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# Vegetation Management Plan

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PREPARED BY: VEGETATION STRATEGY OWNER

APPROVED BY: HEAD OF ASSET MANAGEMENT

DOCUMENT NUMBER: CEOP8008 ISSUE 13

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# 1 INTRODUCTION

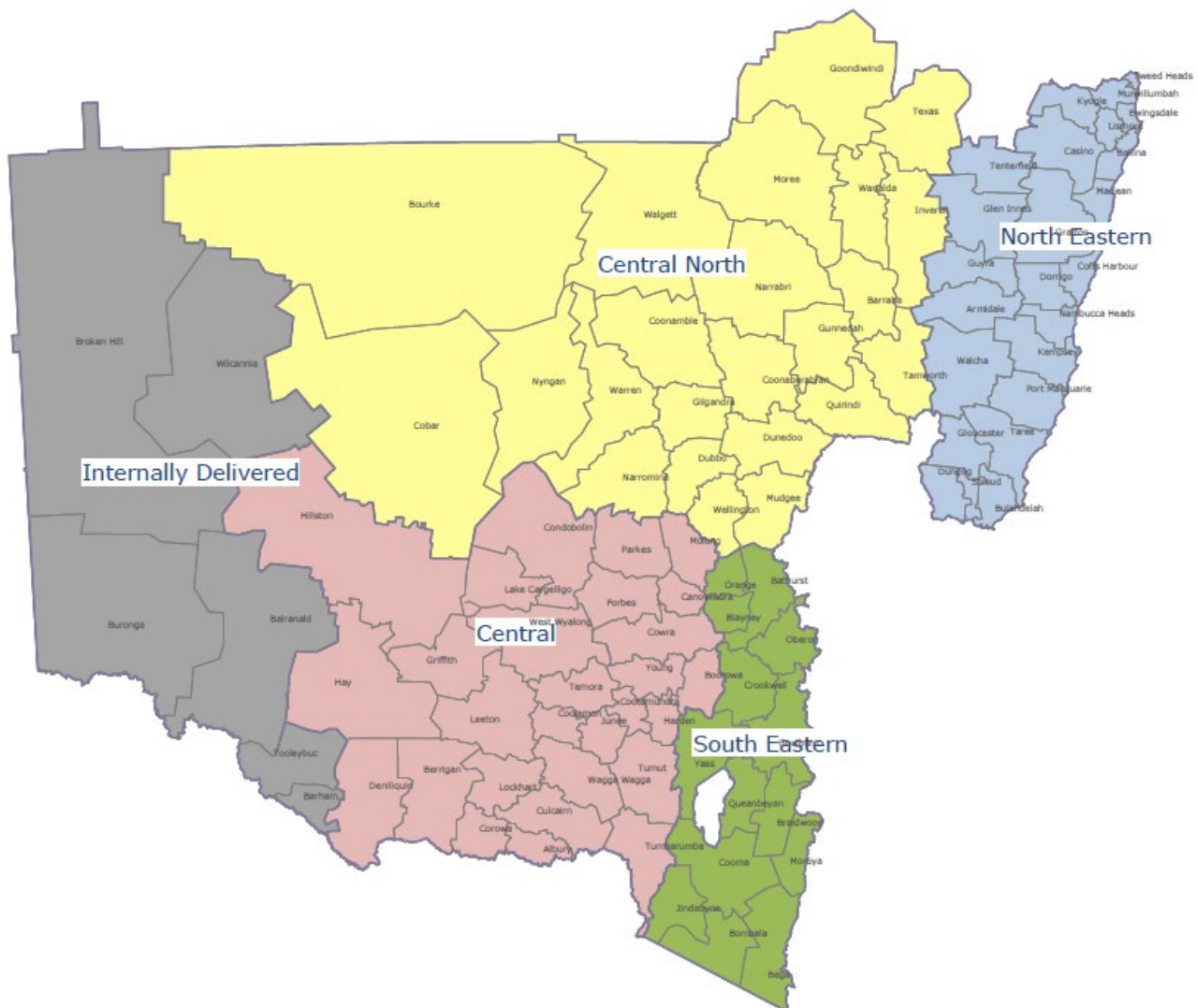
Essential Energy recognises the amenity value of trees and other vegetation and their importance to our environment. However, vegetation must be managed near powerlines to maintain safety to individuals and the environment whilst maintaining the quality and reliability of the electricity supply. It can 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 to be treated as Essential Energy's Tree Management Plan for the purpose of the *Electricity Supply (Safety and Network management) Regulation 2014 (NSW)*.

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

The Vegetation Management Plan CEOP8008 is necessary for Essential Energy to comply with legislative requirements. Particularly to ensure maintenance of vegetation around powerlines can be carried out with the authorisation provided for management of native vegetation in accordance with the Local Land Services Act Schedule 5A.

## Essential Energy Network Area and Vegetation Management Regions.



## 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 Customer Advisory Groups (who represent the local communities) and other identified community groups.
- Written notice to the relevant Essential Energy customers when work is planned on their property.

This plan is also made available to the general public via the Essential Energy website and on request 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:

Manager Vegetation Strategy  
P.O. Box 5730, Port Macquarie NSW 2444  
Telephone: 13 23 91  
Email: [vegetation@essentialenergy.com.au](mailto:vegetation@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

## 2.1 Legislation

Essential Energy has a responsibility to maintain clearance between powerlines and vegetation. This responsibility arises from clause 5 of the *Electricity Supply (Safety and Network Management) Regulation 2014*.

There are various Acts and Regulations associated with the management of vegetation near electricity infrastructure. These are referenced in section 18 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 trees do not cause interference with electricity assets.



- The ***Electricity Supply (Safety and Network Management) Regulation 2014*** is the regulation specified by the Act which relates to management of vegetation by a network operator.

As a network operator, Essential Energy is required to operate the network within an *Electricity Network Safety Management System* (ENSMS) framework as specified under the Regulation and in accordance with AS5577.

The primary objectives of the Regulation (Part 2 Division 1) relating to vegetation management are to ensure:

- (a) the safety of members of the public, and
- (b) the safety of persons working on networks, and
- (c) the protection of property (whether or not belonging to a network operator), and
- (d) the management of safety risks arising from the protection of the environment  
(for example, preventing bush fires that may be ignited by network assets), and
- (e) the management of safety risks arising from loss of electricity supply.

The safety management system (ENSMS) content requirements (Part 2 Division 1, 7(1)) applicable to vegetation management include:

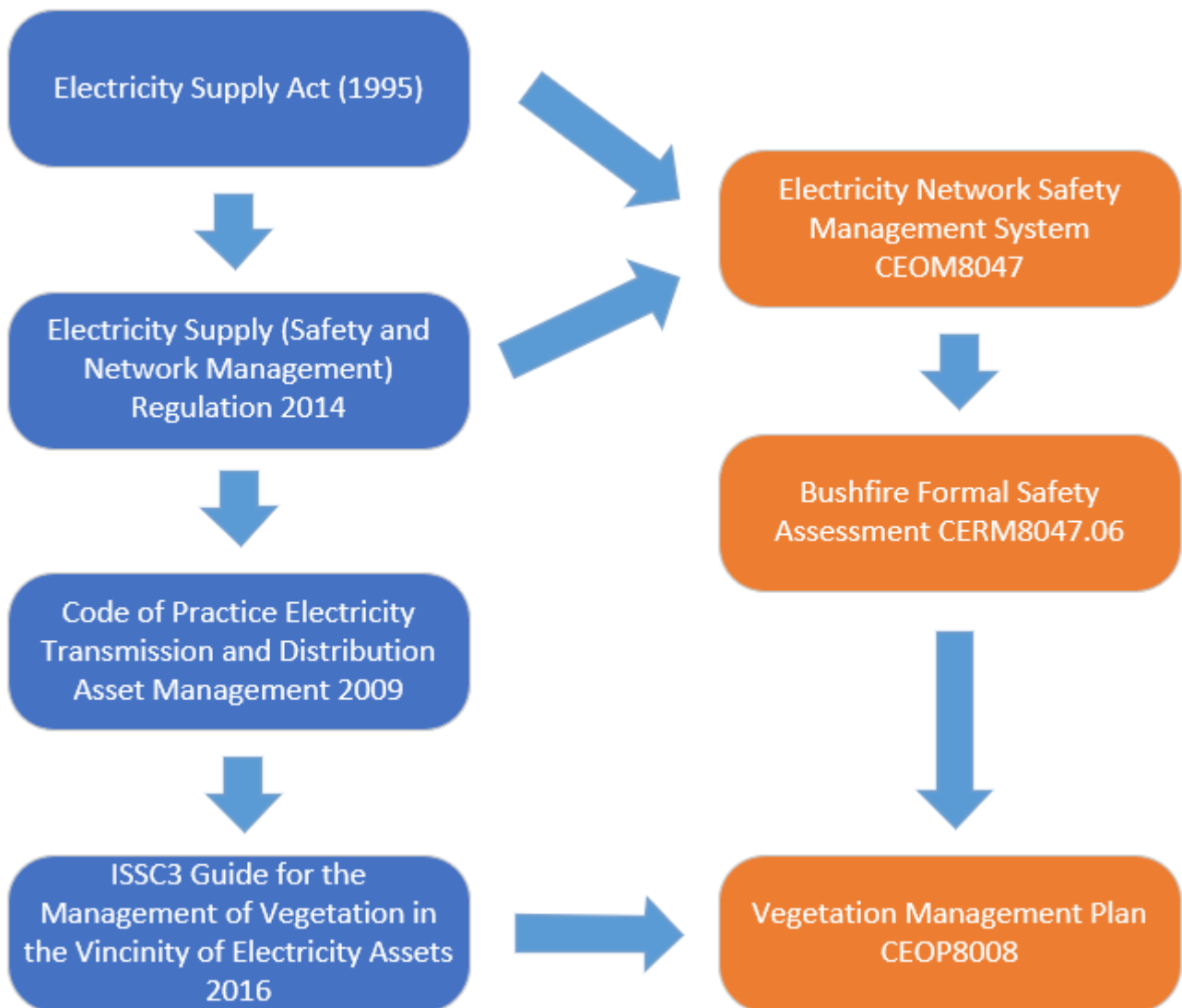
A network operator must have a safety management system in place that:

