past come under some criticism in their lack of flexibility in line clearing practices.

It is understood that there are particular difficulties in maintaining vegetation clear of powerlines in both densely populated, rural areas and in National Parks and open space reserves. Network operators are always considering ways to improve their environmental management practices.

Network Operators are aware that the electricity network is not the only use required of road reserves, parks and natural areas, however ensuring the safety of the public is of paramount importance in addition to maintaining a reliable electricity supply, however community expectations and aesthetic and environmental imperatives have a significant claim for consideration in this process.

It is important that all stakeholders consider open space values (tourism, recreation and amenity), the role of the land in terms of broader ecological sustainability as well as heritage considerations in maintaining and planting vegetation near powerlines.

Since 1977 there has been a marked growth in community concern and thus a rise in statutory heritage listings on LEPs and the State Heritage Register, Tree Protection Orders covering Local Government Areas and Significant Tree Registers. This parallels lobbying for and gazettal of increased areas of National Parks and other forms of nature protection reserves.

These listings have been for individual trees, groups of trees, avenues and street plantings, parks, reserves and natural areas. This reflects the increasing value the community is placing on remnants of the natural world and the cultural significance it places on human modified landscapes and plantings, of both native and exotic species.

The community is increasingly valuing the role and benefits of trees and vegetation in increasingly crowded and dense cities, sprawling suburbs and industrial lands, and their value in providing open space, recreation, tourism escapes, clean air and water.

Consideration would include but not be limited to, tree species present and their cultural requirements, tree age, local and regional ecological values and recognised and potential heritage values. They would also include consultation with Local Councils and relevant agencies to determine any significant, protected or heritage listed vegetation, necessary consents required. To effect appropriate management strategies, vegetation managers must be aware of planning instruments and policies at a local, regional and state and national level. These policies should be considered and acknowledged in the development of vegetation maintenance and tree planting programs or approvals. Such programs must contain a mechanism to monitor and review performance and hold service delivery accountable with regard to effective outcomes in these areas.

An important consideration for the implementation of a network management strategy is the issue of sustainability. Pruning that considers only line clearance without considering the broader, long term impacts on vegetation management has a very real potential for creating long term hazards in large numbers of street trees.

Trimming of vegetation at growth points and branch collars is to be conducted in accordance with the principles of Australian Standard AS 4373-1996.

Practical application will be given to the appearance of trees beneath overhead electricity lines having regard to the consideration that trees are often capable of maintaining heights greater than the lines themselves or the clearance envelope in Drawing 1 and Table 1.

Likewise inappropriate vegetation clearance can lead to altered species representation, local extinctions and detrimental physical effects such as weed invasion and soil erosion. All of these are legacies for other land managers.

Proper planning is essential in areas adjacent to powerlines. The planting of vegetation in the areas adjacent to powerlines must be carefully considered as large or fast growing species can lead to Network operators, Local Councils and other land managers committing additional resources in the future to ensure effective management.

In addition the areas within and surrounding electrical substations and equipment may require additional clearing / vegetation removal to create and or maintain Asset Protection Zones (refer RFS bushfire guidelines) in addition to the requirements for safety and security.

Water crossing signs require specific vegetation management attention in order to ensure visibility by approaching vessel in accordance with the Waterways Authority requirements.

3.2 Recognition of Land Types

There are essentially two locations that contain power lines. One is on public road reserve verges, the other location is on private properties.

For the purposes of this guideline these locations can be further categorised into the following;

- Urban
- Non-Urban
- Within Electricity Easements

In determining the most appropriate method of managing vegetation in a given location it is vital to be aware of the category of land type in which the vegetation exists. Different land use types may require different management strategies to successfully manage its vegetation, and delivering outcomes acceptable to the community. For example: a tree on an urban road reserve with no access difficulties may be managed differently to a tree on an urban property where access is very difficult. Management of vegetation within electricity easements is expanded in ISSC 20 "Guidelines for the Management of Electricity Easements".

