

UNCLASSIFIED

Vegetation Management Plan



UNCLASSIFIED

CEOP8008

PREPARED BY: MANAGER NETWORK RISK STRATEGY

AUTHORISED BY: MANAGER MAINTENANCE

DOCUMENT NUMBER: CEOP8008 ISSUE 7

This plan is copyright. No part may be reproduced by any process without written permission, except as permitted under the copyright act.

DISCLAIMER

As printed or saved copies of this document may not be current, users of this document are referred to Essential Energy's website where a current version of this document is available (www.essentialenergy.com.au/content/vegetation-management).

© 2012 ESSENTIAL ENERGY

UNCLASSIFIED**UNCONTROLLED COPY IF PRINTED**

UNCLASSIFIED**Contents**

1	INTRODUCTION	5
1.1	Consultation	6
1.2	Feedback and Review	6
2	OBJECTIVES	6
2.1	Legislation	7
3	PURPOSE	7
4	SAFETY	8
4.1	Landowner/Occupier's Safety Responsibilities	8
4.2	Vegetation Management Worker's Safety Responsibilities	9
4.3	Planters' Safety Responsibilities	9
4.4	Clearing Requirements for the maintenance of Underground Lines	9
4.5	Clearing Requirements for Existing Overhead Lines	9
4.6	Clearing Zone	10
4.7	Inspection Zone	11
4.8	Covered Conductor Thick (CCT) and Aerial Bundled Conductors (ABC) including Service Lines	11
4.9	Easement Corridors	11
4.10	Stays	11
4.11	Site Specific Tree Clearing Management Plan	11
5	LINE CLEARANCES EXISTING LINES	12
5.1	Maintaining Existing Lines	12
5.1.1	Table 1 Vegetation Clearances – Existing Bare Conductors	13
5.1.2	Drawing 1 – Existing Bare Conductors	14
	Table 2 Vegetation Clearances – Existing Insulated Conductors	15
5.1.3	Drawing 2 – Existing Insulated Conductors	15
6	FENCED ASSETS, POLES, STRUCTURES AND WATER CROSSINGS	16
6.1	Fenced Assets and Padmount S/S	16
6.2	Poles and Structures	16
6.3	Buffer Zones	17
6.4	Water Crossings	17
7	STREETLIGHTING CLEARANCES	18
8	ENVIRONMENTAL	18
8.1	Heritage Sites	19
8.2	Threatened Species	20
8.3	Protection of Flora and Fauna	20
8.4	Bush Fire Prevention	20
8.5	Erosion and Sediment Control	20
8.6	Roadside Management	21
8.7	Use of Herbicides	21
8.8	Pollution Control	21
8.9	Waste	21
8.10	Animal and Crop Diseases/Pathogens	21
8.11	Weeds	22
8.12	Noxious Weed Management for new line routes	22
8.13	Mangroves	22
8.14	Vegetation at Rivers, Lakes and Creeks	22
8.15	State Environmental Planning Policy (SEPP) and Commonwealth Protected Areas	23
8.16	National Parks	23
8.17	State Forests	23
8.18	Railways Land	23
8.19	Dead Trees or Branches	23

UNCLASSIFIED

8.20	Maintenance of Local Aesthetic Qualities	23
8.21	Pruning Method.....	24
8.22	Revegetation of Cleared Areas.....	24
8.23	Clearing Methods and Debris Disposal	24
9	PLANTING GUIDELINES	24
9.1	Rural Areas	25
9.2	Urban Areas.....	25
9.3	State Forests Agro forestry Ventures	25
9.4	Orchards	25
9.5	Essential Energy's Planting Guide.....	26
	9.5.1 Table 4 - Trees Unsuitable for Planting Under/Near Powerlines.....	27
10	UNDERGROUND POLICIES, NEW AND AUGMENTED CONSTRUCTION WORK	28
11	PUBLIC EDUCATION.....	28
12	METHODOLOGY OF VEGETATION CONTROL.....	29
12.1	Qualification of Employees	29
12.2	Pruning or Clearing Cycles	29
12.3	Urgent or Emergency Trimming.....	29
12.4	Consultation with Land Owner/Occupier	29
12.5	Notification of intended vegetation works	30
12.6	Dispute resolution	30
13	PRUNING PRACTICES.....	31
14	UNSTABLE AND HAZARDOUS TREES (HAZARD TREES)	31
15	ALTERNATIVES TO PRUNING	32
15.1	Electrical Options	32
15.2	Non-Electrical Options	32
	15.2.1 Tree Transplanting.....	32
	15.2.2 Removal.....	32
	15.2.3 Removing trees	33
15.3	Unsuitable Species	33
15.4	Strategies for Removals.....	34
15.5	Replacement of Trees.....	34
16	PROCESS FOR SAPLINGS AND REGROWTH CONTROL	34
17	ACCESS FOR MAINTENANCE OR REPAIRS	35
18	AUDITING PROCESS	35
19	TREE TRIMMING CONTRACTORS WORKING FOR ESSENTIAL ENERGY	36
20	RESPONSIBILITIES / ALLOCATION OF COSTS.....	36
20.1	Essential Energy	36
20.2	Site Specific Tree Plans.....	36
	20.2.1 Councils – In Principle Agreements	36
	20.2.2 Australian Macadamia Society – Charter in relation to management of Macadamia trees under powerlines.....	37
20.3	Private Landowners/Occupiers	37
21	KEY TERMS AND DEFINITIONS.....	38
22	REFERENCES	40
23	ATTACHMENT A – ESSENTIAL ENERGY VEGETATION MANAGEMENT PLAN PURPOSE STATEMENT	41
24	REVISIONS	42

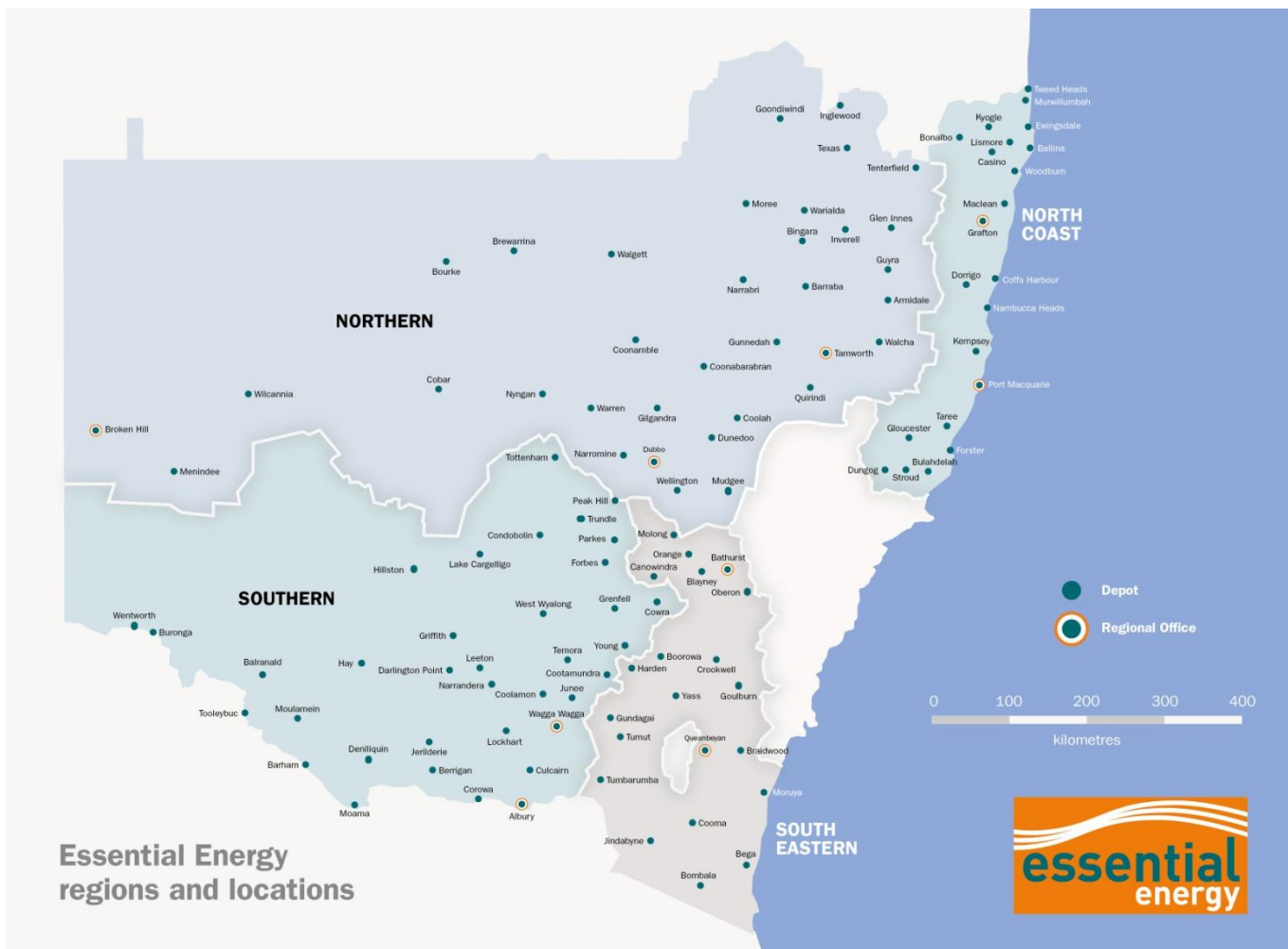
1 INTRODUCTION

Essential Energy recognises the amenity value of trees and other vegetation and their importance to our environment. However, vegetation must be managed near powerlines to maintain safety to individuals and the environment whilst maintaining the quality and reliability of the electricity supply. It can be a challenging task to achieve the balance between maintaining safety requirements, protecting infrastructure and minimising the environmental impact.

Essential Energy’s Vegetation Management Plan details the requirements and methodology of vegetation control near powerlines. The plan is Essential Energy’s Tree Management Plan for the purpose of the *Electricity Supply (General) Regulation 2001 (NSW)*.

Essential Energy’s Vegetation Management Plan has been prepared in consideration of the relevant legislation and industry guidelines.

ESSENTIAL ENERGY NETWORK AREAS and REGIONS



UNCLASSIFIED

1.1 Consultation

The review of this plan is undertaken in a way that gives an opportunity to comment on the proposed plan to all relevant stakeholders, including the relevant council or councils for the areas in which it is to operate, the residents and local community groups. The consultation includes:

- Direct consultation with Councils and Regional Advisory Groups (who represent the local communities) and other identified community groups.
- Written notice to the relevant Essential Energy customers.
- Publication in a local newspaper as well as being placed on exhibition with the relevant Local Councils.

This plan is also made available to the general public via the Essential Energy website and on request at any Essential Energy Service Centre or by calling 13 23 91.

1.2 Feedback and Review

Periodical reviews will be conducted to promote opportunities for continual improvement of the Vegetation Management Plan consistent with the consultation above. However, any interested parties may provide relevant comment and feedback on this plan at any time. These will be considered during the periodical reviews.

Written submissions should be addressed to:

Ian Fitzpatrick
Manager Network Risk Strategy
P.O. Box 718, Queanbeyan NSW 2620
Telephone: (02) 60423336 Mobile: 0419418236
E-mail: Ian.Fitzpatrick@essentialenergy.com.au

2 OBJECTIVES

The objective of this Vegetation Management Plan is to establish the manner in which vegetation near existing powerlines will be managed in order to:

- Minimise danger to the public posed by trees in close proximity to powerlines.
- Improve system reliability by reducing vegetation related interruptions to the electricity supply.
- Reduce the risk of fires caused by trees coming into contact with electricity wires.
- Minimise environmental impact.
- Reduce the risk of vegetation causing damage to, or interfering with powerlines.
- Provide an approach consistent with industry practices and legal requirements.