- (a) is in accordance with AS 5577 or with any other code or standard that the Secretary may, by written notice given to the network operator, nominate, and
- (b) without limiting paragraph (a), deals with the following matters:
  - (i) the safety and reliability of the network operator's network,
  - (ii) the safety of electrical installations of customers connected to the network operator's network,
  - (iii) advice to the public about the hazards associated with electricity in relation to the network operator's network,
  - (iv) management of bush fire risk relating to electricity lines and other assets of the network operator's network that are capable of initiating bush fire.

The ENSMS requires that a Formal Safety Assessment (FSA) be undertaken to address the safety risks associated with the operation of the network to workers, the public and environment. The Bushfire FSA CERM8047.06 identifies vegetation as a threat scenario and the management of vegetation as a critical preventative control in the management of bushfire risk.

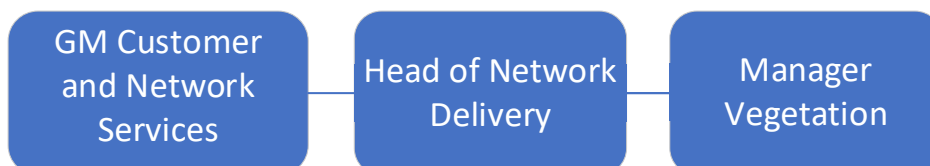
To meet these requirements, particularly (a), Essential Energy relies upon two specific industry codes; *ISSC3 Guide for the Management of Vegetation in the Vicinity of Electricity Assets* and *Code of Practice: Electricity transmission and distribution asset management 2009*. These provide a basis for the expected clearance standards.

The following diagram demonstrates the legislative hierarchy of control and how this plan relates to the legislative requirements and industry codes and guidelines.



## 2.2 Process Ownership and Responsibilities

The following two diagrams represents the Essential Energy roles with responsibility for vegetation management.



Responsibility: program delivery / contract management; compliance to standards, guidelines, codes of practice; including the vegetation management plan, ISSC3 Guideline, and CEOP2140 Vegetation Management Requirements.





Responsibility: Vegetation Management Plan owner, policy development and review, maintenance strategy, risk management, development and review of industry standards, guidelines and codes of practice.

### 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.
- Address compliance with appropriate legislation

### 4 SAFETY

Trees near powerlines are widely considered 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 and costs.

#### 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, an appropriately qualified contractor should be engaged to 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](http://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 in cases where any branch overhangs conductors.

In some cases, the work to clear a tree to a safe distance from the powerline may be provided by Essential Energy without charge.



## 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 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

Planting trees and other tall growing vegetation can have potential safety, reliability and cost implications. Planting near powerlines could create a fire risk and cause damage to the network in the future. Planting guidelines are contained on the Essential Energy website.

The costs associated with managing vegetation near powerlines can be significant. These costs have a direct impact on owners, or in the case where it is funded by Essential Energy, for all consumers through the electricity pricing. Essential Energy typically incurs the cost of trimming or removing vegetation. However, Section 48 of the Electricity Supply Act 1995 does allow for recovery of reasonable costs in some circumstances where the vegetation has been planted by an owner or occupier of a premises.

## 4.4 Clearing Requirements for the maintenance of Underground Lines

Clearing shall be carried out to allow for the repair or replacement of cables 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.

## 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.

Clearance distances are described in section 5.

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## 4.6 Clearing Zone

The clearing zone is the area to the side and under conductors within the clearance distances specified in section 5. All vegetation except grasses is to be removed from the clearing zone except:

- Low growing species under 3m when fully matured.
- All vegetation in deep valleys, where the conductors will be above the maximum height of the prevailing vegetation and the clearance space beneath will never be compromised, can be retained (except for access requirements).
- Tolerable Risk Vegetation, and other risk-based exceptions as defined in section 5.2.

In long spans, the cable may blow out a considerable distance and vegetation should be cleared to meet the minimum requirements within Table 3 Minimum Vegetation Clearances (in metres) for span lengths 300 m to 600 m with no current engineering assessment.

## 4.7 Inspection Zone

The inspection zone is the area beyond the clearing zone where trees exist which have potential to come into contact with powerlines should they fall or trees within specified corridors.

Hazardous vegetation likely to break, fall or be blown into powerlines in this zone shall be trimmed or removed where possible and practical. This includes dead, diseased and dying trees identified as hazard trees.

Trees within this zone that overhang into the clearing zone may be risk assessed to determine the maintenance requirements.

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

High voltage CCT and low voltage ABC are sometimes used to limit the extent of clearing as specified in Table 2.

## 4.9 Vegetation Corridor Management

Vegetation corridors can be applied to mitigate bushfire risk while ensuring continuity of electricity supply.

A Vegetation Corridor is the land surrounding Network Assets, in which Vegetation Treatment occurs or has previously occurred, and is either:

- a) contemplated under section 53 of the Electricity Supply Act 1995 (NSW) (Statutory Corridor); or
- b) established by an encumbrance registered on the title of land, usually to a nominated width, conferring a right onto Essential Energy to construct, operate, maintain, repair, renew, replace or upgrade electrical infrastructure (Registered Easement Corridor).

Essential Energy will ensure Vegetation Corridors are sustainably managed, by:

- a) Considering the local environmental context and applying a custodian or stewardship mindset.
- b) Applying the practice of Integrated Vegetation Management, leveraging and promoting natural ecology and compatible land uses to create Vegetation Corridors dominated by Low-Growing Vegetation and slow-growing Vegetation species, out-competing faster and taller growing species.
- c) Transitioning Vegetation Management activities over time to be relatively low-intensity, with less elevated Vegetation Pruning and minimal Mechanical Clearing required.
- d) Balancing Grow-In Risk Vegetation and Fall-In Risk Vegetation mitigation requirements with bushfire, network reliability and network safety performance.
- e) Ensuring compliance with the Minimum Vegetation Clearance Zone requirements through Pruning of compatible Vegetation and Removal of Vegetation incompatible with a reasonably practicable Pruning regime or other risk mitigation measures; and
- f) Ensuring Vegetation Management Cycles are primarily driven by Vegetation growth rates and environmental factors experienced within Vegetation Corridors.

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- a) Essential Energy typically manages vegetation within the dimensions of the previously-cleared vegetation corridor. Where the width of previous Vegetation Treatment is not discernible, the Vegetation Corridor outer dimension or width is equal to the lesser of:
- the Mature Tree Line (if discernible); or
  - the applicable Nominated Easement Width, as per AS/NZS 7000:2016 - Overhead line design, summarised below in Table 1.