3.3 Community Consultation

As outlined in the Scope of this guideline, the requirements for the establishment of new overhead power lines are addressed in industry guide "*Guidelines for the Development of Electricity Systems Community and Environmental Considerations*" (ISSC22). That guideline details the need for community consultation for the establishment of new power lines, particularly at the higher voltages. Larger projects may require a Review of Environmental Factors (REF) or an Environmental Impact Statement (EIS) that could involve formal engagement of community groups, publication of DRAFT documents for public comment, public advertisements and even open public forums and meetings.

In this guideline we are concerned with the maintenance of vegetation near the existing, built infrastructure. Consequently, community consultation in that context may generally involve:-

- Notification to customers, either generally (by way of public advertisement) or individually by card, letter or power bill, that vegetation work is about to commence in their area or street;
- Notification to an individual customer regarding a tree on their property that requires trimming;

- Notification to individual customers that a planned interruption to supply is required to carry out vegetation management work (usually 48 hours notice is given);
- Liaison with the local council that vegetation management work is about to commence in an area, particularly where a mutual obligation arrangement exists for the local council to chip or dispose of the trimmed material; and
- Liaison with the local council, community groups and other stakeholders when a new Vegetation Management Plan (see section 1.4.8), Vegetation Management Agreement (see section 3.6), or other local initiative is being negotiated between the local council and the local electricity distributor. This may involve invited public input, comment or meetings.

3.4 Factors Influencing Vegetation Management Options

Many factors will have an influence on the vegetation management option selected for any particular location. Land type is one influence and others may be:

- **Voltage of the Existing Power Lines**

Relevant when determining feasibility and costs associated with insulating the electrical network. Public risk or network reliability priorities may influence the proposed tree trimming works.

- **Tree Species**

Certain species are more likely to have a more aesthetic appearance after pruning. For example *Lophostemon confertus* (Brush Box) because of its broad domed natural canopy. This is contrasted by other species such as Eucalyptus sp. which in general have a straight or erect type branching habit and therefore do not prune well.

- **Tree Health**

The tree's health should be one of the factors considered in the overall environmental assessment of the tree/s in determining the preferred vegetation management option.

- **Number of Trees**

May be a factor if removal and replacement is being considered. A street with many trees may provide a significant amenity and removal would have a significant impact on the area. This may be the situation even if the trees are in poor health. However, if a lone tree in poor health or a lone tree with an unsuitable branching habit (see above in Tree Species subheading), then consideration would be given to the removal and replacement of that tree.

- **Trimming Costs/Constraints**

A factor in considering possible environmental enhancement and removal/replacement.

- **Removal and Replacement / Tree Management Plan, Costs**

The costs should be carefully considered when assessing this vegetation management option, in comparison to retaining the trees and continuing to trim.

- **Good Corporate Citizenship**

An important factor when considering the ramifications of all options and processes of vegetation management.

- **Environmental Enhancement Program**

A selective program of environmental enhancement of the network (e.g. Use of insulated cables, undergrounding etc.).

- **Network Reliability**

Overall, one of the three key performance indicators for vegetation management. Consequently a strongly weighted factor to be considered when selecting the vegetation management option, particularly for voltages at or above 11kV.

- **Access**

Access to trees in certain locations such as urban backyards can prove very difficult. This combined with other influencing factors such as network reliability and safety will play a major part in selecting the correct management option.

- **Technical Feasibility**

Various technical options do exist such as the use of Aerial Bundled Cable (ABC), however not all situations make these options feasible. Correct assessment of the feasibility is essential, as other factors will influence this option, particularly costs.

Consideration of the various influencing factors (not all factors will be relevant in every situation) will assist in determining the most appropriate and realistic vegetation management option. It is important that this determination be justified against Section 2.1, and although the required factors for consideration in this section are not weighted, they nonetheless should be responsibly assessed to demonstrate the outcome determined.

3.5 Vegetation Management Options

Having considered the factors influencing a given situation, determination should then be given as to the most suitable vegetation management option to be taken. These options may include one or more of the following:

- **Trimming**

To be carried out in accordance with the practices outlined in this guideline and to maintain safety clearances.

- **Removal/Replacement**

To be carried out only after environmental assessment, consultation and a formal Tree Management Plan. Refer to the *Electricity Supply (General) Regulation 2001 Part 11* contained within the *Electricity Supply Act 1995*.