This plan (CEOP8008) does not deal with vegetation management for the construction of *new* powerlines. This is dealt with separately in CEOP2010 – Vegetation Clearing Guidelines for New Powerlines.

UNCLASSIFIED

2.1 Legislation

There are various Acts and Regulations associated with the management of vegetation. Those of most relevance to Essential Energy's electricity networks are referenced in section 21 REFERENCES.

Specific legislation includes:

- The Electricity Supply Act 1995 Section 48 – Interference with electricity works by trees. This contains requirements for maintaining vegetation and powers of a distributor to ensure it does not cause interference with electricity assets.
- The Electricity Supply (General) Regulation 2001 part 10 deals with tree preservation and tree management plans associated with electricity works. Its purpose is to deal with;
 - 1 minimising the extent of damage to trees near powerlines;
 - 2 the use of tree management plans in managing the vegetation near powerlines;
 - 3 the consultation associated with managing trees near powerlines.

3 PURPOSE

The purpose of this Vegetation Management Plan is to:

- Ensure proper guidelines and methodology are in place to promote Best Practice in the maintenance of vegetation under or near powerlines
- Ensure that those guidelines and methodology minimise the dangers to the public, vegetation management workers and electrical maintenance workers
- Assist those involved in the management of vegetation to understand Essential Energy expectations and obligations
- Detail responsibilities for maintaining clearance between powerlines and vegetation
- Ensure compliance with appropriate legislation including the *Electricity Supply (General) Regulation 2001* and *State Environmental Planning Policy (Infrastructure) 2007*.
- Provide requirements for the clearing of vegetation prior to the installation of new overhead and underground powerlines

UNCLASSIFIED**4 SAFETY**

Safety is a core value of Essential Energy. Essential Energy's Health and Safety Policy, details the broad guidelines, safety requirements and objectives. Trees near powerlines, are a safety risk. The dangers include:

- Falling branches or trees bringing down live power lines
- Ignition of bushfires with subsequent impact to property, individuals and the environment.

And to a lesser extent

- Children climbing trees near powerlines
- Electric shock potential from property owners clearing vegetation near powerlines.

Essential Energy invests a significant component of its operational budget on the management of trees and other vegetation to address such risk where possible. The community, councils, and private landowners also have a role in managing the risks.

4.1 Landowner/Occupier's Safety Responsibilities

The landowner/occupier, should monitor the clearance between powerlines and vegetation to ensure the clearance space is free of vegetation at all times. Refer to the following section *Line Clearances*.

Essential Energy should be contacted for advice if the clearance space is compromised. Where the landowner/occupier is responsible for the management of the vegetation, Essential Energy should be contacted to advise of an authorised contractor who can carry out the work.

Trimming or removal of trees near powerlines is extremely dangerous and should not be attempted by untrained persons. Unauthorised persons should not do any trimming or removal works within the restricted approach distances set out in the WorkCover Code of practice: *Work Near Overhead Power Lines 2006 Chapter 5*. All other trimming and removal works near powerlines must have regard to the WorkCover Code and be carried out in accordance with *AS4373 (2007) Pruning of Amenity Trees*.

Copies of this code are available at www.workcover.nsw.gov.au

Only authorised vegetation management workers may carry out work on trees in close proximity to powerlines, that is, where any part of the tree is within 3m of a conductor or any branch at any distance overhanging conductors.

Where this is the case, Essential Energy will provide advice and a list of powerline authorised vegetation management contractors. In some cases the work to clear a tree to a safe distance from the powerline may be provided by Essential Energy without charge.



UNCLASSIFIED

4.2 Vegetation Management Worker's Safety Responsibilities

Vegetation management workers must be appropriately qualified and authorised to carry out vegetation control work where the tree, the workers or the equipment is to come within 3 metres of any powerlines. While carrying out management measures vegetation maintenance workers must not endanger themselves or members of the public. All appropriate Legislation, Codes of Practice and Essential Energy Safety Procedures shall be followed.

4.3 Planters' Safety Responsibilities

Those planting trees and other tall growing vegetation should realise their safety responsibilities and not create a potential safety problem. Planting near powerlines could have safety and economic consequences in the future. Planting guidelines are contained in this plan.

The costs associated with managing vegetation near powerlines can be significant. These costs have a direct impact on the price of electricity for all consumers and potentially may expose the person who has control of the vegetation to removal expenses.

4.4 Clearing Requirements for the maintenance of Underground Lines

Clearing shall be carried out to allow for the installation of replacement lines and to limit the potential effects of roots with connection boxes, conduits and cables.

The clearing zone shall allow adequate working clearance for excavation, construction and backfill equipment. The clearing zone width will vary according to the construction methods and is at the discretion of the project manager.

Tree roots can extend beyond the drip line of trees up to 5 times the drip line radius. The roots of some species can interfere with connection boxes, conduits and cables, and ficus species (figs) are an example of this type of vegetation. Horticultural advice should be sought in these circumstances.

At the completion of the works the area shall be rehabilitated to prevent corrosion.

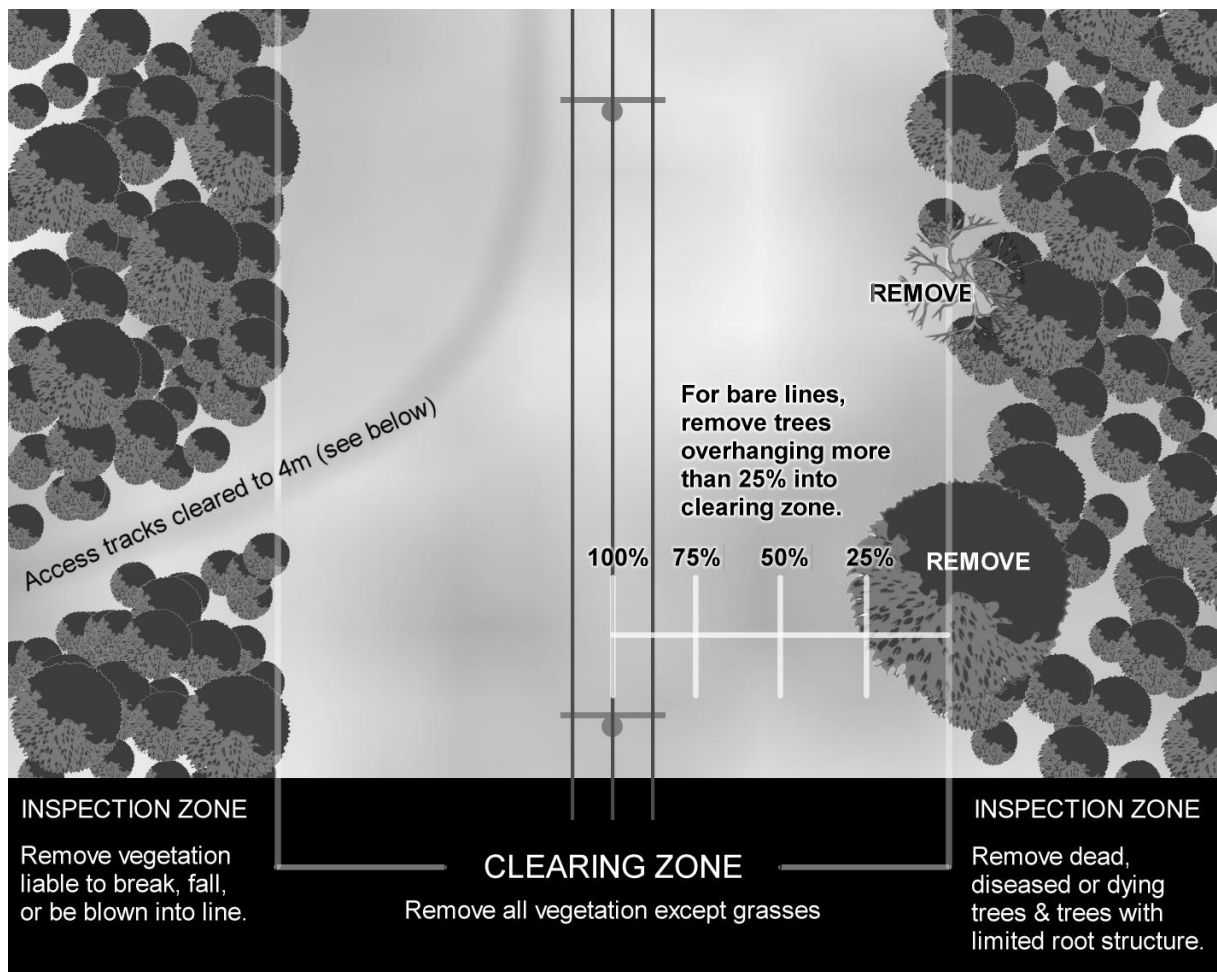
4.5 Clearing Requirements for Existing Overhead Lines

Many factors affect the extent of clearing including the length of the span, the conductor material, the amount of sag on hot days with heavily loaded lines, the amount of conductor swing, the degree of whip of adjacent trees on a windy day, the type of vegetation and regrowth rates, the terrain etc.

The following (Figure 1) provides the general requirements for clearing for overhead power lines. This should be read in conjunction with the clearance distance tables in section 5.

UNCLASSIFIED

Figure 1



4.6 Clearing Zone

All vegetation except grasses is to be removed from the clearing zone except below:

- Low growing species shall be retained at river or creek crossings
- All vegetation in deep valleys where the conductors will be above the maximum height of the prevailing vegetation and the clear space will never be compromised can be retained (except for construction access requirements)
- Low growing species may be retained for the first 5 metres of the corridor adjacent to main roads for a visual buffer zone providing this does not restrict access to assets
- Stumps shall be retained where there is the possibility of erosion.

In long spans, the cable may blow out a considerable distance (easement width shall allow for any conductor blow out) and vegetation should be cleared in accordance with Tables 1 & 2 Vegetation Clearances.

The power line shall generally be installed in the centre of the clearing zone. Where the powerline traverses the side of steep slopes the Level 3 Accredited Service Provider may specify an appropriate offset.

UNCLASSIFIED**4.7 Inspection Zone**

Trees within this zone should, wherever justified from a practical, safety and economical position, be a distance from the powerline equal to or greater than their potential height i.e. it is desirable that a 20 metre tree should not be within 20 metres of the line. The topping of tall trees is not considered a suitable solution to reducing their potential threat to the powerline. Vegetation liable to break, fall or be blown into the line in this zone shall be removed where possible. This includes dead, diseased and dying trees with limited root structure.

Trees within this zone that overhang or could overhang into the clearing zone past the first one quarter of the width of the clearing zone for bare conductors shall be removed (see figure 1).

Low growing species (>3m tall) may be allowed in this zone at the discretion of Essential Energy.

4.8 Covered Conductor Thick (CCT) and Aerial Bundled Conductors (ABC) including Service Lines

CCT and ABC are used to limit the extent of clearing and to provide a safe method of overhead distribution. To ensure safety, allow construction and limit Essential Energy's future clearing costs a clearing zone width of 6 metres applies.

Overhang is permissible in urban areas, providing the minimum clearance distances in Table 2 are maintained in all directions and they are considered structurally sound by visual inspection and are in low bushfire risk zones.