**Table 1 - Corridor Clearances**

Nominal voltage	Typical width of easement
low voltage $\leq 1000$ volts	15m (7.5 m each side of pole line)
11,000, 22,000 (inc. 12.7kV) volts	20m (10 m each side of pole line)
33,000 (inc. 19.1kV) volts	25m (12.5 m each side of pole line)
66,000 volts	30m (15 m each side of pole line)
132,000 volts	45m (22.5 m each side of centre line)

**4.10 Stays**

Vegetation Treatment is undertaken on all Vegetation that is deviating, abrading or causing damage to any stay wire, or is likely to, during the Vegetation Management Cycle, to deviate, abrade or otherwise cause damage to any stay wire. Damage can include, but is not limited to, reducing the effectiveness of the designed tension and insulation properties of the stay wire. Deep disturbance of soil at the stay position is avoided.

**4.11 Site Specific Tree Clearing Management Plan**

Site specific 'Tree Management Plans' may be designed to address unique site conditions or exceptions outlined in section 5.2. These require appropriate risk assessments to be carried out and must be approved by the Essential Energy Strategy Owner. A site specific Tree Management Plan may be a suitable instrument for protection of Heritage trees or trees of high cultural value situated in low risk conditions.

**5 LINE CLEARANCES: EXISTING LINES****5.1 Maintaining Existing Lines**

The following table and drawings outline 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 for the Management of Vegetation in the Vicinity of Electrical Assets*).

Minimum distances specified in Table 2 and Table 3 Minimum Vegetation Clearances (in metres) for spans with no current engineering assessment:

- Are from the nearest conductor or cable
- Include allowance for sag and sway
- Do not include allowance for regrowth (between cycles). This distance must be added to the values in the table. Allowance for regrowth should be estimated by delegated persons or work crew based on training and experience. This takes into account factors such as; *species growth rates, seasonal environmental conditions, tree health, potential movement (whip), and the likely period of the next cutting cycle.*

**New Powerlines**

Clearances associated with construction of new lines is not within the scope of this plan. For the vegetation clearance requirements for *new* power lines refer to policy document CEOP2010.

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**Table 2 Minimum Vegetation Clearances (in metres) for span lengths 0-300 m from the Conductor**

An additional 0.5 m clearance is to be added to all bare conductor clearances for bush fire prone areas.

Voltage	Conductor Type	Clearance Profile	Portion of Span	Span Length (X metres)			
				$X \leq 50$	$50 < X \leq 100$	$100 < X \leq 200$	$200 < X \leq 300$
LV	Bare Conductor	All directions from any conductor	First & Last 1/6 <sup>th</sup>	1.0	1.0	1.5	3.5
			Middle 2/3 <sup>rd</sup>			2.5	4.0
	Covered / Insulated Conductors	All directions from any conductor	First & Last 1/6 <sup>th</sup>	0.5	0.5	0.5	1.0
			Middle 2/3 <sup>rd</sup>			1.0	
11 - 22kV	Bare Conductors (not including steel)	All directions from any conductor	First & Last 1/6 <sup>th</sup>	1.5	1.5	2.0	4.0
			Middle 2/3 <sup>rd</sup>		2.5	3.5	5.0
	HV Aerial Bundled Cables (ABC)	All directions from any conductor	First & Last 1/6 <sup>th</sup>	0.5	0.5	0.5	1.0
			Middle 2/3 <sup>rd</sup>			1.0	
	Covered Conductor Thick (CCT)	All directions from any conductor	First & Last 1/6 <sup>th</sup>	1.0	1.0	1.0	1.0
			Middle 2/3 <sup>rd</sup>			1.0	
11 - 33kV (Distribution)	Steel Conductor	All directions from any conductor	First & Last 1/6 <sup>th</sup>	1.5	1.5	1.5	2.0
			Middle 2/3 <sup>rd</sup>			2.5	4.0
33 - 66kV	Bare Conductors (not including steel)	All directions from any conductor	First & Last 1/6 <sup>th</sup>	3.0	3.0	3.0	4.5
			Middle 2/3 <sup>rd</sup>		3.0	4.0	6.0
132kV	Bare Conductors (not including steel)	All directions from any conductor	First & Last 1/6 <sup>th</sup>	6.0	6.0	6.0	6.0
			Middle 2/3 <sup>rd</sup>		6.0	6.0	6.5

#### Clearance Table Notes

1. Bushfire prone lands: 0.5m is to be added to clearances for bare conductors in bushfire prone lands. Essential Energy treats all 'rural' areas (as designated in its asset management system) as bushfire prone land for the purposes of vegetation management. Rural lands are considered to be capable of carrying fast moving grass or bushfires.
2. Spans >600m: The same clearance distances specified for 500-600m spans should apply for inspection and reporting purposes. Clearance requirements for these very long spans will be reviewed when prepared for vegetation treatment. Environmental impact assessments may come into consideration for any large scale

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clearing associated with spans with larger mid span blowout values.

3. Variations: Essential Energy has applied larger clearances than contained within ISSC3 for some conductors to account for possible tree movement ("tree whip"). All distances specified in the table are the minimum clearance space distance however there may be unique circumstances where a departure is appropriate. These cases are expected to be rare and will require a site specific tree management plan to be developed with the approval of the Vegetation Strategy Owner – refer to section 5.2.
4. Overhang Branches:
  - a) Overhang branches are not permissible where they encroach specified minimum clearance distances specified.
  - b) For LV and HV, overhang is generally permissible in urban areas where the vegetation is considered structurally sound and outside minimum clearances.
  - c) In rural areas where 'clear to sky' already exists, this state is to be maintained.
  - d) 'Clear to sky' is required for bare conductors in HIGH risk rural areas and may be utilised in other areas as defined by Essential Energy as reasonably practicable.
  - e) Where an Exception to the Minimum Vegetation Clearance exists as per section 5.2, the Exception also applies to Clear to Sky requirements.
5. LV spans >300m: LV spans >300m are rare however where they may exist a value of 4m clearance has been applied to the whole span length. The risk for LV is associated with branches potentially causing conductor clashing as the voltage level itself is too low to ignite foliage. The clashing risk in long rural spans can be largely mitigated by installation of spreaders.



**UNCLASSIFIED****Table 3. Minimum Vegetation Clearances (in metres) for span lengths 300 m to 600 m with no current engineering assessment.**

An additional 0.5 m clearance is to be added to all bare conductor clearances for bush fire prone areas.

Voltage	Conductor Type	Clearance Profile	Portion of Span	Span Length (X metres)		
				$300 < X \leq 400$	$400 < X \leq 500$	$500 < X \leq 600$
11 - 22kV	Aluminium Conductor Steel Reinforced (ACSR)	Horizontal from any conductor	First & Last 1/6 <sup>th</sup>	4.0	5.5	8.0
			Middle 2/3 <sup>rd</sup>	7.0	9.5	12.5
		Above & Below any conductor	Entire Span	5.0	5.0	5.0
33 - 66kV	Aluminium Conductor Steel Reinforced (ACSR)	Horizontal from any conductor	First & Last 1/6 <sup>th</sup>	4.5	6.0	8.5
			Middle 2/3 <sup>rd</sup>	7.5	10.0	13.0
		Above & Below any conductor	Entire Span	6.0	6.0	6.0
132kV	Aluminium Conductor Steel Reinforced (ACSR)	Horizontal from any conductor	First & Last 1/6 <sup>th</sup>	6.0	7.0	9.5
			Middle 2/3 <sup>rd</sup>	8.5	11.0	14.0
		Above & Below any conductor	Entire Span	6.5	6.5	6.5
11-33kV	Steel Conductor	Horizontal from any conductor	First & Last 1/6 <sup>th</sup>	3.5	5.0	7.0
			Middle 2/3 <sup>rd</sup>	6.0	8.5	11.0
		Above & Below any conductor	Entire Span	4.0	4.0	4.0

**Clearance Table Notes**

1. Bushfire prone lands: 0.5m is to be added to clearances for bare conductors in bushfire prone lands. Essential Energy treats all 'rural' areas (as designated in its asset management system) as bushfire prone land for the purposes of vegetation management. Rural lands are considered to be capable of carrying fast moving grass or bushfires.
2. Spans >600m: The same clearance distances specified for 500-600m spans should apply for inspection and reporting purposes. Clearance requirements for these very long spans will be reviewed when prepared for vegetation treatment. Environmental impact assessments may come into consideration for any large scale clearing associated with spans with larger mid span blowout values.