- **Slashing**

A limited option for distribution voltages and suitable for specific locations only. Commonly used for transmission line easements and acceptable within National Parks. Formal assessment will be required.

- **Climbing and Trimming**

This limited option works particularly well when managing large trees in situations where EPV access is not possible, or severely restricted. This option may also be useful in certain situations where live line trimming is not viable. It is also a cost-effective option where only a small number of trees need to be trimmed and in environmentally sensitive lands.

- **Close Approach Trimming near Live High Voltage Mains and Equipment**

Cost effective option, maintains supply and therefore helps reliability factor. Consequently a very good option where continuous supply is essential (e.g. near hospitals, commercial centres etc.).

- **Environmental Enhancement Works**

A program specifically set up to improve the aesthetic impact of the overhead power lines on the environment. Such a program is aimed to maximize the benefits to the general community, while demonstrating good corporate citizenship.

- **Undergrounding Overhead Power Lines**

A desirable solution but often financially unrealistic on a large scale. Selected locations may be cost effective after assessing all environmental factors.

- **Insulate Overhead Power Lines**

Aerial Bundled Cable (ABC), LV & HV - A good solution where large trees are retained below power lines. Allows a tree's canopy to develop under, around or over power lines, although the safety clearances must be maintained – refer Drawing 2 and Table 2.

Covered Conductor Thick (CCT), 11kV & 22kV - Similar to ABC and may reduce the trimming required. This Cable is designed for large trees growing adjacent to the power lines rather than directly under.

- **Re-Route Overhead Power Lines**

Could be considered after assessing all the environmental factors. Limited application as this option may create a new problem and effects along the alternate route.

- **Offset Crossarm Construction**

An option where room permits on roadside verge and where trees are planted offset from the power lines (may be combined with use of insulated cabling). May be particularly suited to column shaped trees such as pines, or palm trees.

- **Use of Taller Poles**

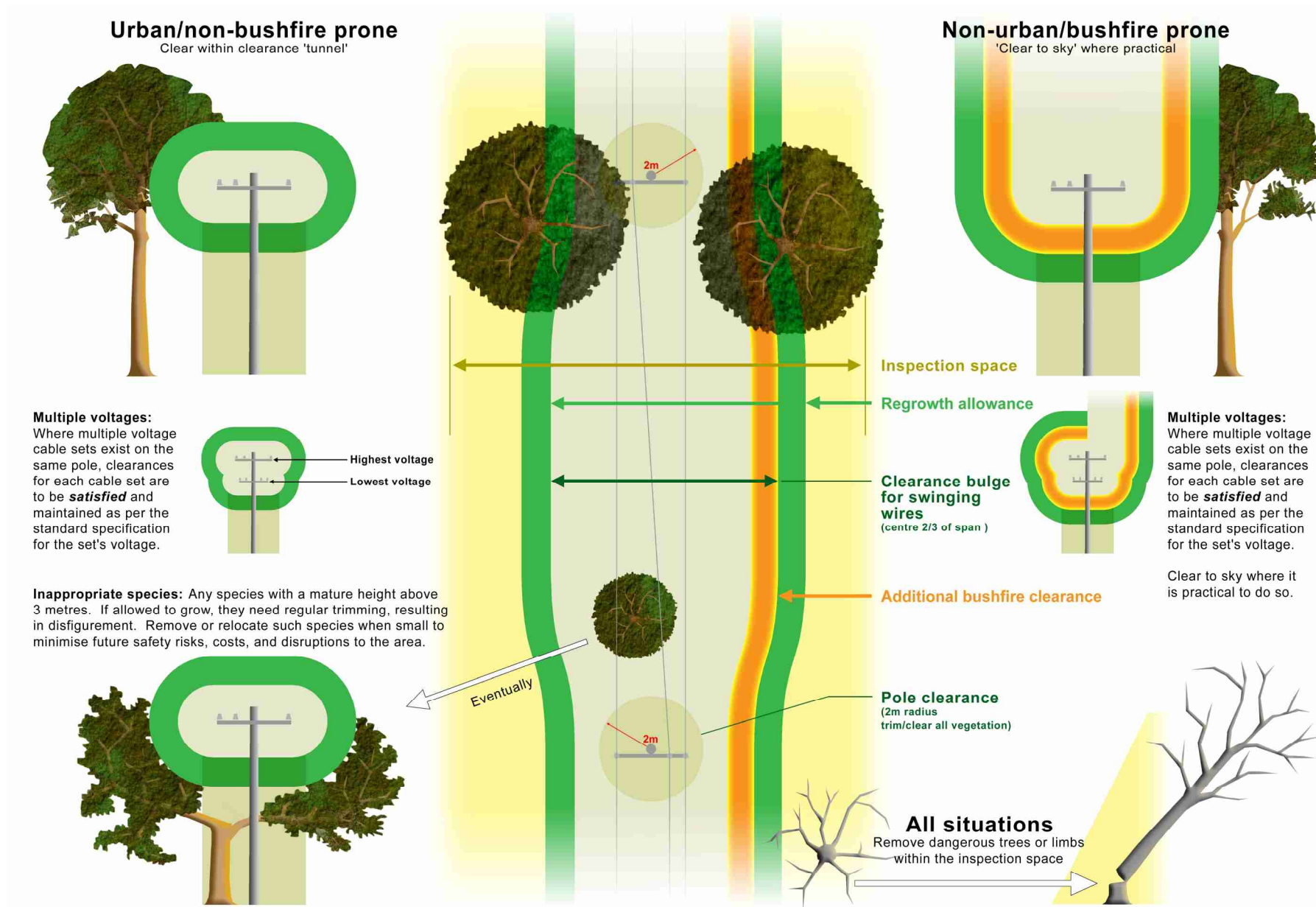
An option where tree health is good, trees will canopy below the wires, and tree numbers in a span are significant. However, insulation of the network may be the superior option.