4.9 Easement Corridors

For details about easement widths or corridor requirements for powerlines refer to CEOP8046 Network Planning: Easement Requirements Section 8.

The distances specified in tables in CEOP8046 take into account not only vegetation interference potential but other factors such as access to infrastructure, structure encroachments, and public safety associated with stray currents.

4.10 Stays

Vegetation is to be cleared to a width of 5 metres along the line of the stay and for a radius of 3 metres around the stay peg. Deep disturbance of soil at the stay position is to be avoided.

4.11 Site Specific Tree Clearing Management Plan

A site specific 'Tree Management Plans' may be designed to address unique site conditions. These require appropriate risk assessment to be carried out and must be approved by Essential Energy.

UNCLASSIFIED

5 LINE CLEARANCES EXISTING LINES

5.1 Maintaining Existing Lines

The following two pages contain Tables and Drawings outlining the minimum clearances to be achieved when undertaking maintenance trimming or removals. These are consistent with expectations under the regulations and industry guidelines (ISSC3) – *Guide to Maintaining Safety Clearances Near Powerlines*).

Exceptions to the Rule

In the past a small proportion of easements have been granted for some powerlines with specific special vegetation clearance terms e.g. commercial macadamia tree plantations. Essential Energy inherited these site conditions from other authorities and in some cases these specified clearances do not satisfy the current general standards for minimum vegetation clearances as highlighted in the tables in section 5. Whilst it is not desirable to have terms that are inconsistent with the standards, the legal terms of those easements continue to apply. Essential Energy may over time risk assess these sites and renegotiate these terms with the landowners.

New Powerlines

The focus of this plan (CEOP8008) is on vegetation maintenance associated with *existing* power lines. For the vegetation requirements for *new* power lines refer to CEOP2010.

UNCLASSIFIED**5.1.1 Table 1 Vegetation Clearances – Existing Bare Conductors**

Voltage	Spans 0-100m	Spans 100-200m	Spans 200-300m	Spans > 300m See note 3
Urban LV	1.0	2.5	4.0	
Rural LV	3.0	3.0	4.5	
Urban HV (1kV - 66kV)	2.5	3.5	5.0	
Rural HV 1kV – 22kV	3.0	4.0	5.5	10.0 (note 3)
Rural HV 33kV & 66kV	3.5	4.5	6.5	15.0 (note 3)
Urban & Rural 132kV	4.5	5.5	7.0	22.5 (note 3)

Note:

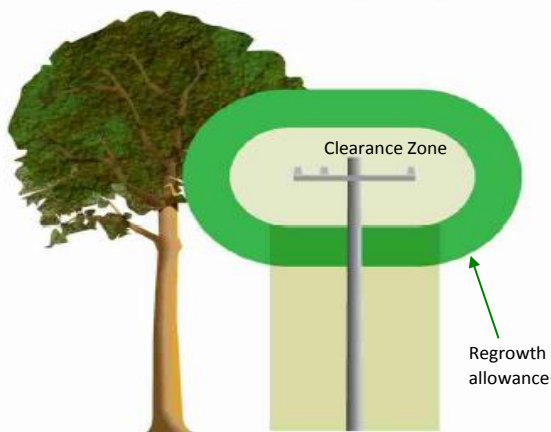
- 1 All distances are to the “nearest conductor”**
Allowance for bushfire prone plus sag and sway are included in the distances specified.
- 2 Allowance for regrowth (between cycles) must be added to the values in the table**
Allowance for regrowth should be estimated by delegated persons or Cutting crews based on consideration of risk factors such as; *species, growth rates, seasonal factors & environment, tree health, potential movement (whip), and period between cutting cycles.*
- 3 Spans over 300m**
Longer spans can sag and swing considerable distances. Long spans in excess of 300m represent 10% of all rural spans. In these cases clear trees to corridor width unless 1. Horizontal Clearance – their full mature height will be less than the distance to the conductor i.e. they cannot touch the line should they fall, 2. Vertical Clearance – the full mature height of a tree under the line will not exceed 3m and does not inhibit access for maintenance vehicles. Any alternative clearances should be based on design calculations to ensure the sag and sway are considered.
- 4 Determining span length**
Where the span length is unknown it can be estimated on site or with the aid of range finding binoculars. The most common span distances are indicated in grey shaded cells.
- 5 Hazard trees**
Whilst carrying out vegetation inspections attention should be given to trees outside the clearance zone that have a high likelihood of contact with conductors. For practical application, this is an assessment of vegetation in visibly poor health or of poor structural integrity in the view of the inspector. It would not be practical or environmentally appropriate to trim or remove all vegetation outside the clearance zone with potential to fall on a line as this is difficult to predict without extensive investigation of each plant.

UNCLASSIFIED

5.1.2 Drawing 1 – Existing Bare Conductors

Urban or Low Bushfire Risk.

Clear to minimum distances specified in Table 1.



Rural or High Bushfire Risk.

Table 1 rural distances include bushfire risk allowance. Regrowth must be added. Remove overhangs in targeted high risk areas, in all other situations remove where practical.

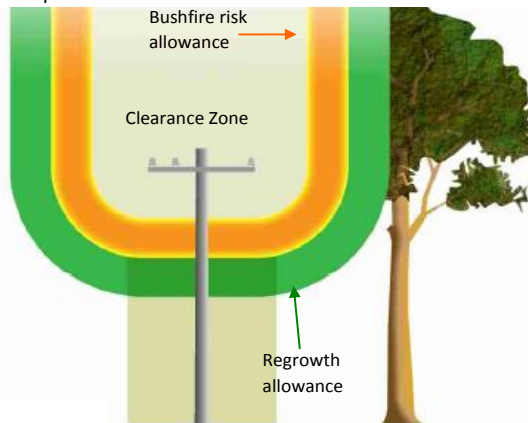


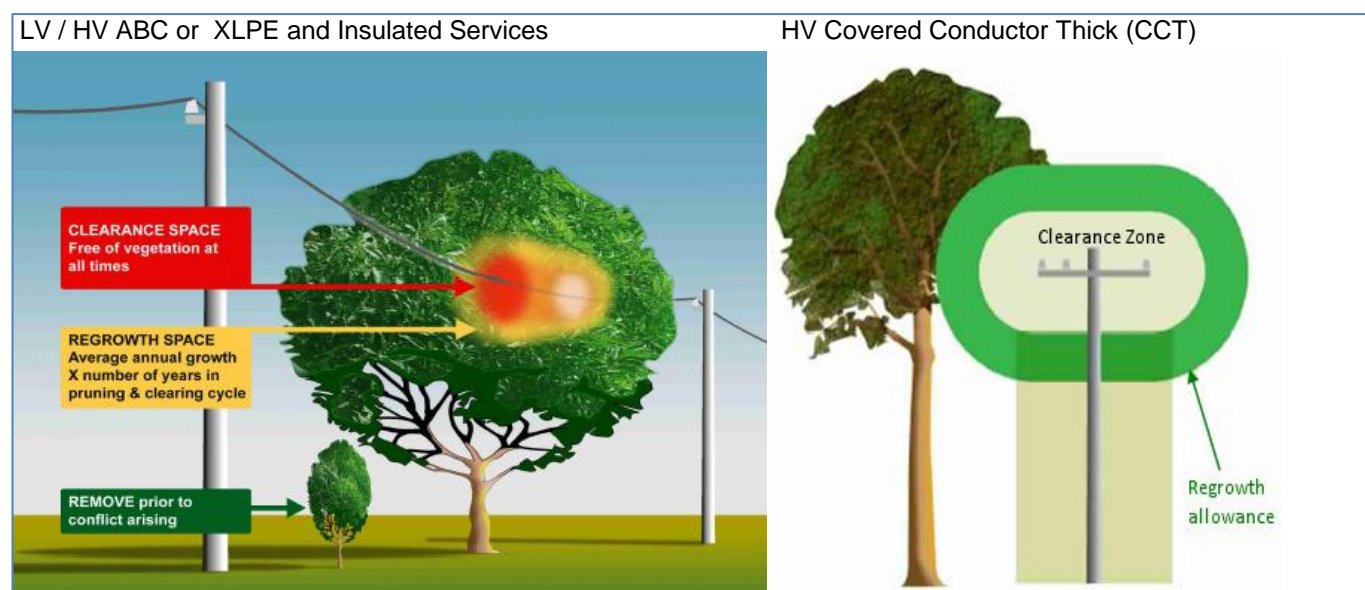
Table 2 Vegetation Clearances – Existing Insulated Conductors

Voltage	Spans 0-100m	Spans 100-200m
Urban LV Service Lines	Not touching	N/A
Urban LV Insulated Mains	0.5	1.0
Urban HV CCT / ABC	1.0	1.5
Rural LV Insulated	1.0	2.0
Rural 1kV – 33kV CCT / ABC	2.0	3.0

Note:

- 1 All distances are to the “nearest conductor”.**
Allowance for bushfire prone plus sag and sway are included in the distances specified.
- 2 Allowance for regrowth (between cycles) must be added to the values in the table.**
Allowance for regrowth should be estimated by delegated persons or Cutting crews based on consideration of risk factors such as; species, growth rates, seasonal factors & environment, tree health, potential movement (whip), and period between cutting cycles.
- 3 Determining span length.**
Where the span length is unknown it can be estimated on site or with the aid of range finding binoculars. The most common span distances are indicated in grey shaded cells.
- 4 Overhang trees & branches.**
Overhang is permissible in urban areas, providing the minimum clearance distances in the table are maintained in all directions and they are considered structurally sound by visual inspection and are in low bushfire risk zones.
- 5 Grey Shaded cells.**
Grey shaded cells indicate the most common span distance for insulated conductors (0-100m range).

5.1.3 Drawing 2 – Existing Insulated Conductors

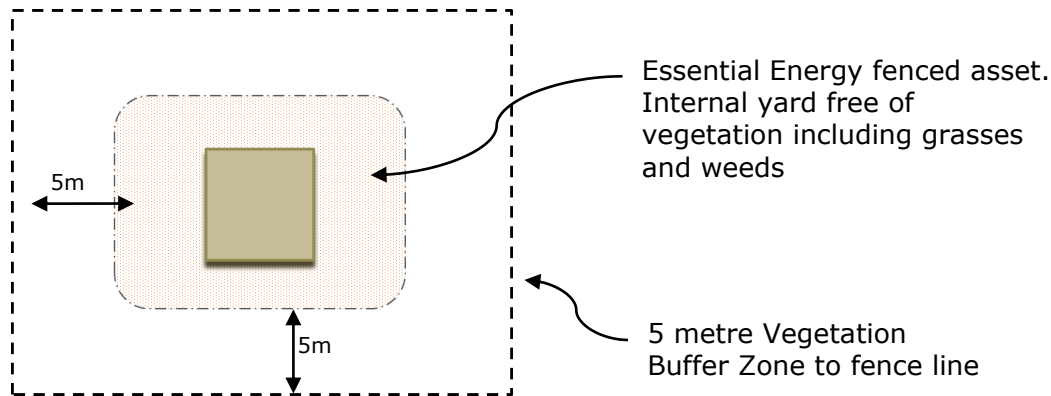


UNCLASSIFIED

6 FENCED ASSETS, POLES, STRUCTURES AND WATER CROSSINGS

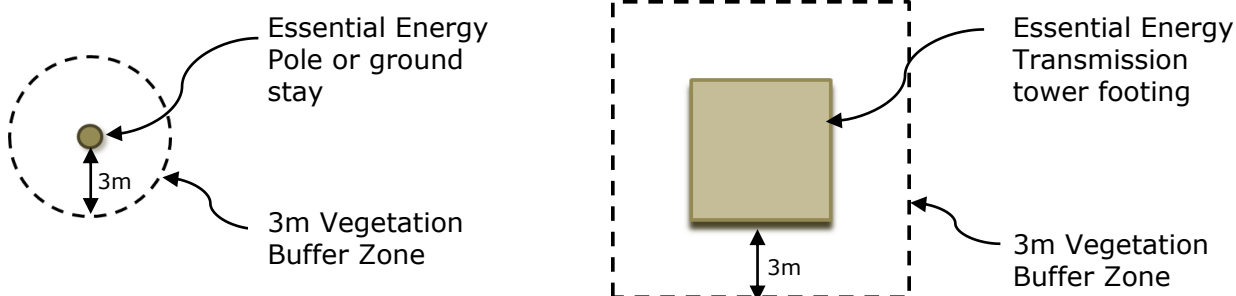
6.1 Fenced Assets and Padmount S/S

Fenced asset sites in rural areas should retain a Vegetation Buffer Zone of 5 metres free of flammable trees & shrubs. Grasses and small non-flammable shrub species are acceptable. The internal yard area of the asset should be free of all vegetation including grasses and weeds.