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3. Variations: Essential Energy has applied larger clearances than contained within ISSC3 for some conductors to account for possible tree movement ("tree whip"). All distances specified are the minimum safety distance however there may be unique circumstances where a departure is appropriate. These cases are expected to be rare and will require a site specific tree management plan to be developed with the approval of the Asset Manager.
4. Overhang Branches:
  - a) Overhang branches are not permissible where they encroach specified minimum clearance distances specified.
  - b) For LV and HV, overhang is generally permissible in urban areas where the vegetation is considered structurally sound and outside minimum clearances.
  - c) In rural areas where 'clear to sky' already exists, this state is to be maintained.
  - d) 'Clear to sky' is required for bare conductors in HIGH risk rural areas and may be utilised in other areas as defined by Essential Energy as reasonably practicable.
  - e) Where an Exception to the Minimum Vegetation Clearance exists as per section 5.2, the Exception also applies to Clear to Sky requirements.
5. LV spans >300m: LV spans >300m are rare however where they may exist a value of 4m clearance has been applied to the whole span length. The risk for LV is associated with branches potentially causing conductor clashing as the voltage level itself is too low to ignite foliage. The clashing risk in long rural spans can be largely mitigated by installation of spreaders.
6. For Steel SWER (12.7kV & 19.1kV) conductors use the 11-33kV Steel clearances. For other SWER conductor types (ACSR, AAAC, etc.) use 11-22kV clearance values. This applies for Table 2 and 3.

## 5.2 Risk-Based Approach to Minimum Vegetation Clearance Dimensions

Essential Energy has nominated exceptions to the specified Minimum Vegetation Clearances (Exceptions) based on assessment of risk associated with the proximity of Vegetation to Network Assets relevant to operational and environmental circumstances. These Exceptions are designed to manage Vegetation related risks so far as is reasonably practicable.

## 5.3 Tolerable Risk Vegetation

The Tolerable Risk Vegetation Exception is relative to the assigned Bushfire Risk Priority Rating. Essential Energy or its nominated service provider assesses if Vegetation is Tolerable Risk Vegetation by carrying out a site-specific risk assessment based on the following risk assessment requirements:

- a) Tolerable Risk Vegetation Exceptions must only be considered in relation to Vegetation located within VMAs or Bays assigned a Bushfire Risk Priority Rating of P3 or P4;
- b) For uninsulated ('Bare') conductor types, the Vegetation must meet the following requirements, namely the Vegetation:
  - i) appears structurally sound and healthy;
  - ii) will not grow further than 25% into the Minimum Vegetation Clearance Zone during the Vegetation Management Cycle; and
  - iii) is not likely to contact HV overhead Network Assets (including via branch drop or loose bark).
- c) For insulated Low Voltage Mains, including overhead insulated Service Mains connecting a Premises to an LV overhead Network Asset, the Vegetation must meet the following requirements, namely the Vegetation:
  - i) appears structurally sound and healthy;
  - ii) is not, and is not likely to, during the Vegetation Management Cycle, to be visibly abrading, deviating, or preventing visual inspection of the Conductor; and
  - iii) is not otherwise damaging the Service Mains or any Premises.

The Exception does not apply if the risk assessment above shows that only part of the assessed Vegetation fits the criteria of Tolerable Risk Vegetation. For example, if a tree has two branches located inside the minimum clearance space, yet only one of those branches meets the criteria, neither branch nor other part of the tree qualifies for an exception. In this situation Essential Energy or the nominated service provider must carry out Vegetation Treatment on that Vegetation without applying the Tolerable Risk Vegetation Exception.

## 5.4 Significant Vegetation

Essential Energy or its nominated service provider will, prior to carrying out Vegetation Treatment, identify Trees or Vegetation with community recognised significance during the Vegetation Inspection and Scoping process. Personnel involved in performing Vegetation Treatment are made aware of the location of Vegetation with 'community recognised significance' during pre-planning.

Types of Trees or Vegetation considered as having community recognised significance include, but are not limited to, those on heritage registers or protected by legal instrument.

Where Vegetation identified as having community recognised significance requires Vegetation Treatment and such Vegetation Treatment will not meet the requirements of the *Australian Standard 4373-2007 Pruning of Amenity Trees or clearances specified in section 5.1 tables 2 & 3* Essential Energy may conduct a site specific risk assessment to potentially allow that Vegetation to remain within the Minimum Vegetation Clearance Zone.

## 5.5 Other Exceptions

Essential Energy recognises that there may be situations where the Minimum Vegetation Clearance Zone requirements are not appropriate for the location, (e.g. the environmental impact of Vegetation Treatment outweighs the assessed reduction in risk). In these circumstances, Essential Energy may apply a reduced

Minimum Vegetation Clearance for the relevant location, Vegetation or grouping of Vegetation, based on a case-by-case site specific risk assessment.

## 5.6 Vegetation Work Severity Timeframes

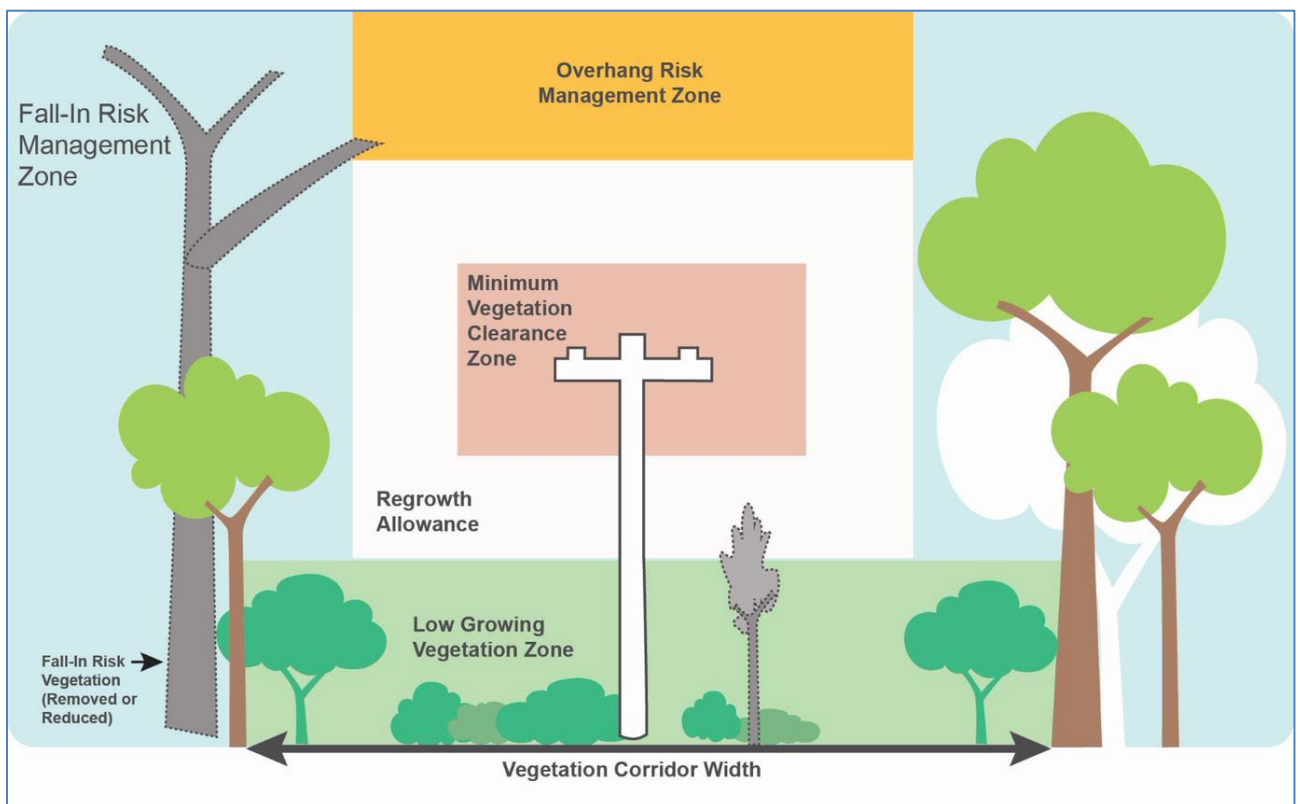
For Severity classifications and Maximum Rectification Times (MRT) refer to CEOP2140 Vegetation Management Requirements.

## 5.7 Fall-In Vegetation Hazard Management

In practice, many trees exist outside the minimum clearance zone at a height that if they were to fall, contact with a powerline could occur. It is not environmentally appropriate, economical, nor practical to remove all such trees as the majority are in good health and likely to be safe.