3.6 Vegetation Management Agreements

Vegetation Management Agreements are another option to be considered which would put in place the protocol for managing vegetation in each of the local councils in the Network Operators' area. The key objectives would be negotiated between the two parties and may include such initiatives as tree removal arrangements, use of insulated cables or undergrounding where appropriate, preferred species selections for the streetscapes to achieve thematic, heritage or aesthetic outcomes, etc.

4. DRAWINGS and TABLES

4.1 Drawing 1: "Clearances for Bare Conductors and Covered Conductors"



4.2 Table 1: Minimum Safety Clearance Radius for Bare and Covered Conductors (CC)

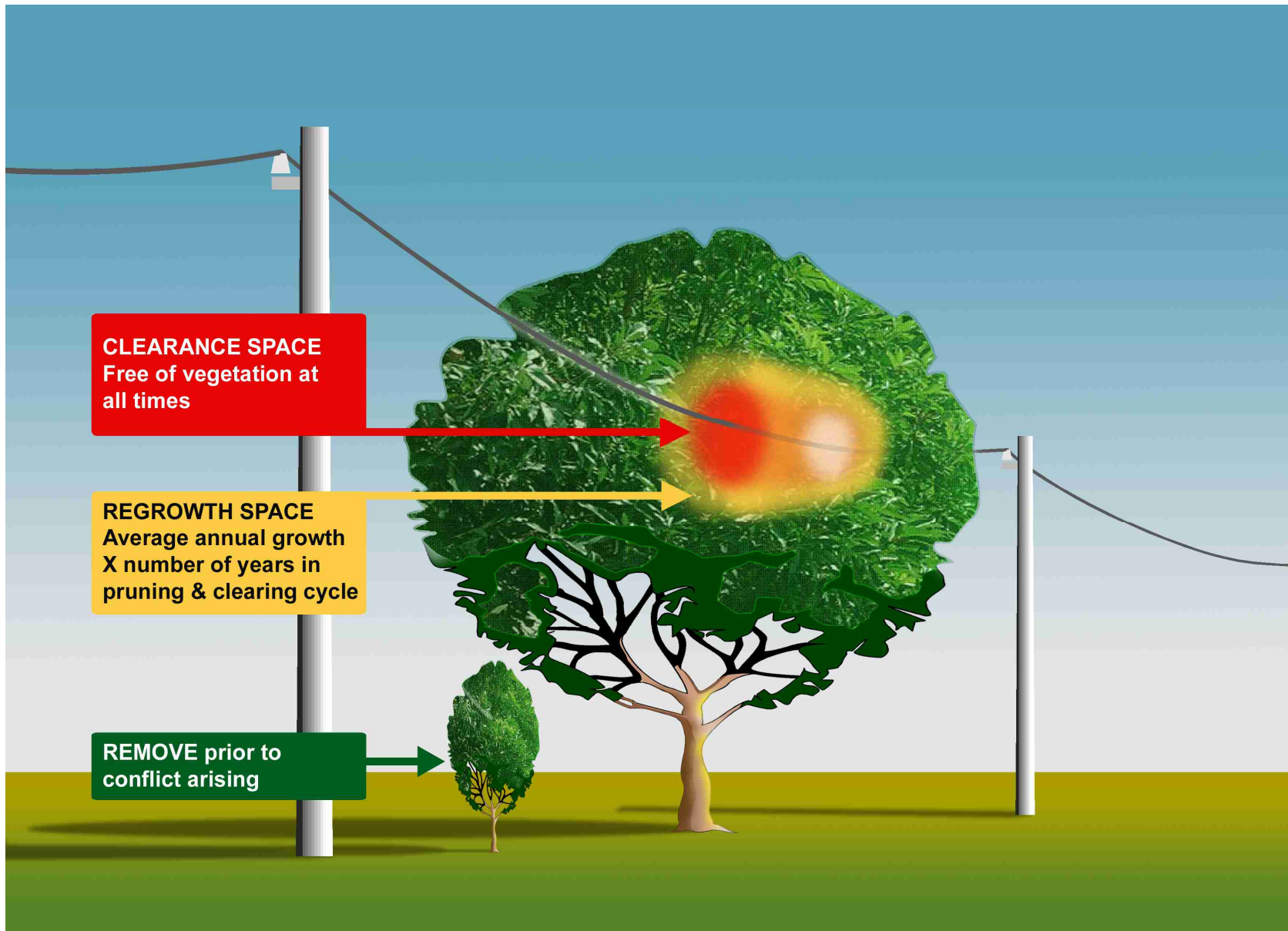
Cable Type & Operating Voltage	Distance along span				
	At Pole and 1/6th either side	Middle 2/3 of span less than 50m span	Middle 2/3 of span between 50m to 100m span	Middle 2/3 of span between 100m to 200m span	Middle 2/3 of span between 200m to 300m span ¹
<i>Up to and including 1000V Bare LV and service lines</i>	1.0m	1.0m	1.0m	2.5m	4.0m
<i>Up to and including 1000V Covered LV and service lines</i>	0.6m	0.6m	1.0m	2.5m	4.0m
<i>Bare above 1000V up to and including 22kV</i>	1.5m	1.5m	2.5m	3.5m	5.0m
<i>Bare 33kV up to and including 66kV</i>	2.0m	2.0m	3.0m	4.0m	6.0m
<i>Bare 132kV</i>	3.0m	3.0m	4.0m	5.0m	6.5m
<i>11kV up to and including 22kV Unscreened CC</i>	1.0m	1.5m	2.0m	2.5m	N/A

Note 1: For spans greater than 300m and clearances for voltages above 132kV to 500kV refer to specific construction types and design criteria or other specific requirements of the Network Service Provider. Also in specific circumstances the Network Service Provider may increase these minimum clearances due to other network constraints, e.g. High reliability requirements for Hospitals etc.

Note 2: Above table does not include any allowance for regrowth or additional clearances in Non-Urban/Bushfire prone areas.

See Drawing 1 for a diagram showing the application of this table.