6.2 Poles and Structures

Where vegetation is interfering with a pole, structure or stay wire or any attachment on a pole or structure, a minimum clearance of 3 metres is to be achieved in all directions around the pole, structure or stay wire and attachment. Where it is impractical for this clearance to be achieved, vegetation is to be trimmed so that the pole or structure can be safely accessed. Vegetation should be trimmed to enable each pole or structure to be safely accessed from a ladder and to enable a below ground line inspection of the pole or structure to be carried out without hindrance from roots or branches. Trees and tree branches should be trimmed where necessary to prevent unauthorised access to pole steps or other pole attachments that are normally out of reach.



UNCLASSIFIED**6.3 Buffer Zones**

The purpose of a 'Buffer Zone' around assets is to reduce risk that highly combustible fuel loads pose to assets in the event of a fire occurring. These risks include:

- The effects of radiant heat on electrical assets from wildfires
- Fire compromising the integrity of security fences
- Fires occurring inside fenced areas spreading.

Less combustible vegetation is permitted in these zones subject to risk assessment by delegated persons. For example, grasses of low height or certain shrubs and trees species may actually provide some level of protection from fires.

Replacement of unsuitable (highly flammable) species with suitable species should be considered where appropriate.

Buffer zones in urban areas may not be practically possible.

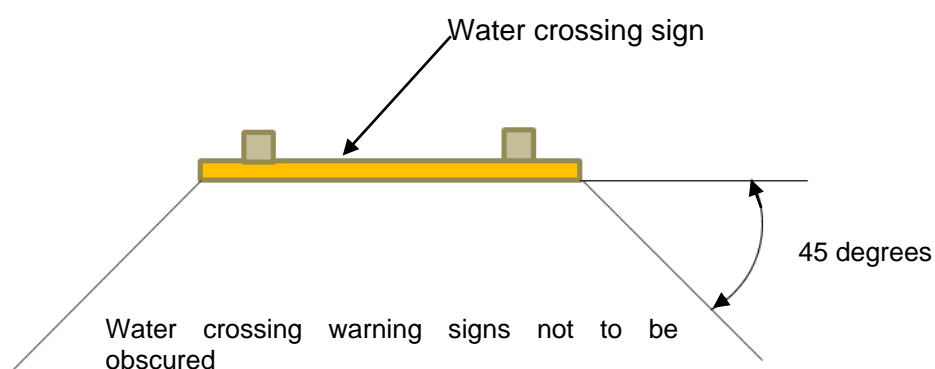
6.4 Water Crossings

Water crossing signs are located adjacent to bodies of water, to warn of the presence of underground or overhead powerlines crossing the body of water.

All vegetation is to be cleared to ensure that the entire face of a water crossing sign is visible to watercraft:

- From any point within 45 degrees from each side of the surface of the sign
- From water level to 5 metres above the surface of the water, where the sign faces the surface of the water.

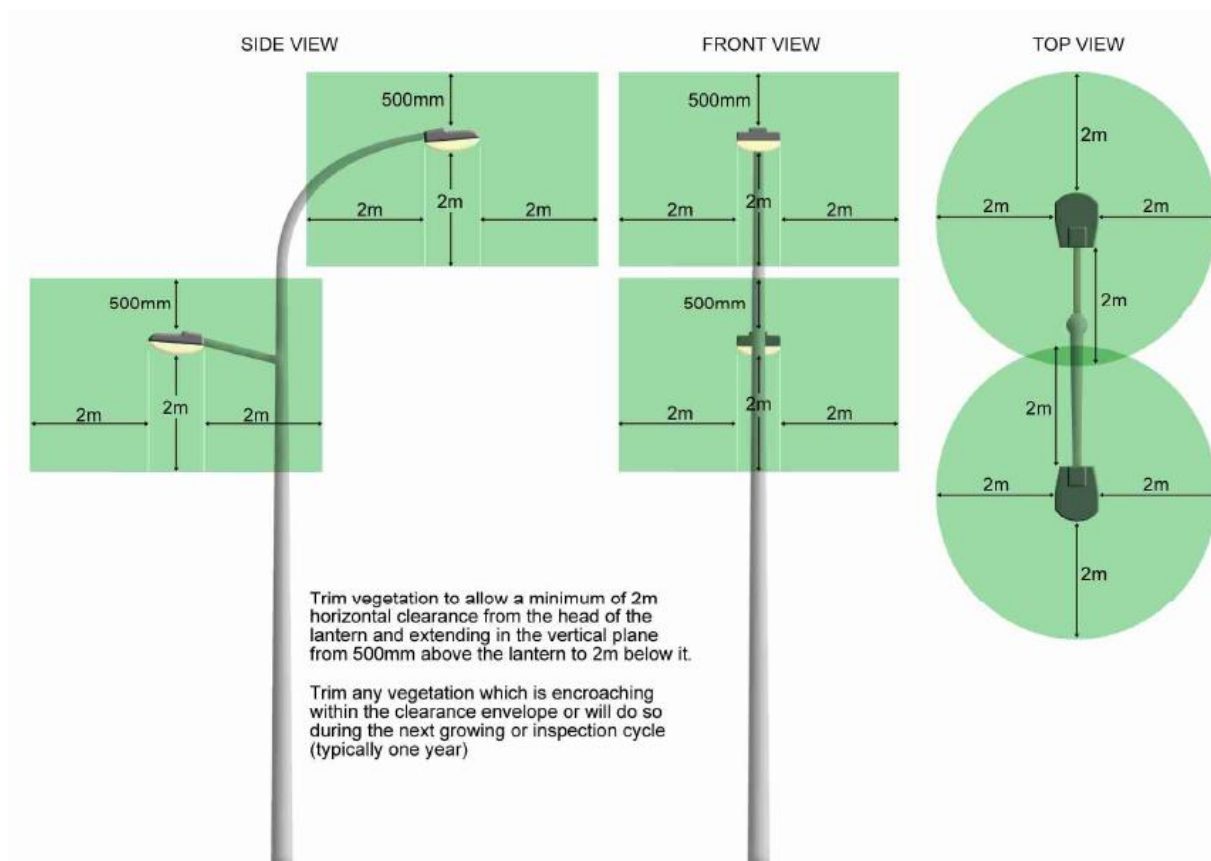
Trim any vegetation which is encroaching or will encroach or obscure during the growing / inspection cycle.



UNCLASSIFIED

7 STREETLIGHTING CLEARANCES

The primary purpose of the Streetlighting, to enhance public safety through appropriate street illumination levels, should be taken into consideration when pruning where public streetlighting exists. The following requirements for clearing around the lamps is taken from ISSC3 and provided as a guide. The councils have ultimate responsibility for street lighting levels and fund their operation therefore, where they specify clearing requirements different to those indicated below, these should be given consideration.



8 ENVIRONMENTAL

Essential Energy's Environmental Management System (EMS), certified to international standard *ISO 14001*, includes Essential Energy's Environmental Policy and, applies broadly to all functional areas including vegetation management. The EMS requires Essential Energy to identify the environmental issues relating to the activities Essential Energy carries out and to use a risk assessment process to determine the significance of Essential Energy's impact.

In relation to vegetation management, the environmental risks have been considered and reflected in the standards and procedures set out in this Vegetation Management Plan. In certain circumstances Essential Energy has to balance the safety requirements with the environmental sensitivities. Often the most appropriate option to resolve clearance issues is dependent on the environmental value of the flora in question. For example trees with lesser environmental or heritage value may be trimmed while those with more significance may involve relocating or insulating the line.

UNCLASSIFIED

Good vegetation management practices, including removal of a small number of trees or branches, can actually provide greater protection of the wider environment by avoiding potential bushfire damage associated with powerlines.

Essential Energy will carry out vegetation management near powerlines in compliance with applicable statutory obligations and in accordance with this Plan.

Essential Energy has developed several internal manuals for guidance in regard to environmental matters. Although these manuals are relevant to this Plan they do not form part of the Plan. These manuals may be amended at any time. If this occurs this Plan will be deemed to refer to the latest version of these manuals. Generally an amendment to these manuals will not require an amendment to this Plan (unless the change materially affects any provision of this Plan).

Document ID	Title
CECM1000.01	HSE Manual: Management System Core Components
CECM1000.03	HSE Manual: Incident Management
CECM1000.10	HSE Manual: Hazardous Materials
CECM1000.13	HSE Manual: Bushfire Prevention & Survival
CECM1000.70	HSE Manual: Environmental Impact Assessment NSW
CECM1000.71	HSE Manual: Environmental Impact Assessment QLD
CECM1000.72	HSE Manual: Air
CECM1000.73	HSE Manual: Water
CECM1000.74	HSE Manual: Noise
CECM1000.75	HSE Manual: Waste
CECM1000.76	HSE Manual: Land Use
CECM1000.77	HSE Manual: Flora & Fauna
CECM1000.79	HSE Manual: Cultural & Heritage
CECM1000.80	HSE Manual: Resource Conservation
CECM1000.81	HSE Manual: Pesticide Notification Plan
CECM1000.90	HSE Manual: Handbook
CECP1000	Corporate Policy: Safety, Security, Health & Environment Policy
CEOP2010	Operational Procedure: Vegetation Clearing Guidelines for New Powerlines

8.1 Heritage Sites

Essential Energy seeks to preserve natural and cultural heritage features including Aboriginal sites, and non-aboriginal historic structures and memorial gardens, parks, tree plantings and landscapes including those heritage listed where these are known or identified and brought its attention. This includes trees listed singly, in groups, avenues, streetscape plantings or conservation areas on the State Heritage Register under the NSW Heritage Act 1977, covered by tree protection orders, listed on significant tree registers, heritage schedules or in “Special Character Areas” on local and regional environmental plans (LEPs and REPs) and development control plans (DCPs) prepared under the Environmental Planning and Assessment Act 1979, listed on the Register of the National Estate by the Australian Heritage Commission and classified by the National Trust of Australia).

UNCLASSIFIED

Works shall cease where there are finds of Aboriginal artefacts or other archaeological artefacts. They shall be reported to Essential Energy, National Parks and Wildlife Service and the Heritage Office for the appropriate action.