Overhead networks in all jurisdictions can be affected by seemingly healthy trees unexpectedly failing sometimes due to significant storm exposure. Accurately predicting the likelihood of individual tree failures across a largely healthy population with current industry inspection methods is impossible and therefore an element of risk will always remain. Only trees or branches identified with a high probability of failure (high risk) will be nominated for trimming or removal during the inspection process. Such vegetation is referred to as Fall-In Risk Vegetation.

Fall-In Risk Vegetation means visibly defective Vegetation (Vegetation that is structurally unsound including as a result of the Vegetation being dead or dying, as identified from the perspective of the Network Asset, as far as is reasonably practicable to do so), that is outside the Minimum Vegetation Clearance Zone and which may require Pruning, cutting, height reduction, or Removal to obviate an unreasonable risk of the Vegetation falling, dropping, and contacting Network Assets during the Vegetation Management Cycle.



Fall-In Risk Vegetation is managed by;

- Identification through vegetation scoping (inspection) work pre-listing
- Capture within a vegetation management database utilising defined report codes
- Actioned if required by trimming or removal as defined in work scope

## 5.8 State Forests, Agri-Forestry and other Commercial Plantations

Fires caused by tree failure during or after forestry harvesting or thinning operations is not uncommon. This risk must be appropriately managed by the tree owner.

The minimum agreed vegetation corridor width for powerlines through State Forests, Agri-forestry and other commercial plantations is the lesser distance of:

- 32 metres each side of pole line (64m total); or
- The maximum likely mature height of the surrounding trees (measured to nearest conductor).  
For example: if the maximum mature tree height is estimated to be 35m and the distance to conductor is less than 35m, then that tree (and any others of similar height) must be reduced in height or removed to avoid potential contact with the network should the tree fall.

## 5.9 Orchards / Commercial Fruit Trees

Generally, orchards trees should not be planted directly under or near existing powerlines as this may cause the trees to be removed or trimmed heavily to meet clearance requirements. In these cases, costs for works can be passed onto the owner. 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 in close proximity to powerlines.

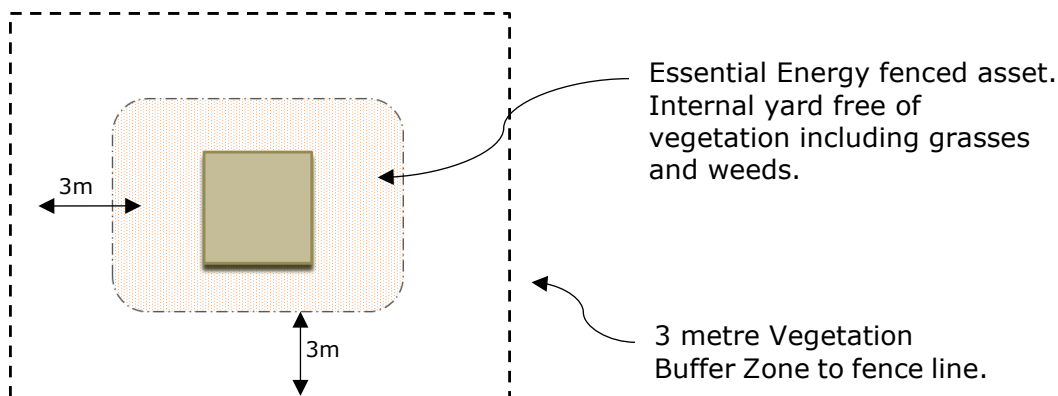
The minimum corridor width for the voltage should be maintained free of trees. Typically for distribution high voltage powerlines this is 10m either side of the powerline. Refer to CEOP8046 section 8.

Essential Energy also has alternative agreements in place with some landholders or industry associations for crop-specific vegetation management.

# 6 FENCED ASSETS, POLES, STRUCTURES AND WATER CROSSINGS

## 6.1 Fenced Assets and Padmount S/S

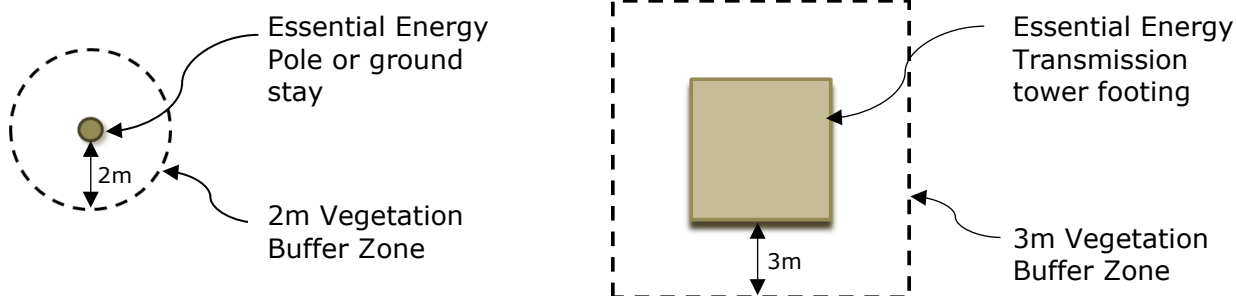
Fenced zone substations typically have a site-specific vegetation management plan with tailored vegetation management requirements. Fenced asset sites in rural areas without a site-specific vegetation management plan should retain a Vegetation Buffer Zone of 3 metres free of highly flammable trees & shrub species to protect assets from the potential excessive radiant heat in a fire situation and to maintain the integrity of security fencing. Grasses and small low-flammable shrub species are acceptable. The internal yard area of the asset should be free of all vegetation including grasses and weeds to avoid ignition from sparks that may generated from equipment within the yard.



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## 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 2 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 or removed 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 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.



## 6.3 Buffer Zones

The purpose of a 'Buffer Zone' around assets is to reduce risk of highly combustible fuel loads in close proximity 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.

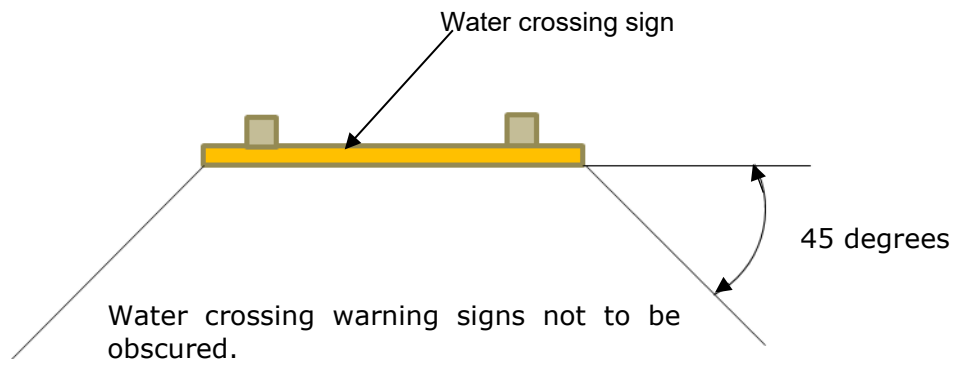
All vegetation is to be cleared to ensure that the entire face of a water crossing sign is visible to watercraft:

- 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.

Note that water crossings can exist in very sensitive environmental locations and special conditions may apply in regard to clearing works.

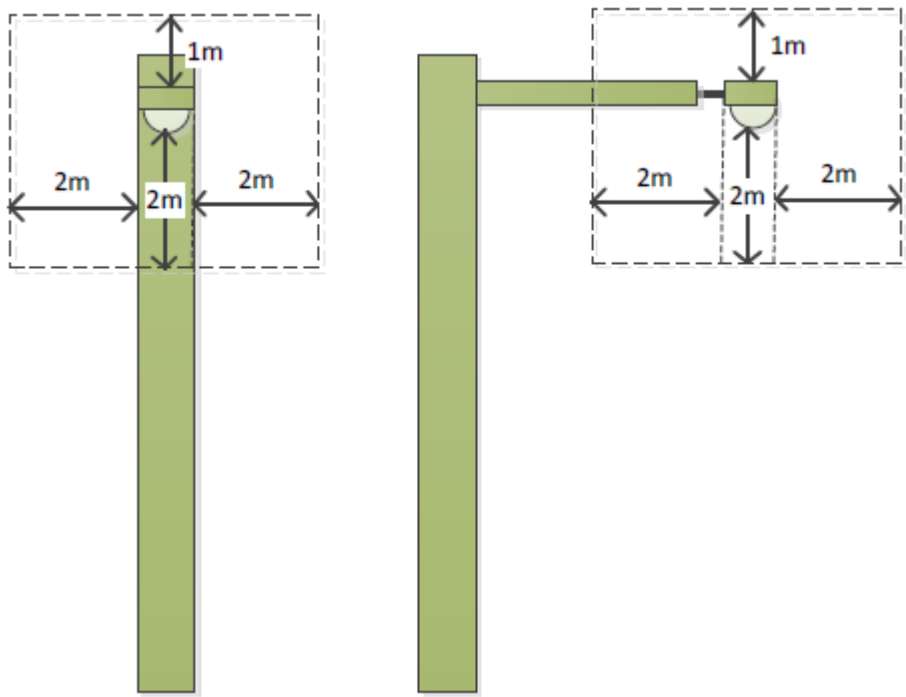




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## 7 STREET LIGHTING CLEARANCES

The primary purpose of the street lighting is to enhance public safety through appropriate street illumination levels. The following requirements for clearing around the lamps is taken from ISSC3 and provided as a guide only as the councils have ultimate responsibility for street lighting levels and fund their operation. Street light lanterns shall have a minimum of 2 m clearance in all directions, except above the lantern where a minimum of 1 m is required.