4.3 Drawing 2: "Clearances for Aerial Bundled Cable and Covered (Insulated) Conductors"



4.4 Table 2: Minimum Safety Clearance radius for ABC and Covered Conductors (Insulated)

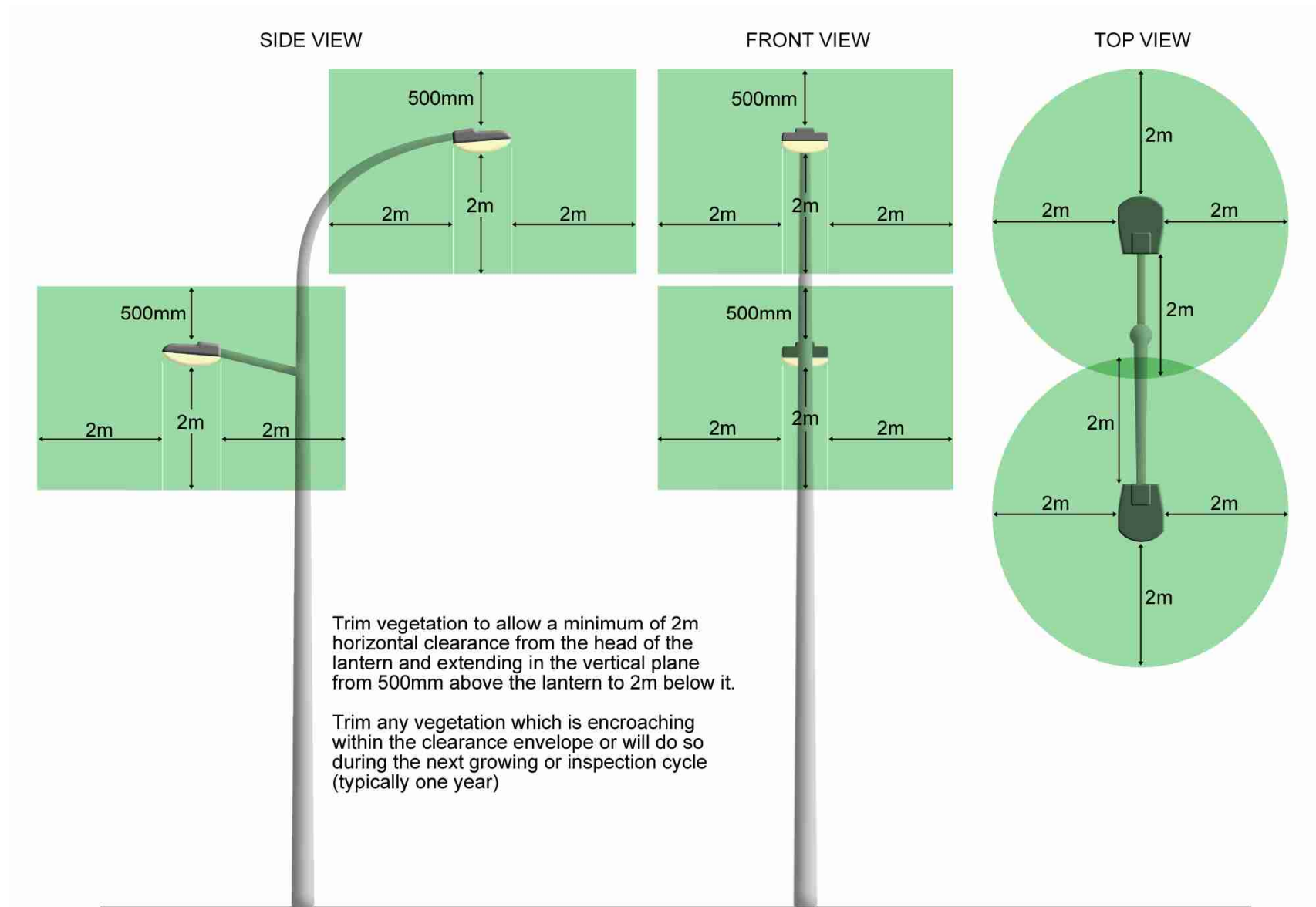
Cable Type & Operating Voltage	Distance along span		
	At Pole and 1/6th either side	Middle 2/3 of span less than 100m span	Middle 2/3 of span Greater than 100m
<i>Less than 1000V LV ABC / Insulated XLPE Service lines</i>	0.5m	0.5m	1.0m
<i>11kV ABC / Screened CC or CCT</i>	0.5m	0.5m	1.0m

Note 1: Above table does not include any allowance for regrowth or additional clearances in Non-Urban/Bushfire prone areas.