Council trees could be protected under Tree Protection Orders, Significant Tree Registers, and heritage schedules as either items or in conservation areas, in “Special Character Areas”, in bushland or scenic protection zones on LEPs. They could also form a key part of areas controlled by development control plans (DCPs).

Significant, special character, protected, memorial and heritage trees may require more frequent trims to minimise impact or the consideration of alternative solutions as detailed in the section of this plan called *Alternatives to Pruning*.

Consent is required from the relevant body to excavate in areas where archaeological relics are known or likely to be disturbed or damaged.

8.2 Threatened Species

Where Essential Energy is made aware of, or identifies, the existence of threatened species, every reasonable effort will be made to minimise the impact or manage the situation.

Management of corridors under powerlines can sometimes provide suitable conditions for threatened grass or herb species.

8.3 Protection of Flora and Fauna

Essential Energy vegetation management workers shall conduct activities in accordance with CECM1000.77 Flora and Fauna

8.4 Bush Fire Prevention

Recurring Bush fires can be devastating for the environment and personal life and property. One of the primary reasons for vegetation control near powerlines is to reduce the potential ignition of bush fires caused by trees interfering with electricity lines. Whilst Essential Energy encourages clear corridors under powerlines, it does not always directly control fuel build up as this is dependent on occupational land uses and the environmental conditions.

Essential Energy works cooperatively with NSW Rural Fire Services to manage the bush fire risk. Landowners and rural fire services sometimes rely on powerline corridors as strategic fire breaks or fire prevention operations.

Clear corridors also assist in protecting infrastructure from potential damage caused by fires.

8.5 Erosion and Sediment Control

Vegetation management works will be carried out to minimise disturbance to low growing species, vegetative ground covers and topsoil, to prevent or minimise erosion.

If there is the possibility of erosion, the stumps and the root structures of vegetation to be controlled should be retained.

Where the site is left exposed and has the potential to erode then appropriate measures will be implemented in accordance with recognised mitigation practices, this may include re-seeding the area.

It is recognised that the disturbance of acid sulphate soils can be an issue and vegetation management works shall be carried out to minimise soil disturbance.

UNCLASSIFIED**8.6 Roadside Management**

Essential Energy will endeavour to work within the principles and guidelines of the NSW Roadside Environment Committee, as roadside linear corridors can have high conservation value in some locations. Essential Energy continues its involvement as an active member of the NSW Roadside Environment Committee.

8.7 Use of Herbicides

Tree stumps, which cannot be removed, shall be cut at ground level and treated by cut stump application.

All suckers, saplings or immature trees in the clearing zone shall be treated by herbicide to prevent regrowth. This is best done when the vegetation is actively growing and shall be carried out to the manufacturer's recommendations using a herbicide suitable and registered for the vegetation involved.

In some instances herbicide application may not be appropriate at the time initial clearing works are undertaken. In such instances, the Project Manager is to specify an appropriate follow up period for the customer to carry out herbicide control of suckers and regrowth. The follow up period specified will generally not exceed twelve months from the date the clearing was carried out.

8.8 Pollution Control

Disposal of any material by Essential Energy's vegetation management workers must be in accordance with legislative requirements.

Watercourses and water bodies shall not be polluted by rubbish, felled or cut vegetation, toilet waste, silt, fuel spillage, herbicide, herbicide containers, etc. Refuelling operations or decanting of herbicides should be conducted at least 30 metres away from watercourses.

Spillage of herbicides or fuels should be avoided, but where a spillage or leakage has occurred, the applicable Essential Energy Procedure shall be followed to ensure adequate control measures are implemented and the appropriate notifications are carried out.

8.9 Waste

Debris may be left in rural situations to decompose naturally, where it will not pose a safety, fire or vehicle access risk. The mulching or removal of debris may be required in some situations. The mulch generated may be left on site to stabilise the site.

Allowing debris from cutting activities to create a fuel load hazard underneath lines should be avoided.

The burning of debris is to be used as a last resort and the requirements of bush fire regulations need to be followed. Where debris from exotic and/or invasive weed species is likely to self-propagate then the resultant debris should be removed to the local landfill site or treated to prevent propagation.

8.10 Animal and Crop Diseases/Pathogens

Essential Energy will endeavour to prevent or minimise the spread of organisms that cause crop or animal diseases when carrying out vegetation management works. Refer to CECM1000.77 Section 6.2.

UNCLASSIFIED**8.11 Weeds**

Essential Energy aim is to prevent or minimise the spread of noxious weeds (NSW) and declared plants (QLD) when carrying out vegetation management works. Essential Energy's Noxious Weeds management procedures are referred to in the CECM1000.77 Section 6.1.

For specific detail in regard to weeds in NSW refer to the NSW Department of Industry & Investment website. The following provides assistance in identification of declared weeds: <http://www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds/profiles>.

8.12 Noxious Weed Management for new line routes

The following categories of noxious weeds shall be eradicated prior to any works commencing as maintenance works can be difficult or more expensive:

- In New South Wales noxious weeds categorised as W1 or W2 weeds
- In Queensland declared plants categorised as P1, P2 or P3 weeds and

Clearing works shall be carried out to minimise the spread of all noxious weeds and in accordance with Essential Energy's procedure for preventing the spread of Noxious Weeds, Plant and Animal Diseases.

8.13 Mangroves

Essential Energy shall follow the requirements of its permit to trim mangroves; the Department of Primary Industries Division of Fisheries and Aquaculture issues the permit under the *Fisheries Management Act 1994*. All trimmings will be removed from the tidal zone. Machinery is not permitted to enter the intertidal zone unless with the consent of the District Fisheries Officer. Trimming shall otherwise be carried out in accordance with the requirements of this Vegetation Management Plan.

8.14 Vegetation at Rivers, Lakes and Creeks

Tall growing saplings up to 3 metres that are likely to cause interference or damage to powerlines in the future are to be removed and/or treated with an appropriate herbicide to prevent regrowth, whilst root structures are to be retained.

The Office of Environment and Heritage may give approval for the removal of mature trees if the surrounding vegetation is sufficient to prevent erosion. Otherwise the tree should be trimmed. Where trimming of any tree is too dangerous to do, the tree shall be topped to chest height and treated with an appropriate herbicide. It may be necessary to establish low growing vegetation to stabilise the area prior to the removal of mature trees.

UNCLASSIFIED**8.15 State Environmental Planning Policy (SEPP) and Commonwealth Protected Areas**

Essential Energy's aim is to carry vegetation management works in these areas in accordance with this Vegetation Management Plan and appropriate legislation.

The following are those NSW SEPP's that apply:

- SEPP 14 Coastal Wetlands
- SEPP 26 Littoral Rainforests
- SEPP 44 Koala Habitat Protection
- SEPP 71 Coastal protection.

Areas of national environmental significance protected by Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth) including Commonwealth lands, RAMSAR wetlands and World Heritage sites.

These areas may require specific approvals before works can commence.

8.16 National Parks

Vegetation control in lands reserved and dedicated National Parks will be carried out in accordance with this Vegetation Management Plan and in accordance with the agreement "NSW Electricity Association - Procedures for Power Line Maintenance in National Parks" where such agreements exist.

8.17 State Forests

Vegetation control in State Forests will be carried out in accordance with this Vegetation Management Plan and in NSW in accordance with Essential Energy's Occupation Permit.

8.18 Railways Land

It may be necessary for Essential Energy to liaise with the relevant Rail Authorities to obtain access to the rail corridor prior to performing vegetation management on rail property to ensure rail safety requirements are met. Refer to CEOP2407.

8.19 Dead Trees or Branches

Where dead trees or branches are in the immediate vicinity of powerlines, they should be lopped to a height at which if they fell would not cause a potentially dangerous situation and damage the powerline. This will allow the remainder of the tree to stand for any fauna that may wish to inhabit it. If any fauna already inhabit branches that are to be removed then work should be delayed until the fauna has moved, unless there is an immediate threat to the powerline. Timber removed by lopping may be left on site for habitat depending on property owner requirements.

8.20 Maintenance of Local Aesthetic Qualities

It is recognised that maintaining the local aesthetics of an area is important. However, many trees do not lend themselves to trimming in a manner that is visually pleasing. Similarly what is pleasing to one person may be unattractive to another. Also further trimming of most species to make them aesthetically pleasing will result in accelerated growth and a dangerous situation. The aesthetic considerations need to be balanced with the safety and regulatory expectations with the latter being the priority. Where the aesthetic outcomes cannot be agreed by stakeholders, the alternatives to trimming should be considered.

The priority of all tree pruning is to minimise the risk of contact between trees and overhead powerlines and to do as little damage to the tree as possible.

UNCLASSIFIED**8.21 Pruning Method**

Essential Energy will use arboriculture techniques recognised as best practice for the control of vegetation types under or near powerlines. This will include trimming to comply with Australian Standard AS4373 – Pruning of Amenity Trees wherever possible.

This is discussed in further detail in Essential Energy procedural guideline CEOP2021: Removing Vegetation near Overhead Powerlines

8.22 Revegetation of Cleared Areas

All clearing works shall be carried out to limit the possibility of erosion in accordance with Essential Energy's Erosion and Sediment Control procedure.

Therefore all exposed areas shall be re-established with grasses, preferably those native to the area. This will also limit the establishment of noxious weeds, the possibility of bushfires, facilitate the ease of access for routine and emergency maintenance and also provide grazing areas for native animals, birds and insects.

8.23 Clearing Methods and Debris Disposal

Vegetation shall be cleared and debris shall be disposed of prior to the power line being constructed. This shall be carried out to meet all relevant legislation requirements and debris should be recycled where possible. Management of debris should be considered in the Environmental Impact Assessment.

9 PLANTING GUIDELINES

There is an increasing public awareness of environmental issues and emphasis on planting trees to reduce the carbon footprint. This can lead to the planting of inappropriate trees in unsuitable locations. Essential Energy is concerned with those planted under or near powerlines.

Planting of inappropriate species can jeopardise public safety when powerlines are damaged by trees or when the public attempt to trim or remove trees near powerlines. Under NSW legislation, the planting of inappropriate species may also make the planter responsible for future trimming and/or removal costs, and could lead to claims for damages caused by the planting. It is therefore in everybody's interests to reduce the potential costs and the associated dangers by reducing the number of inappropriate plantings. Under the *Electricity Supply Act 1995 (NSW)* if a person plants a tree or permits a tree to be planted which could or does interfere with powerlines, any costs incurred by Essential Energy to prune or remove the tree may be passed onto that person and may be recovered as a debt in court. Without limitation, Table 4 in Part 8.5.1 sets out species which must not be planted near powerlines.

Planting the wrong tree in the wrong place can also have environmental consequences. Bush fires have been caused by vegetation coming into contact with powerlines resulting in a loss of flora, fauna, life and property.

Essential Energy encourages the planting of trees and other tall growing vegetation safe distances away from powerlines allowing them to grow to their full potential. Refer to the table *Trees Unsuitable for Planting Under/Near Powerlines* in this plan.

UNCLASSIFIED**9.1 Rural Areas**

The property owner and Councils are encouraged to plant all tree species, other than grasses, away from powerlines in rural areas as these areas represent the greater risk in regard to bushfire potential. Access to powerlines is also required by Essential Energy crews for routine maintenance and repairs. Private land owners/occupiers, Landcare or other interest groups planting or conducting revegetation projects should do so in locations where planting will pose no risk to powerlines or require costly maintenance and management into the future.

Essential Energy will make its delegated persons available for advice or consultation when individual or group are planning new plantings.