## 8 ENVIRONMENTAL

Essential Energy operates an Environmental Management System (EMS) certified to ISO 14001. The EMS requires Essential Energy to identify the environmental aspects relating to the activities Essential Energy carries out and provide controls to mitigate or manage that aspect.

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.

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 are listed in the table below.

Document ID	Title
CECP0003.01	Board Policy – HSE Environment
CECM1000.01a	HSE Manual: Environmental Management System
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 and Vibration
CECM1000.75	HSE Manual: Waste
CECM1000.76	HSE Manual: Land Use
CECM1000.77	HSE Manual: Flora & Fauna
CECM1000.78	HSE Manual: Community Consultation & Interaction
CECM1000.79	HSE Manual: Cultural & Heritage
CECM1000.80	HSE Manual: Resource Conservation
CECM1000.10j	HSE Manual: Pesticide Notification Plan
CECM1000.90	HSE Manual: Handbook
CEOP2010	Operational Procedure: Vegetation Clearing Guidelines for New Powerlines

## 8.1 Heritage Sites

Essential Energy activities have the potential impact on a variety of heritage matters. For vegetation management, Essential Energy, can have assets located within memorial gardens, parks, tree plantings and landscape that can be listed on either local, State or National heritage registers.

Works would stop immediately upon discovering an Aboriginal object whereby that work may impact or continue impact that object. Environmental Services will be contacted who will investigate the situation and provide further advice on how and when to proceed.

Council trees could be protected by a number of mechanisms under their respective Local Environmental Plans (LEPs) and by State Environmental Planning Policies (SEPPs).

Such locally listed 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*.

Pruning or clearing State heritage trees, including those that form part of the curtilage for State heritage listed items will require approval from NSW Heritage unless there is a valid standard exemption order in place. Refer to <https://www.heritage.nsw.gov.au/assets/Standard-Exemptions-Guidance-PDF.pdf#page=30> – Standard Exemption 13: Vegetation or other more application exemption to your particular circumstance. Specific heritage items may also have their own exemption, for example, the King George V Avenue of Memorial English Oaks, subject to complying with the conditions and terms of the exemption.

**UNCLASSIFIED****8.2 Flora and Fauna**

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

In recognising the importance of vegetation near utilities, particularly, electricity, additional exemptions apply to clearing of native vegetation and harming state listed threatened species. Generally, the routine maintenance of vegetation for powerlines is not typically considered a significant impact.

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

**8.3 Ground Fuel Management**

Elimination of ground fuels below powerlines is neither practical nor sensible. Suitable low growing species are permitted under powerlines subject to:

- Reasonable access for inspection, maintenance and construction works of the electrical infrastructure.
- Environmental objectives
- Risk assessments if necessary

Essential seeks to strike a reasonable balance between the flora and fauna environmental benefits and protection of infrastructure. Permitting certain low growing species is useful in deterring unsuitable species including those which may come into contact with powerlines in the future and weed species.

**8.4 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.

**8.5 Use of Herbicides**

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

Suckers, saplings or immature trees in the clearing zone can 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 routine vegetation treatment works are undertaken. In such instances, the Essential Energy or its nominated service provider may specify an appropriate follow up period to carry out herbicide control of suckers and regrowth. The follow up period specified will generally not exceed twelve months from the date the initial vegetation treatment was carried out.

**8.6 Pollution Control**

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

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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, applicable procedures shall be followed to ensure adequate control measures are implemented and the appropriate notifications are carried out.

**8.7 Waste**

Debris from privately owned trees may be left in neat piles on private lands for landowners to manage, by arrangement. Allowing debris from cutting activities to create a fuel load hazard directly underneath lines should be avoided. Vegetation subjected to herbicide application (such as spray or stem injection) may remain on site where agreed by tree owner and where in line with CEOP2140 Vegetation Management Requirements.

Mulch material that is proposed to be removed from the site and beneficially reused at another premise, must be managed and handled, in accordance with [The Mulch Order 2015](#).

The Mulch Order 2015 contain a requirement to develop a Risk Management Protocol (RMP) that contains measures to ensure the land application of mulch does not cause harm to the environment at the land application site and the spread of any weed, diseased plant material or pest.

**8.8 Biosecurity**

Essential Energy recognises that biosecurity is a shared responsibility with landowners and enables landowners to notify Essential Energy of biosecurity concerns on their property or region by completing an online form.

[Essential](#) Energy manages biosecurity risks in accordance with the *Biosecurity Act 2015*, which imposes a general biosecurity duty to prevent, eliminate or minimise biosecurity risks as far as reasonably practicable. That means weighing up the biosecurity risk concerned, considering the impact and the cost associated with exercising that duty and whether the cost is grossly disproportionate to the risk.

This includes following the process as detailed out in CERM1000.96 Operational Guideline – Biosecurity Risk Management.

**8.9 Mangroves**

Mangroves are considered marine vegetation under the *Fisheries Management Act 1994*. Trimming and removal of mangroves, regardless of whether required for the maintenance of electricity assets, requires a permit issued by the Department of Primary Industries.

Essential Energy has in place a permit that applies to its network area enabling the trimming and removal of mangroves for the purposes of maintaining electricity powerlines in accordance with the conditions of the permit.

Trimming shall otherwise be carried out in accordance with the requirements of this Vegetation Management Plan.

**8.10 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

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appropriate herbicide. It may be necessary to establish low growing vegetation to stabilise the area prior to the removal of mature trees.

### **8.11 State Environmental Planning Policy (SEPP) and Commonwealth Protected Areas**

Essential Energy is required to carry out vegetation works in accordance with the NSW Coastal Management SEPP. As vegetation maintenance is considered emergency or routine maintenance works, Essential Energy is able to maintain vegetation within the coastal wetland mapped areas without triggering the need for consent.

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.

### **8.12 National Parks Estate**

Vegetation control in lands reserved and dedicated National Parks will be carried out in accordance with this Vegetation Management Plan and any subsequent approval issued by the National Parks and Wildlife Service for that clearing.

### **8.13 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.

### **8.14 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.

### **8.15 Dead Trees or Branches**

Where dead trees or branches are in the immediate vicinity of powerlines, they should be reduced to a height at which if they fell would not cause a potentially dangerous situation and damage the powerline or Essential Energy personnel. 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 may be delayed until the fauna has moved, unless there is an immediate threat to the powerline or heightened forecast bushfire risk conditions. Timber removed by reduction pruning may be left on site for habitat depending on property owner requirements.

## **9 PLANTING GUIDELINES**

### **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 not pose a risk to powerlines in the future or require costly maintenance and management.

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



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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.