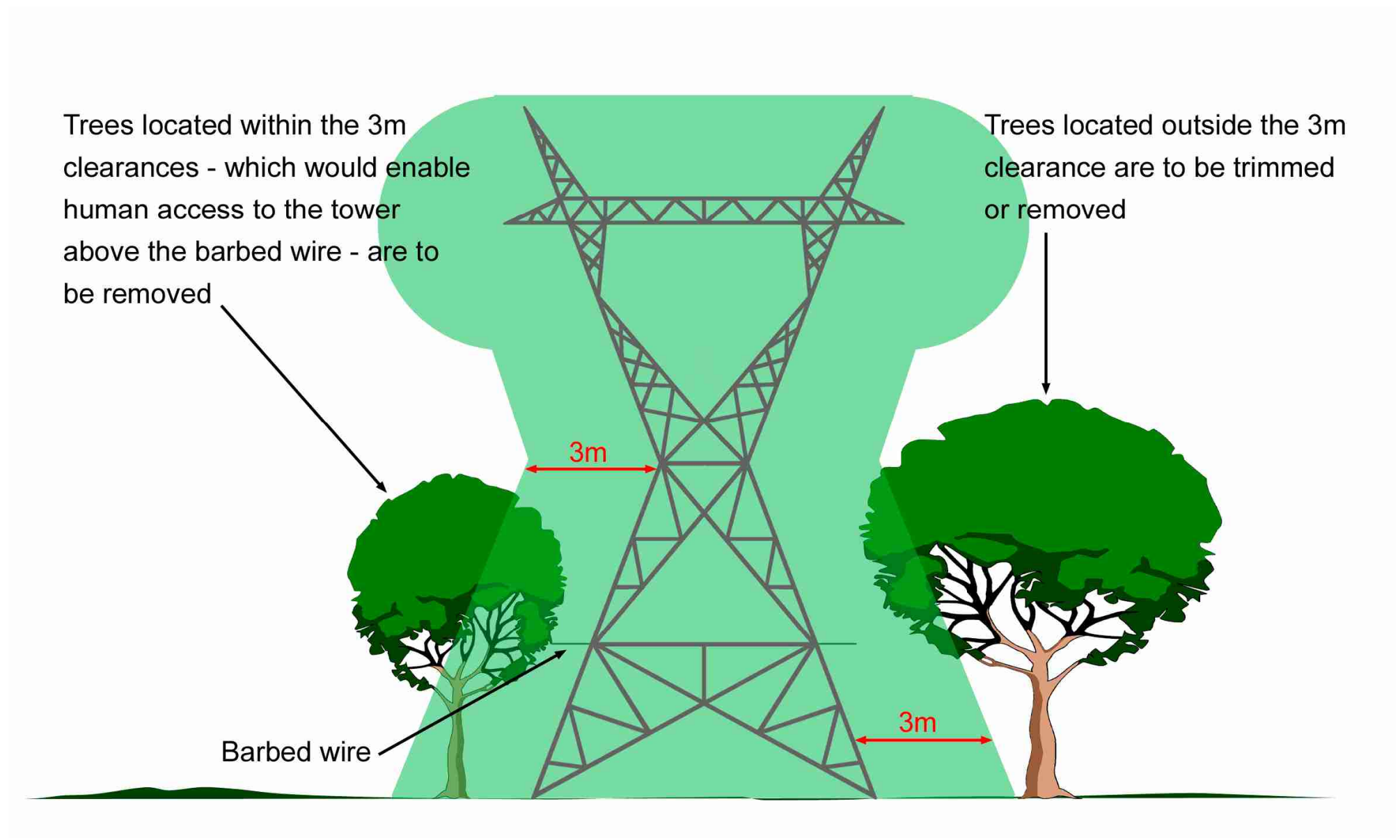
Note 2: Trim any twigs or branches thicker than your thumb (approximately 15mm diameter) which are in the aerial bundled conductor clearance tunnel, or which will encroach into the tunnel within the clearing cycle under still air conditions. The clearance tunnel should take into consideration variation in sag between support structures. (This requirement may not be applicable in Bushfire prone areas at the discretion of the Network Operator).

See Drawing 2 for a diagram showing the application of this table.