The planting of low growing species (3m or less) near powerlines may be permissible in some instances provided they do not and will not interfere with powerlines or pose a risk of bush fire or to public safety and will not restrict access to powerlines for maintenance or repairs.

9.2 Urban Areas

Essential Energy will endeavour to work cooperatively with Councils to ensure plantings and electrical infrastructure can co-exist taking into account security of supply and community safety.

Many Councils have entered into “In Principle Agreements” with Essential Energy to highlight the agreed goals and approach to be adopted.

In most urban areas powerlines are accessible from the street pavement. This allows low growing plants to be planted under or near powerlines. These plants will require maintenance trimming if they enter powerline clearance zones. As the mature height of individual plants can vary significantly it is best to plant away from powerlines. Accordingly, Essential Energy encourages the public to consult with Council when planning to plant on streets or in public areas.

9.3 State Forests Agro forestry Ventures

A minimum agreed corridor width of 32 metres applies. Specific tree plans can be developed for specific sites to ensure the safety and integrity of the powerlines.

9.4 Orchards

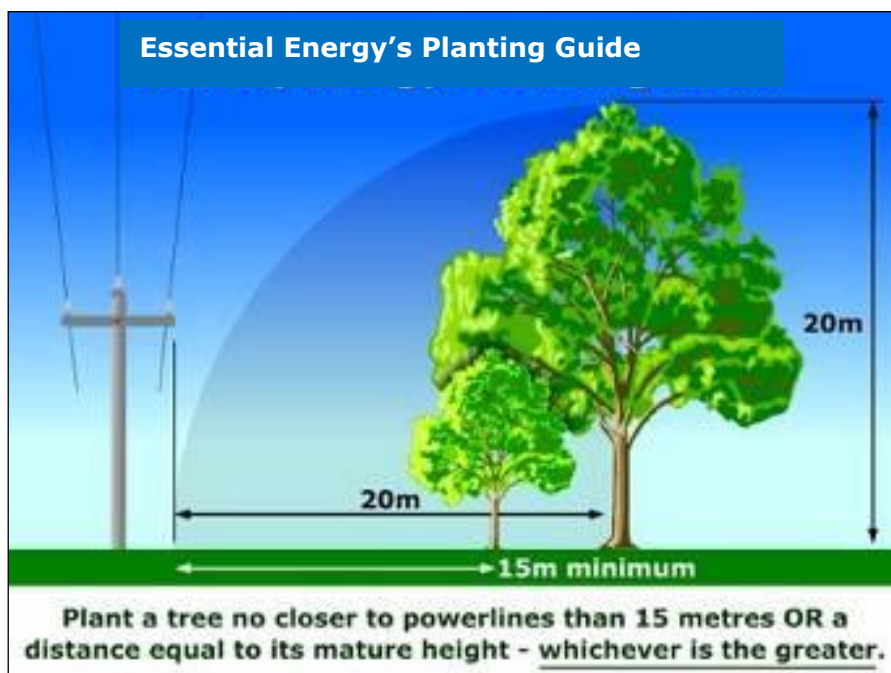
Generally, orchards trees should not be planted directly under existing powerlines as the future maintenance of clearances will be required in most circumstances with potential costs being at the property owners expense. Commercial tree crops under powerlines restrict the distributor’s access to poles and powerlines by heavy vehicles and place farm workers at greater risk of electrocution when working on trees near powerlines.

The minimum corridor width for the voltage should be maintained free of trees. Typically for distribution high voltage powerlines this is a 20m buffer zone (i.e. 10m either side of the powerline) refer to CEOP8046 section 8.

UNCLASSIFIED**9.5 Essential Energy's Planting Guide**

Simple Tips:

- Look up before you plant
- Consider how big the tree or vegetation will grow in the future and what will be affected
- Plant taller varieties furthest away from the powerlines using the Planting Guide
- Planting on streets and footpaths should not be carried out without Council approval
- When planting, remember that access to powerlines is required for maintenance and repairs in the future
- It is recommended to plant away from the underground pits, pillar boxes and padmount transformers so roots don't become a problem
- This guide also applies to planting trees near Aerial Bundled Conductor (ABC) powerlines
- Essential Energy can provide guidance when planting. Local nurseries should also be consulted
- Essential Energy considers the trees listed in Table 4 and other tall growing species (whose height may exceed 3m) as unsuitable under or near powerlines.



UNCLASSIFIED**9.5.1 Table 4 - Trees Unsuitable for Planting Under/Near Powerlines**

The majority of trees are unsuitable for planting under or near powerlines due to the dangers involved and insufficient room for the tree to grow. Table 4 provides a list of some common species that are unsuitable under or near powerlines.

TABLE 4 – TREES UNSUITABLE FOR PLANTING UNDER/NEAR POWERLINES			
Botanical Name	Common Name	Botanical Name	Common Name
Acacia species (large)	Wattle	Jacaranda mimosifolia	Jacaranda
Acer species	Maples – not Japanese	Ligustrum species	Privet
Acmena species (large)	Lillypilly or Bush Cherry	Liquidamber species	Liquidamber
Alnus species	Black & Evergreen Alder	Lophostemon confertus	Brush Box
Araucaria species	Bunya-Bunya, Hoop or Norfolk Island Pine	Magnolia grandiflora	Bull Bay Magnolia
Bambusa species	Bamboo	Melaleuca species (large)	Paper barks
Banksia species (large)	Banksia	Melia azedarach	White Cedar
Betula species	Birch	Palm species	Palm
Brachychiton species	Lace-Dark, Flame & Kurrajong	Pinus species	Pine
Caesalpinia ferrea	Leopard tree	Platanus species	Plane tree
Casuarina species	She-Oaks	Populus species	Poplar
Cedrus species	Cedar, also Fir & Spruce	Quercus species	Oak
Celtis species	Nettle-tree	Salix species	Willow
Cinnamomum camphora	Camphor Laurel	Schinus species	Pepper-corn tree
Cupressus species	Cypress trees	Stenocarpus spinuatus	Qld. Firewheel tree
Delonix rigia	Poinciana or Flamboyant	Syncarpia glomulifera	Turpentine
Erythrina species	Coral-tree	Syzygium species	Lillypilly or Bush Cherry
Eucalyptus species	Gum trees	Tamarix aphylla	Athel pine
Ficus species	Fig trees	Tilia species	Linden or Lime tree
Fraxinus species	Ash	Tipuana tipu	Race-horse tree
Gleditsia species	Honey Locust	Ulmus species	Elm
Grevillea robusta	Silky Oak	Zelkova serrata	Japanese Elm
Hymenosporum flavum	Native Frangipani		Tall growing fruit and nut trees

UNCLASSIFIED

10 UNDERGROUND POLICIES, NEW AND AUGMENTED CONSTRUCTION WORK

Councils typically require undergrounding of electrical services in 'Greenfield' urban developments which is generally accepted by developers and the community. This prevents interference with vegetation and is less restrictive on property owners when considering landscaping or tree planting.

Whenever arrangements for new overhead construction are made, powerline routes should avoid tall growing vegetation otherwise corridor clearing works should be undertaken and be sufficient to minimise future maintenance problems. Trees, saplings and some undergrowth shall be removed to ensure specified corridor widths.

For existing developments, underground cable or overhead insulated systems (i.e. aerial bundled conductor) should be considered when replacing or augmenting existing bare conductor overhead mains.

11 PUBLIC EDUCATION

Essential Energy will continue to develop increased customer awareness of safety issues mentioned in this Plan in relation to the planting and control of vegetation near powerlines.

In this regard Essential Energy's education program may include:

- Planting guidelines
- Posters
- Newspaper articles
- Tips on Essential Energy accounts
- Liaison with landowners/occupiers, State Government bodies, Bush Fire Management Committees, Landcare, Garden Clubs, Progress Associations, Tidy Towns, Koala Societies, Beautification Committees, etc. as appropriate
- Attendance at community or other groups meetings
- Attendance at field days e.g. AgQuip, tree fairs etc.
- Qualified employees to assist the community with any problems or inquiries they may have in relation to vegetation control near powerlines; and
- Any other opportunity to educate the community.

UNCLASSIFIED

12 METHODOLOGY OF VEGETATION CONTROL

12.1 Qualification of Employees

For those positions involved directly with the management of vegetation either by Essential Energy or by contractors working for the landowner/occupier, pre-requisites should include the following:

- Formal qualifications in either horticulture or arboriculture attained from an accredited institution. The “Tree Care for Electricity Workers” course as taught by Ryde TAFE College or equivalent shall be the minimum acceptable standard. This applies to positions that manage and oversee trimming crews in the field and to those carrying out the work.
- All necessary qualifications as required by contractual, statutory or safety requirements to carry out the work safely and in a tradesman like manner.

12.2 Pruning or Clearing Cycles

The frequency of clearing cycles is based on practical factors including regrowth rates, fire risk, climate, type of vegetation, recurrent costs, conservation considerations etc. Typically a two to three-year cycle is considered as reasonable industry practice in rural areas.

Large urban areas are often put on annual maintenance cycles to meet council expectations and provide more attention to suburban powerlines with smaller clearance zones.

Essential Energy may vary cycles as required using a risk management approach or in consultation with stakeholders.

12.3 Urgent or Emergency Trimming

Trees and other vegetation may need to be controlled or removed under emergency conditions to maintain safety and to maintain or restore the electricity supply particularly after storm events. Where possible, trees in this category shall be assessed individually to determine the appropriate action.

When assessing work requirements under emergency conditions, changed environmental factors may need to be considered. Examples of these conditions would be storm events, and natural disasters.

Trees trimmed under emergency conditions may require some form of follow up remedial pruning after the event.

The land owner/occupier should be notified as soon as practical when Essential Energy removes vegetation under emergency conditions.

12.4 Consultation with Land Owner/Occupier

Except in the case of an emergency Essential Energy will usually liaise with and notify the landowner/occupier impacted about impending works. Essential Energy understands the sensitive nature of trimming or removal works and will endeavour to resolve issues in a cooperative manner with the landowner/occupier in order to comply with its statutory responsibilities. If persons decline permission to take appropriate actions, Essential Energy may need to use its legislative powers to carry out the work to maintain safety and avoid impact to supply. The work will be done in accordance with this plan and the owner may be responsible for the associated costs in some cases.

UNCLASSIFIED**12.5 Notification of intended vegetation works**

Essential Energy notifies land occupier of its intention to carry out vegetation works at specific sites.

The process for this includes:

- Monitoring conditions - An initial site inspection to scope the required work
- Authorised delegated persons advising occupiers of the work scope identified in the form of verbal discussions onsite where the occupier or representative is available and/or by notification letter
- Notification letters provide details of the work requirements and include delegated person contact details providing an opportunity for the occupier to discuss the matter further. In cases where full private tree removal is identified, customer consent is sought prior to works commencing
- Property occupier notification is provided before the intended work commencement date.

12.6 Dispute resolution

Essential Energy has a documented policy for dealing with customer concerns or complaints – refer to policy guideline CEOP2042: Customer Complaint Handling.

This process endeavours to capture the details of the enquiry, ensure escalation if required, and monitors progress and corrective actions. With respect to vegetation issues, the sensitivity is recognised.

In general, the first point of contact is Essential Energy delegated persons who typically resolve most issues on site. For a smaller number of issues that are not able to be resolved in the first instance, they are escalated to their team coordinator.

If this does not reach a resolution the matter is further escalated to senior managers. In the rare cases where a matter still remains unresolved the customers are able to refer the matter to the industry ombudsman. If the situation is dangerous or of an urgent nature, Essential Energy will enforce its rights to enter the property and address the situation or, consider other actions to make the situation safe, such as disconnection.