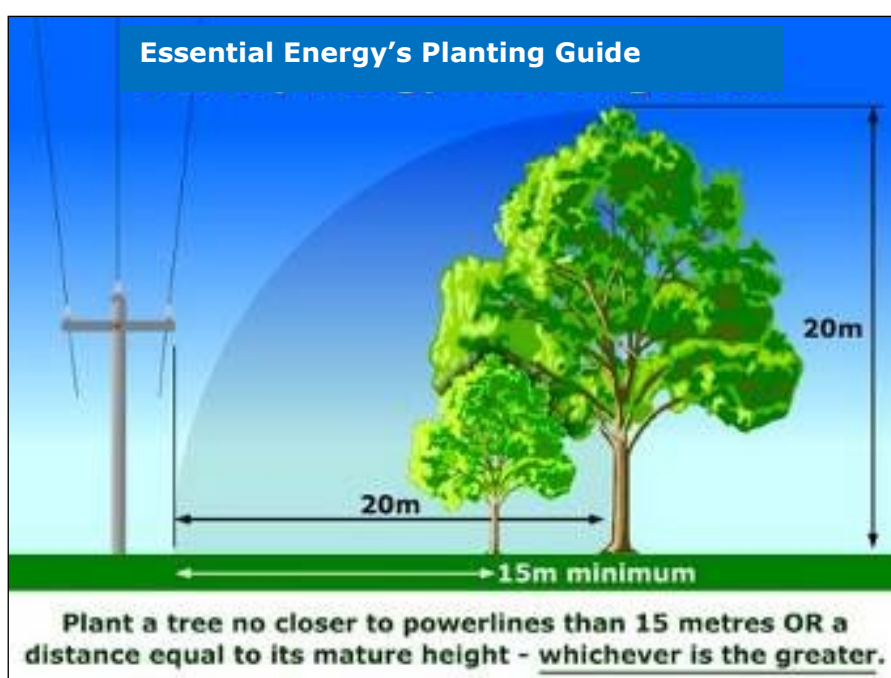
Many Councils have entered into “In Principle Agreements” or “Memoranda of Understanding” with Essential Energy. The agreements highlight the goals and approach to be adopted, with some responsibilities shared by involved parties.

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 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



### **Trees Unsuitable for Planting Under/Near Powerlines**

Many tree species are unsuitable for planting under or near powerlines due to their height when fully grown, and may be referred to as Incompatible Vegetation.. For a list of typically unsuitable species considered Incompatible Vegetation refer to Essential Energy's website:

<https://www.essentialenergy.com.au/our-network/managing-the-network/unsuitable-trees>.

Where young trees, with vigorous growth rates or whose mature height will infringe the clearance space, have been planted near power lines, they are best removed or relocated at an early stage. Essential Energy may direct landowners to remove inappropriate new planting/s at the land owners expense.

## **10 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. Reference should be made to the Public Electrical Safety Awareness Plan (PESAP).

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

- Planting guidelines.
- Newspaper articles.
- 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 interest group meetings.
- Attendance at field days e.g. AgQuip, Henty field days, etc.
- Access to vegetation qualified employees to discuss inquiries they may have in relation to vegetation control near powerlines.

## **11 METHODOLOGY OF VEGETATION CONTROL**

### **11.1 Qualification of Employees**

For those positions involved directly with the management of vegetation r, pre-requisites include the following:

- All necessary qualifications as required by contractual, statutory or safety requirements to carry out the work safely near powerlines.
- Formal qualifications in either horticulture or arboriculture attained from an accredited institution applies to positions that manage and oversee trimming crews in the field..

### **11.2 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, time between maintenance cycles is shorter in urban environments and longer in rural areas.

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

### **11.3 Urgent or Emergency Trimming and Removal**

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 or where a tree has been identified as a more immediate fire risk.

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When assessing work requirements under emergency conditions, changed environmental factors may need to be considered. Examples of these conditions include; trees found with potential to start a fire during fire danger periods; storm events; and natural disasters.

Trees trimmed or removed under emergency conditions may require some form of follow up remedial vegetation treatment after the event, to ensure ongoing safety.

Land owner/occupier notifications and consultation are not always possible in an urgent or emergency scenario.

## **11.4 Consultation with Land Owner/Occupier**

Except in the case of an emergency or where authorised under the provisions of statutory legislation 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 ensure the interests of other property owners and the community are protected from the risk of bushfire or power outage.

## **11.5 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 may include;

- 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 for works involving chemical use, debris management and tree removals.

## **11.6 Dispute resolution**

Essential Energy has a documented procedure for dealing with customer concerns or complaints – refer to [essentialenergy.com.au/about-us/customer-and-regulatory-information/complaints-and-dispute-resolution-procedure](https://essentialenergy.com.au/about-us/customer-and-regulatory-information/complaints-and-dispute-resolution-procedure).

This procedure 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.

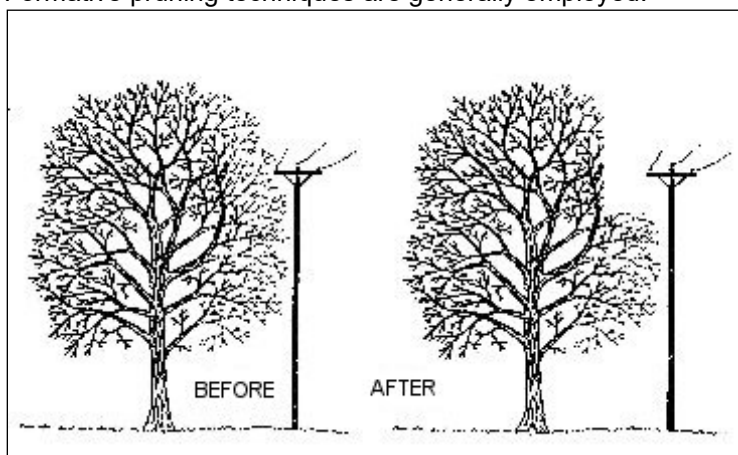
## **12 PRUNING PRACTICES**

Trees are pruned to arboriculture standards set forth by Australian Standard AS 4373 “Pruning of Amenity Trees”, wherever practicable and in accordance with training.

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The aim of the pruning is generally to work with the natural habit of each tree. The branches to be trimmed will generally be taken back to branch collars in accordance with good arboriculture practice and therefore at times may exceed the minimum safety clearance distance.

Formative pruning techniques are generally employed.



## 12.1 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 whilst minimising damage to the trees.

## 13 ALTERNATIVES TO PRUNING

There are a number of methods of maintaining clearance between powerlines and vegetation; the most common and economically viable method used is pruning to an appropriate clearance. Alternative methods may be considered if they are economically feasible or where the vegetation concerned is of significant cultural or heritage value or listing.

### 13.1 Engineering Options

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

- The use of insulated conductors such as aerial bundled cable to minimise the amount of trimming.
- Relocating powerlines to avoid vegetation.
- Undergrounding supply to eliminate the need for maintenance.

Where landowners or Councils seek to implement these options, Essential Energy should be consulted and may give consideration to contributing to the cost of the work in lieu of reductions in the cost of future vegetation control.

## 13.2 Non-Engineering Options

### Tree Removal

Trees may be removed when necessary. Alternative strategies may be considered except where the alternatives are not feasible in the circumstances (including economically feasible) in which case the tree may be removed. Essential Energy may prioritise the removal of trees on the basis of network risk posed by the tree and in context of other hazard rectification priorities.

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 is an unacceptable maintenance cost burden.

Essential Energy will seek the removal of trees where:

- Other options including undergrounding of powerlines, replacement with ABC, relocation of powerlines are not economically feasible;
- The electricity works and supplies are threatened, or risk cannot be adequately managed by pruning;
- The tree cannot be pruned in a safe manner or the worksite poses unacceptable safety risk for workers;
- There is an inappropriate species imposing considerable ongoing cost to maintain;
- The tree does not respond to directional pruning away from power lines;
- The tree cannot be maintained within defined maintenance periods 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 after pruning are unacceptable such that it would be more appropriate to fully remove the tree.

Essential Energy and its nominated service providers consider the following as examples of incompatible vegetation types likely requiring removal:

- Palms;
- Bamboo;
- Vines; and
- Trees that respond to pruning with accelerated regrowth such as Jacaranda, Eucalyptus, Brush Box.

Additional examples of incompatible vegetation can be found on the Essential Energy website at [www.essentialenergy.com.au/content/unsuitable-trees](http://www.essentialenergy.com.au/content/unsuitable-trees).

Essential Energy will consult with councils where specific street trees are identified for removal. When the need for the removal of a tree on private land is identified, Essential Energy will consult with the property owners/occupiers.

Where trees are removed the stump shall be appropriately treated to prevent regrowth.

The following approaches may be used to facilitate the removal process:

- Removal of the tree with subsequent replacement.
- Replanting with a suitable species prior to removal of the inappropriate species.
- For large groups of trees, a staged removal may be considered.

### Tree Height Reduction

Tree height reduction is the practice of removing enough of the Tree canopy and trunk to eliminate the potential for the Tree to, at any time, enter the Minimum Vegetation Clearance. Trees subject to this practice are either already dead, or administered with herbicide.