4.5 Drawing 3: "Clearances from Streetlights"



4.6 Drawing 4: "Clearances from Tower Structures"



4.7 Table 3: Minimum Safety Clearances from Poles & Tower Structures

Structure	Clearance
Poles	Clearances around all poles of all types and voltages is 2m radius, see Drawings 1,2 & 3. ¹
Tower Structures	3m radius around the tower or a 12m radius from the tower centre whichever is the greater. See Drawing 4 Tower plan.

Note 1: Consideration should be given to retaining vegetation of amenity value but clearances must be achieved to:

- prevent vegetation contacting the pole;
- enable the unhindered climbing of ladders in safe locations; and
- ensure that there is adequate clear space for a full excavation and inspection of the below ground area around the pole.

For clearances around Streetlighting lanterns see Drawing 3.

For clearances around Towers see Drawing 4.

4.8 Table 4. Regrowth allowances

Dependent on species and locality an allowance for growth must be assessed on a case by case basis. These columns indicate the estimated normal additional growth allowance that may be applied in the different vegetation circumstances - see Drawings 1 and 2.

This table gives the allowance for regrowth between inspection / maintenance cycles.

Location	Shrubs and mature trees	Typical native and introduced vegetation	Fast growing species in favourable environments and lopped vegetation
Urban areas where trimming cycles are short, typically annual	0.5m	1m	2m
Rural areas where trimming cycles are longer, typically 3 years.	1m	3m	6m

4.9 Additional clearances in Non-Urban / Bushfire Prone areas

Clearing vegetation above the conductors (“clear to sky”), in accordance with Drawing 1, should be implemented wherever possible in Non Urban / Bushfire prone areas. Consideration may be given to reduce this requirement where there is an occupied property within 25m of the lines.

At the discretion of the Network Service Provider an allowance of 0.5m may be added to the minimum safety clearances in Table 1 for bare conductors in Non Urban / Bushfire prone areas. This allowance is added to the minimum safety clearances before regrowth allowances are applied.

Other strategies such as specific maintenance or inspection cycles may be used instead of, or in conjunction with, the 0.5m suggested, based on the risk management profile of the network operator.

5. APPENDIX A: NSW Heritage Register Criteria

An item will be considered to be of State (or local) heritage significance if, in the opinion of the Heritage Council of NSW, it meets one or more of the criteria shown in the box below. While all criteria should be referred to during the assessment, only particularly complex items or places will be significant under all criteria. In many cases, items of environmental heritage will be significant under only one or two criteria.

In using these criteria it is important to assess the values first, then the context in which they are significant. Decide the appropriate context by considering similar items of local and State significance in each of these contexts. These criteria were gazetted following amendments to the *Heritage Act 1977* which came into force in April 1999. The Heritage Council determines the criteria for State significance and issues guidelines to assist in their application.

Criterion (a) -	an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);.
Criterion (b) -	an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area);
Criterion (c) -	an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);
Criterion (d) -	an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons;
Criterion (e) -	an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);
Criterion (f) -	an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);
Criterion (g) -	<p>an item is important in demonstrating the principal characteristics of a class of NSW's:</p> <ul style="list-style-type: none"> • cultural or natural places; or • cultural or natural environments. <p>(or a class of the local area's:</p> <ul style="list-style-type: none"> • cultural or natural places; or • cultural or natural environments.) <p>An item is not to be excluded from the Register on the ground that items with similar characteristics have already been listed on the Register</p>

Different components of a place may make a different relative contribution to its heritage value. Loss of integrity or condition may diminish significance. In some cases it may be useful to specify the relative contribution of an item or its components.

Other criteria for significance for a tree or group of trees are any of:-

- It/they make/s an important contribution to the character or amenity of the local area;
- It/they is/are indigenous to the local area and its species is listed under the *Threatened Species Conservation Act 1995*; or
- It/they represent/s an important habitat for native fauna; or
- It/they is/are part of a wildlife corridor or a remnant area of native vegetation;
- It/they is/are important to the maintenance of biodiversity in the local environment; or
- It/they is/are a notable visual element to the landscape of a local area.

6. APPENDIX B: Additional Reading

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