UNCLASSIFIED

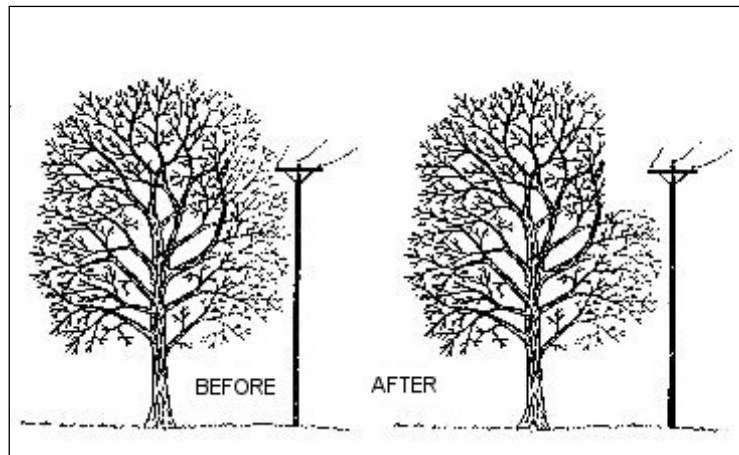
13 PRUNING PRACTICES

Trees are to be pruned to acceptable arboriculture standards set forth by Australian Standard AS 4373 “Pruning of Amenity Trees”, and as trained by TAFE – “Tree Care for Electricity Workers” Course or equivalent. Where these methods prove inappropriate, e.g. species that require pruning more frequently than is practical or acceptable, alternatives to pruning shall be considered.

Pruning is defined as the selective removal of branches from a tree to obtain a desired end, i.e. to provide the required clearance from powerlines. The aim of the pruning methods should be to work with the natural habit of each tree. The techniques for this are described in more detail in the Essential Energy’s policy guideline CEOP2021: *Removing Vegetation Near Overhead Powerlines*.

The branches to be trimmed will generally be taken back to branch collars therefore clearance distances may be in excess of minimum distances specified.

Formative pruning techniques are generally employed for street trees.



14 UNSTABLE AND HAZARDOUS TREES (HAZARD TREES)

Trees of any species and diameter originating from fallen decaying logs, stumps or other unstable rooting positions, any trees with obvious symptoms of advanced decline, i.e. excessive dieback; sparse leaf cover; major decay fungi in evidence etc., within the inspection space that could otherwise damage the powerline shall be actioned.

In practice, and as mentioned in the note 5 of the clearance Table 1, many trees exist outside the clearance zone at a height that if they were to fall would potentially contact the powerline. It is not environmentally appropriate, economical, nor practical to remove such trees where they appear to be in good health and therefore a low risk.

Trees or branches identified as potentially high risk by delegated persons will be considered for trimming or removal.

UNCLASSIFIED**15 ALTERNATIVES TO PRUNING**

There are a number of methods of maintaining clearance between powerlines and vegetation; the most common method used is pruning. Alternative methods should be considered if they are economically feasible or where the vegetation concerned is of significance or heritage value or listing. Likewise prior to removing a tree other options should be considered. Owners of trees are encouraged to consider alternatives to pruning or removal. Essential Energy may also benefit by considering alternatives to pruning to decrease maintenance costs and increase reliability of supply.

15.1 Electrical Options

The following electrical options may be considered as alternatives to pruning or removal:

- The use of conductors such as aerial bundled cable to minimise the amount of trimming
- Relocating powerlines to avoid vegetation
- Under grounding mains to eliminate the problem
- Offsetting cross-arms to one side to increase clearances; and
- Using taller poles.

Where landowners or Councils seek to implement any electrical options, Essential Energy should be consulted. Essential Energy may give consideration to contributing to the cost of the work if it reduces the cost of future vegetation control and improves the reliability of the electricity supply.

15.2 Non-Electrical Options**15.2.1 Tree Transplanting**

Tree transplanting is an option that can be implemented in addition to tree replacement. Certain species lend themselves very well to being transplanted. Small plants that are planted near powerlines should be transplanted away from powerlines at the earliest opportunity.

Essential Energy recognises this option is outside its expertise and does not perform this type of work. Where a Land owner/occupier is considering the transplantation option, they should seek the advice of an appropriate horticultural expert, and discuss their requirements with Essential Energy to determine if supply needs to be isolated for workers engaged in this activity.

15.2.2 Removal

Trees may be removed when necessary to protect the safety of persons and powerlines, or property. Where there is no immediate threat to safety alternative strategies need to be considered and where these alternatives are not feasible in the circumstances (including economically feasible) the tree may be removed.

Essential Energy may issue a notice to the landowner/occupier to remove a tree if the tree is or may be a continual threat to the safety and the integrity of the powerline or requires more regular management.

UNCLASSIFIED**15.2.3 Removing trees**

Essential Energy will seek the removal of trees where:

- Other options including undergrounding of powerlines, replacement with ABC, relocation of powerlines, or transplanting the tree are not economically feasible
- Safety is compromised
- The electricity works and supplies are threatened
- There is an inappropriate species eg. those listed in Section 7.5.1
- The trees do not respond to directional pruning
- The trees cannot be maintained for appropriate periods of time due to their growth rates
- The health of the tree is such that to leave it would pose a threat to the power line and to the safety of the community; and
- The aesthetics of the tree are such that continued trimming irreparably damages it.

Council and/or Essential Energy may carry out further consultation with adjoining landowner/occupiers and/or the community where specific street trees are to be replaced or removed.

When the need for the removal of a tree on private land is identified, Essential Energy will firstly notify and seek to consult with the property owners/occupiers. However, if the owner/occupier planted the tree after the installation of the line and/or has not maintained safety clearances, Essential Energy may arrange for the work to be done and could charge the owner/occupier for the costs incurred in accordance with the *Electricity Supply Act 1995*.

Where tree management works need to be undertaken in an emergency (such as potential damage, interference or destruction of Essential Energy infrastructure increasing the risk to public safety or bush fire) trees may be removed or trimmed without notice.

Protected trees or other vegetation should not be removed before the appropriate consultation and statutory approvals, where required, have occurred.

Where trees are removed the stump shall be appropriately treated.

15.3 Unsuitable Species

Young trees, with vigorous growth rates or whose mature height will infringe the clearance space, are best removed or relocated at an early stage. Essential Energy needs to commit significant resources and costs every year to managing inappropriately planted trees. The operating costs to manage these will continue to increase without a cooperative approach by land occupiers.

UNCLASSIFIED**15.4 Strategies for Removals**

The following are strategies that may be used to facilitate the removal process:

- Replanting with a suitable species prior to removal of the inappropriate species
- For a group of trees a staged removal with staged replacement is preferable as this reduces the visual impact
- Removal of the tree and subsequent replacement
- Replant on the other side of the street prior to any removals; and
- Essential Energy encourages Council and other groups to consult with the local community when removals of trees are being considered.

15.5 Replacement of Trees

Essential Energy encourages the replacement of trees that are removed provided that the trees are planted away from powerlines. Essential Energy endeavours to work with property owners and Councils to formulate action plans to identify and replace inappropriate trees.

Tree replacement arrangements should not perpetuate the problem, but solve it. Replacement plants shall be planted in accordance with Essential Energy's Planting Guide.

Essential Energy will assist with the supply and replacement of trees that have been inappropriately planted after the powerline was first constructed. Any replacement will generally be of a small size as these plants generally establish better, faster, and after several years will outgrow in size an initial larger plant.

Essential Energy encourages the replacement of trees with species that are native to the area; this will assist in the preservation of the ecological integrity of the area.

16 PROCESS FOR SAPLINGS AND REGROWTH CONTROL

It is essential that saplings and regrowth of tall growing species are controlled before maturing to a point where more extensive works are required which is costly and resource intensive.

Vegetation may be retained in the following situations:

- Low growing species, particularly at creek or river crossings. However the requirements for access for maintenance or repairs may take precedence
- Low growing species for the habitat of threatened species
- In steep gullies, (particularly where the connectivity of wildlife habitat and erosion prevention are of major importance) where the power line will be well above the maximum height of the prevailing mature vegetation and the clearance space will not be compromised; and
- If there is no immediate threat to safety or the powerline, vegetation may be retained temporarily where the vegetation is being used for the rearing of young fauna.

The methods to be deployed for Sapling/regrowth control are described in detail in the policy guideline CEOP2021: *Removing Vegetation Near Overhead Powerlines*.

UNCLASSIFIED

17 ACCESS FOR MAINTENANCE OR REPAIRS

Heavy vehicle access is required to powerlines allowing for routine and emergency maintenance. This access is prescribed in the Electricity Supply Act 1995. Access requirements should be taken into consideration when planting commercial crops.

Where access tracks exist these should be cleared to ensure heavy vehicle access.

18 AUDITING PROCESS

Essential Energy audits this plan to ensure it fulfils its expectations and the legislative requirements field based audits which relate to the work activities are also conducted.

The plan is audited internally in conjunction with the Bushfire Mitigation Plan audit as it forms a critical component of that plan.

Clearances achieved by cyclic trimming are audited annually by pre-summer aerial patrols in rural areas. Field audits of the corridors and work standard are conducted by Supervisors or designated field auditors.

Arboreal Contractors are predominantly engaged to conduct trimming. Those working for Essential Energy are audited as part of the contract management process for compliance to the plan and contract conditions. Particular attention is paid to compliance with the pruning and removal of trees.

For trees that have been pruned, the auditor will consider:

- Customer relations
- Arboriculture techniques (quality of pruning)
- Clearances achieved
- Debris disposal and tidiness of sites
- Environmental considerations
- Sapling and regrowth removal; and
- Herbicide use.

UNCLASSIFIED

19 TREE TRIMMING CONTRACTORS WORKING FOR ESSENTIAL ENERGY

Under some circumstances Essential Energy may decide to engage private contractors to undertake vegetation management works on behalf of Essential Energy. A standard evaluation of these contractors is conducted to ensure works are carried out in a professional and tradesman like manner with due consideration for safety, value, and the environment.

This evaluation includes but is not limited to:

- Appropriate qualifications & experience
- Health and Safety credentials
- Environmental credentials
- Management capability
- Community relations

20 RESPONSIBILITIES / ALLOCATION OF COSTS

20.1 Essential Energy

In NSW, Essential Energy accepts the cost generally for tree trimming or removal work in rural and urban areas and on private or public lands. This is at Essential Energy's discretion as the Electricity Supply Act 1995 only requires Essential Energy to fund works associated with naturally propagated trees (Vegetation that has been naturally propagated, including by birds or animals), and those trees that were established before the powerline.

In the Queensland franchise area, Essential Energy carries out vegetation management affecting the network assets on the same basis as it does in NSW.

Essential Energy reserves its right to pass on costs where circumstances allow. Those parties planting trees near powerlines that ultimately cause a need for maintenance works should be aware that they may be called upon to meet these costs.

20.2 Site Specific Tree Plans

20.2.1 Councils – In Principle Agreements

Essential Energy seeks to work with Councils in a cooperative manner to ensure effective vegetation management in the best interests of the community as a whole. It will endeavour to enter into "In Principle" agreements regarding vegetation management near powerlines.

Under NSW legislation, Councils are responsible for control costs for vegetation, on land under their control (including road reserves and parks) that:

- has been planted and allowed to grow directly under or alongside powerlines and
- where the vegetation could destroy, damage or interfere with Essential Energy's electricity works: or
- could make Essential Energy's electricity works become a potential cause of bush fire or potential risk to public safety.