Essential Energy or its nominated service providers may use this Vegetation Treatment method where:

- a) The Tree is not within trafficable or public areas where the residual stem/trunk may become a safety hazard in situ or when falling/fallen over; and
- b) It is desirable to retain the Vegetation structure, post Herbicide Treatment (e.g. for animal habitat); or
- c) Vegetation, subjected to Herbicide Treatment, would otherwise be located within, or would at any time move into, the Minimum Vegetation Clearance Zone.

Vegetation height reduction does not refer to, nor replace, directional Pruning or Vegetation Removal practices.

### Vegetation Growth Regulators

In select circumstances Essential Energy or its service provider may use chemicals registered as plant growth regulators that slow vegetative growth by inhibiting gibberellin biosynthesis within Vegetation, provided the service provider:

- a) First obtains Essential Energy approval; and
- b) Complies with the Landholder negotiation and consent, environmental and training requirements; and
- c) Complies with the other legal requirements for use and application of chemicals.

Select circumstances typically include but are not limited to Trees with significant social or economic value, which are physiologically healthy and suited to gibberellin inhibition, but otherwise cannot be safely maintained outside of the Minimum Vegetation Clearance Zone using directional Pruning methods alone.

Where the Essential Energy or its nominated Service Provider has applied Vegetation growth regulator to Vegetation and the Vegetation is later deemed by Essential Energy to pose an unacceptable safety risk, Essential Energy may pursue alternative options such as Tree Removal.

## 14 PROCESS FOR YOUNG 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.

In these cases, spraying and / or mulching may be employed to manage self-seeded species or young regrowth. The methods to be deployed for Sapling/regrowth control are described in detail in the policy guideline CEOP2021: *Removing Vegetation Near Overhead Powerlines*

Low growing species might be retained in situations where there is tolerable risk and significant environmental benefit to be gained.

## 15 ACCESS FOR MAINTENANCE OR REPAIRS

Vehicle access is required to power lines 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.

## 16 SITE SPECIFIC TREE PLANS

A tree plan may be adopted for an individual tree or site. When this is used it must be based on risk assessment approved by Essential Energy's engineering division. It can be a useful instrument for management of an unusual or rare situation such as avoiding the need to excessively prune a tree of significant community value to meet the clearance requirements where it is identified as being located in an area deemed by formal risk assessment to be a very low supply reliability or fire risk.

Some sensitive sites have already been identified by councils through consultation or 'in principle agreements' where agreed protocols are in place.



## 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 and appropriate cost sharing arrangements.

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.

## 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 historical issues associated with these commercial plantations. This sets out the agreed approach to maintenance of power lines at these sites.

## 17 KEY TERMS AND DEFINITIONS

**Accredited Service Provider (ASP):** A contractor accredited under Part 4 of the Electricity Supply (Safety and Network Management) Regulation 2014 (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.

**Hazard Tree/ Fall-in Vegetation Hazard** As defined in CEOP2140 Vegetation Management Requirements. The following table highlights where the different terms are used:

Term	Document
<i>Fall-in Vegetation Hazard</i>	<i>ISSC3, CEOP2140, Vegetation Contracts</i>
<i>Hazard Tree</i>	<i>CEOP2087 Bushfire Mitigation Index</i>

**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.

**Sapling:** An immature tree.

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

**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.

**Service Provider:** means a person or company delivering Vegetation Management for Essential Energy.

**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.

## 18 REFERENCES

CECM1000.70 - HSE Manual: Environmental Impact Assessment NSW

CECM1000.10j - HSE Manual: Pesticide Notification Plan

CEOP2010 – Vegetation Clearing Guidelines for New Powerlines

CEOP2021 – Removing Vegetation Near Overhead Powerlines

CEOP8022 - Bushfire Risk Management Plan

CEOM8047 - Electricity Network Safety Management System Plan

CERM8047.06 - Bushfire Formal Safety Assessment

CEOP2140 – Vegetation Management Requirements

CEOP2087 – Bushfire Mitigation Index

### 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 (Safety and Network Management) Regulation 2014  
ISSC3 – Guide for the Management of Vegetation in the Vicinity of Electrical Assets  
Biosecurity Act 2015  
Biodiversity Conservation Act 2016  
Code of Practice: Electricity Transmission and Distribution Asset Management  
Environmental Planning and Assessment Act 1979  
Fisheries Management Act 1994  
Heritage Act 1977  
Local Land Services Act 2013  
Local Lands Services Regulation 2014  
National Parks and Wildlife Act 1974  
National Parks and Wildlife Regulation 2019  
Occupational Health and Safety Act 2000  
Rural Fires Act 1997  
Soil Conservation Act 1938  
State Environmental Planning Policies including SEPP (Infrastructure) 2007  
Australian Standard AS4373 – Pruning of Amenity Trees  
Code of Practice for the Amenity Tree Industry (NSW)  
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 2014  
Code of Practice – Working near Exposed Live Parts Electrical Safety Act 2002

## 19 REVISIONS

Issue Number	Section	Details of Changes in this Revision
2	8.5	Update planting guide image
3	All	Plan updated to new template Document Number used to be CEK8008
4	All	Update to new External Template
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 &amp; Regulations.</p> <p>Section 4 expanded to provide additional information about clearance &amp; clearing zones consistent with CEOP2010.</p> <p>Section 5.2 deleted Corridor Guidelines for New Lines &amp; easements. Refer CEOP2010.</p> <p>Inserted new Section 6 Fenced Assets, Poles and Structures.</p> <p>Section 7 expanded. 71.3, 7.23 &amp; 7.24 added. 7.8 expanded, use of herbicides.</p> <p>Section 19 Review of Vegetation Management Plan deleted. Refer Section 1.1 &amp; 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	Introduction 6.3, 6.4 2.0 Objectives 2.1 Legislation 4.9 Easements 7 Streetlight Clearances 8.2 Threatened species 8.18 Rail Lands 9.4 Orchards 12.5	<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 &amp; 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>
8	<p>Introduction</p> <p>2.1 Legislation</p> <p>2.2 Process ownership</p> <p>Section 5 Clearances</p> <p>6.1 Fenced assets</p> <p>6.2 Poles and Supports</p> <p>7.0 Street Lighting</p> <p>Other sections</p>	<p>Network Map revised to indicate the new three region model.</p> <p>Legislation reference to the repealed Electricity Supply (General) Regulation 2001 replaced by reference to the updated version of Electricity Supply (Safety and Network Management) Regulation 2014.</p> <p>New section inserted based on feedback by Program Manager</p> <p>Replaced previous two clearance tables (Table 1 &amp; 2) with a combined Table 1 covering all conductor types (based on the VMCR document agreed by NSW distributors)</p> <p>Buffer distance changed from 5m to 3m to align with VMCR review.</p> <p>Buffer zone around base of poles and stays amended from 3m to 2m to align with agreed value in VMCR by NSW distributors</p> <p>Street lighting diagram changed to align with VMCR review. Minor change in distance above light from 0.5m to 1m.</p> <p>General edit of wording in various other paragraphs throughout the document.</p> <p>Some paragraphs were deleted as upon review they were found to be either not required or repetitive.</p>
9	Table 1 & 2	Updated to reflect the recent changes to ISSC3
10	<p>Section 5.2</p> <p>Hazard Trees</p> <p>References</p> <p>Other Sections</p>	<p>Added reference to Maximum Rectification Times and Classifications – CEOP2140</p> <p>Moved from section 13 to 5.3. Added detail on process for managing Hazard Trees</p> <p>Updated</p> <p>Minor amendments</p>
11	<p>2.2</p> <p>4.9</p> <p>5.1</p> <p>5.3</p> <p>5.4</p> <p>5.5</p> <p>17</p>	<p>Approved by updated</p> <p>Authorised by updated</p> <p>Update process ownership and responsibilities</p> <p>Add easement corridors</p> <p>Added note</p> <p>Update to section</p> <p>Section moved from 9.3</p> <p>Section moved from 9.4</p> <p>Tier 2 Incursion definition added</p>

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	18 19	References updated Update with latest legislation
12	2.1 18	Update legislation relationship to include Bushfire FSA References updated
13	4.6 4.9 4.10 5.1 5.2 13.2 19 (former)  8.3  8.13 18	New section on Risk-Based Approach to Minimum Vegetation Clearances Dimensions. New alternatives to pruning (Height Reduction and Vegetation Growth Regulators). Minor edits to improve consistency with Vegetation Management Requirements. Removed Appendix – Purpose Statement appropriate paragraphs merged into introduction and Legislative requirements. Changed Bushfire Prevention to read Ground Fuel Management – statement about managing fuel loads under lines. SEPP requirements updated Legislation references updated

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