UNCLASSIFIED

Where Councils carry out vegetation control works near powerlines, the clearance requirements in this Plan should be observed or as otherwise required by the NSW legislation as it applies to Councils.

20.2.2 Australian Macadamia Society – Charter in relation to management of Macadamia trees under powerlines

The Essential Energy executive on 12/12/2012 approved a charter in relation to management of Macadamia trees under powerlines with the Australian Macadamia Society to address specific issues associated with these commercial plantations. This sets out the expectations and responsibilities of parties involved and the agreed approach to maintenance of power lines at these sites.

20.3 Private Landowners/Occupiers

Under NSW legislation, private landowners are responsible for trimming and removal costs for vegetation on their property where the vegetation has been planted and allowed to grow directly under or alongside powerlines.

Essential Energy contractors and employees may provide a quotation to the landowner/occupier for work required. The landowner/occupier is at liberty to engage an appropriately authorised independent contractor to carry out this work.

Landowners are encouraged to underground private lines to reduce the risks and costs associated with trees. This is provided in the form of underground conversion incentive offered by Essential Energy.

Where landowners engage contractors to carry out vegetation control works near powerlines, the clearance requirements in this plan should be observed or as otherwise required by the NSW legislation WorkCover Code of Practice: *Work near Overhead Power Lines 2006* and *AS 4373 (2007) Pruning of Amenity Trees* as it applies to private land owners/occupiers.

Burning off stubble, sugar cane or other vegetation as a farming practice in the vicinity of powerlines can impact the security of the powerline. Burning off under or near powerlines is not condoned by Essential Energy as this activity has been responsible for damage to poles and lines as well as causing loss of supply. Land holders or occupiers should consider the risks and put appropriate controls in place.

21 KEY TERMS AND DEFINITIONS

Accredited Service Provider (ASP): A contractor accredited under Part 10 of the 'Electricity Supply (General) Regulation 2001 (NSW)' for undertaking contestable works.

Aerial Bundled Conductor: A covered multi-core cable used in substitution for multiple bare single conductors.

Authorised: Refers to be authorised by Essential Energy.

Clearance Zone: The space surrounding a power line, which should be kept clear of vegetation.

Contestable Works: Works (including design), funded by the developer, required to enable a new or altered connection where the developer may choose the ASP (Designer or Constructor) to carry out the works.

Council: The Council of a local government area.

Drip line radius: The radius around the outer edge of the tree at ground line.

Fenced Asset: Any ground mounted asset with fencing e.g. Substations, Regulator, and Switching Station.

HACCP: Hazard Analysis Critical Control Point is a pro-active process control system by which food quality is ensured.

Heritage Listed: Refers trees listed singly, in groups, avenues, streetscape plantings or conservation areas on the State Heritage Register under the *NSW Heritage Act 1977*, covered by tree protection orders, listed on significant tree registers, heritage schedules or in "Special Character Areas" on local and regional environmental plans (LEPs and REPs) and development control plans (DCPs) prepared under the Environmental Protection and Assessment Act, listed on the Register of the National Estate by the Australian Heritage Commission and classified by the National Trust of Australia.

Inspection Zone: The area outside the clearance space that may also need clearing to maintain safety and electricity supply.

Naturally Propagated: Vegetation that has been naturally propagated, including by birds or animals.

Nominated Essential Energy Officer or inspector: That person who has delegated authority from Essential Energy to carry out various activities relating to Vegetation Clearing Management including inspection and/or scoping of works.

Occupier: The person(s) who is in actual occupation of the land.

Overhang: The side branches of a tree that could grow above and overhang the powerlines.

Overhead: In relation to a powerline, means a powerline that is above ground level.

Powerline: An electric line, structures and equipment used for or in connection with the supply of electricity, which ordinarily operates at voltages up to 132 kilovolts but does not include telecommunication cables.

Private Electric Line: Any overhead electric line that is the responsibility of the landowner/occupier. This typically includes overhead mains beyond the customer distribution board.

Regrowth: means saplings, suckers and other vegetation which has grown or regrown after previous control works.

Rural Area: Any area that is not an urban area.

UNCLASSIFIED

Sapling: An immature tree.

Service Line: An overhead or aerial powerline between Essential Energy's distribution mains and the customer's consumer terminals used to supply low voltage electricity to the customer.

Sensitive Areas: Includes riparian areas, threatened species habitat, wetlands, cultural heritage sites, etc.

Threatened Species: A species specified in the *Threatened Species Conservation Act 1995*.

Tree: A plant taller than 3 metres, or having a canopy more than 3 metres in diameter or having a trunk with a circumference at a height of 1 metre from the ground of more than 0.3 metres. May include shrubs and other plants for the purposes of the *Electricity Supply Act 1995 (NSW)*.

Vegetation: All plant life including, but not limited to, trees, palms, vines, shrubs, grasses such as bamboo but not lawns.

UNCLASSIFIED**22 REFERENCES**

CECM1000.70 - HSE Manual: Environmental Impact Assessment NSW

CECM1000.81 - HSE Manual: Pesticide Notification Plan

CEOP2010 – Vegetation Clearing Guidelines for New Powerlines

CEOP2021 – Removing Vegetation Near Overhead Powerlines

CEOP8022 - Bushfire Risk Management Plan

CEOP8029 - Network Management Plan

Acts, Regulations and Other References**National**

Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)

Australian Heritage Commission Act 1975

New South Wales

Electricity Supply Act 1995

Electricity Supply (General) Regulation 2001

Electricity Council Guideline EC22 – Community and Environmental Considerations

Environmental Planning and Assessment Act 1979

Fisheries Management Act 1994

Heritage Act 1977

Native Vegetation Act 2003 & Native Vegetation Regulation 2013

National Parks and Wildlife Act 1974

National Parks and Wildlife Regulation 2002

Noxious Weeds Act 1993

Occupational Health and Safety Act 2000

Rural Fires Act 1997

Soil Conservation Act 1938

State Environmental Planning Policies including SEPP (Infrastructure) 2007

Threatened Species Conservation Act 1997

Australian Standard AS4373 – Pruning of Amenity Trees

Code of Practice for the Amenity Tree Industry (NSW)

ISSC3 - Guidelines for Managing Vegetation Near Power Lines

Urban Erosion and Sediment Control Field Guide (NSW Office of Environment and Heritage)

Queensland

Electricity Act 1994 (Qld)

Environmental Protection Act 1994

Electricity Safety Act 2002

Electrical Safety Regulation 2002

Code of Practice – Working near Exposed Live Parts Electrical Safety Act 2002

UNCLASSIFIED

23 ATTACHMENT A – ESSENTIAL ENERGY VEGETATION MANAGEMENT PLAN PURPOSE STATEMENT

Essential Energy Vegetation Management Plan Purpose Statement

The purpose of the Vegetation Management Plan CEOP8008 is to:

- Ensure proper guidelines and methodology are in place to promote Best Practice in the maintenance of vegetation under or near powerlines with minimum danger to the public, vegetation management workers and electrical workers
- Ensure compliance with appropriate legislation.

Essential Energy has a responsibility to maintain clearance between powerlines and vegetation. This responsibility is stated in *The NSW Electricity Supply Act 1995* Division 2 Part 48: Interference with electricity works by trees.

The importance of the Vegetation Management Plan CEOP 8008 being a compliant plan is highlighted by Clause 43(k) of the *State Environment Planning Policy (Infrastructure) 2007* (ISEPP) which provides that development (in this case, the clearing of trees) is “exempt development” under the *Environment Planning and Assessment Act* (EP & A Act), but only if carried out in the following circumstances:

- 1 For the purpose of vegetation management that complies with a tree management plan prepared in accordance with clauses 103 & 104 of the *Electricity Supply (General) Regulation 2001*; or
- 2 Vegetation management that is exempt under Clause 21: Maintenance of Public Utilities-Electricity Transmission of the *Native Vegetation Regulation 2005*.

Native Vegetation Act – Exclusions

The Native Vegetation Act 2003 No. 103 does not apply to the following types of clearing of native vegetation:

- (g) Any clearing that is, or is part of, an activity carried out by a determining authority within the meaning of Part 5 of the *Environmental Planning & Assessment Act 1979* if the determining authority has complied with that part.

The Environmental Planning & Assessment Act 1979 Part 5 (110) defines a determining authority to be a public authority (110E) (e) a statutory State owned corporation within the meaning of the *State Owned Corporations Act 1989*. Essential Energy falls under the state owned corporation umbrella.

The Native vegetation management NSW guidelines available at www.nativevegetation.nsw.gov.au states that Public Utilities such as Essential Energy, can undertake clearing to maintain public utilities (electricity, water, gas and electronic communication) without approval. Such clearing includes minimising fuel loads under powerlines to reduce the chance of smoke from a fire causing a line trip. Maximum distances for clearing depend on the nominal operating voltage of the powerline.

Note: Tree lopping is not considered ‘clearing’ under the *Native Vegetation Act* unless it results in the death of the tree.

UNCLASSIFIED

24 REVISIONS

Issue Number	Section	Details of Changes in this Revision
5	All	Insertion of new table of powerline clearances. Various other section changes in consideration of the Black Saturday Royal Commission findings and to align with industry guidelines. Updated to new template in line with Essential Energy branding requirements.
6	All	<p>Section 1 expanded on advice from Norton Rose to strengthen compliance with Acts & Regulations.</p> <p>Section 4 expanded to provide additional information about clearance & clearing zones consistent with CEOP2010.</p> <p>Section 5.2 deleted Corridor Guidelines for New Lines & easements. Refer CEOP2010.</p> <p>Inserted new Section 6 Fenced Assets, Poles and Structures.</p> <p>Section 7 expanded. 7.1.3, 7.2.3 & 7.2.4 added. 7.8 expanded, use of herbicides.</p> <p>Section 19 Review of Vegetation Management Plan deleted. Refer Section 1.1 & 1.2</p> <p>Removed content relating to “new line construction” as per advice from Norton Rose.</p> <p>Added minor feedback from Norton Rose particularly associated with Consultation process/contact.</p> <p>Section 19.2 Site Specific Tree Plans. 19.2.1 expanded 19.2.2 added.</p>
7	<p>Introduction</p> <p>6.3, 6.4</p> <p>2.0 Objectives</p> <p>2.1 Legislation</p> <p>4.9 Easements</p> <p>7 Streetlight Clearances</p> <p>8.2 Threatened species</p> <p>8.18 Rail Lands</p> <p>9.4 Orchards</p> <p>12.5</p>	<p>Map revised to 4 region model.</p> <p>Section 6.3 Buffer Zones added, was Water Crossings</p> <p>Objectives were updated to highlight the plan scope does not include requirements for new lines.</p> <p>Legislative references relocated to sect 21 references and updated to highlight ESA & ES Regulation requirements.</p> <p>Sect4.9 removed table for easements/corridors and replaced with reference to CEOP8046 Easement requirements to ensure alignment.</p> <p>Sect7 – Streetlight Clearances. This is a new section added to provide guidance for trimming around streetlights.</p> <p>Reworded sect 8.2 to indicate Essential Energy will use its best endeavours for known threatened species.</p> <p>Sect8.18 made more general to cover the various authorities that may be contactable.</p> <p>Sect9.4 revised - minor rewording to include consideration of safety for farm workers.</p> <p>Sect12.5 removed the reference to 2-4weeks notification period required by VIC ESV and now refers to the notification being prior to the works.</p>