Sarah Ng

From: [redacted]
Sent: Friday, 25 September 2020 9:09 PM
To: DPE PS Biodiversity Mailbox
Subject: NSW PLANNING INDUSTRY & ENVIRONMENT DRAFT CUMBERLAND PLAIN CONSERVATION PLAN
Attachments: EE General Restrictions OH Power Lines Apr 2020.pdf; EE Safety From The Ground Up.pdf; [redacted] Easements and Property Tenure.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

The Secretary
NSW Planning & Environment

ATTENTION: Steve Hartley, Executive Director, Green and Resilient Places Division

Dear Sir or Madam

I refer to the Department's letter of 26 August 2020 from NSW Planning, Industry and Environment advising of the public exhibition of the Draft Cumberland Plain Conservation Plan which proposes the environmental conservation (E2) zoning under a new state environmental planning policy (SEPP) for strategic conservation planning to be applied to Endeavour Energy's Maldon Zone Substation located at [redacted] Razorback [redacted] Submissions need to be made to the Department by 25 September 2020.

Endeavour Energy has noted that in regard to Maldon Zone Substation as shown in the following extract of the Spatial Viewer shows the rear south western part of Maldon Zone Substation as being in the proposed environmental conservation (E2) zoning. As shown in the adjoining extracts from SIX Maps and Endeavour Energy's G/Net master facility model this part of the site has extensive 66,000 volt / 66 kilovolt (kV) high voltage overhead power lines, overhead earth cables and overhead pilot cables (carrying protection signals or communications between substations) including the 'landing' poles which direct the overhead power lines into the substation. The overhead power lines and cables continue to the south west within the easement benefitting Endeavour Energy (indicated by the red hatching).

The selection of this part of the Maldon Zone Substation within the proposed E2 zoning appears to be due to the proximity to the stream (Strahler Order ≥ 2). However the adjoining section within the easement over has been excluded from the proposed E2 zoning. Endeavour Energy believes this should similarly this exclusion apply to the Maldon Zone Substation site.

In regard to the restrictions which apply to easements for overhead power lines please find attached for the Departments reference copies of Endeavour Energy's:

- Energy's Mains Design Instruction 'Easements and Property Tenure Rights'.
- General Restrictions for Overhead Power Lines.

The planting of large trees near any electricity infrastructure (irrespective of whether or not it is located within an easement, statutory allocation or protected works) is not supported by Endeavour Energy. Particularly for overhead power lines, ongoing vegetation management / tree trimming is a significant network cost and falling trees and branches during storms are a major cause of power outages.

The planting of large trees near electricity infrastructure is not supported by Endeavour Energy. Suitable planting needs to be undertaken in proximity of electricity infrastructure (including any new electricity infrastructure required to facilitate the proposed development). Only low growing shrubs not exceeding 3.0 metres in height, ground covers and smaller shrubs, with non-invasive root systems are the best plants to use. Larger trees should be planted well away from electricity infrastructure (at least the same distance from overhead power lines as their potential full grown height) and even with underground cables, be installed with a root barrier around the root ball of the plant.

Landscaping that interferes with electricity infrastructure may become a potential safety risk, cause of bush fire, restrict access, reduce light levels from streetlights or result in the interruption of supply. Such landscaping may be

subject to Endeavour Energy's Vegetation Management program and/or the provisions of the *Electricity Supply Act 1995* (NSW) Section 48 'Interference with electricity works by trees' by which under certain circumstances the cost of carrying out such work may be recovered. For details of Endeavour Energy's Vegetation Management Program please refer to the attached brochure 'Safety, From the Ground Up Vegetation Maintenance Program'.

In the broader context Endeavour Energy supports the intent of the Draft Cumberland Plain Conservation Plan and assumes existing asset maintenance and inspection, including vegetation trimming / maintenance regimes, to maintain electrical safety clearances and access tracks / routes will continue or proceed unaffected.

Should you wish to discuss this matter, or have any questions, please do not hesitate to contact me or the contacts identified above in relation to the various matters. Due to the high number of development application / planning proposal notifications submitted to Endeavour Energy, to ensure a response contact by email to [redacted] is preferred.

With the current COVID-19 health risk, as many as possible of Endeavour Energy staff are working from home. As a result there is only a small contingent located at the Huntingwood head office for essential operations. Although working from home, access to emails and other internal stakeholders is now somewhat limited and as a result it may take longer than usual to respond to enquiries. Thank you for your understanding during this time.

Yours faithfully

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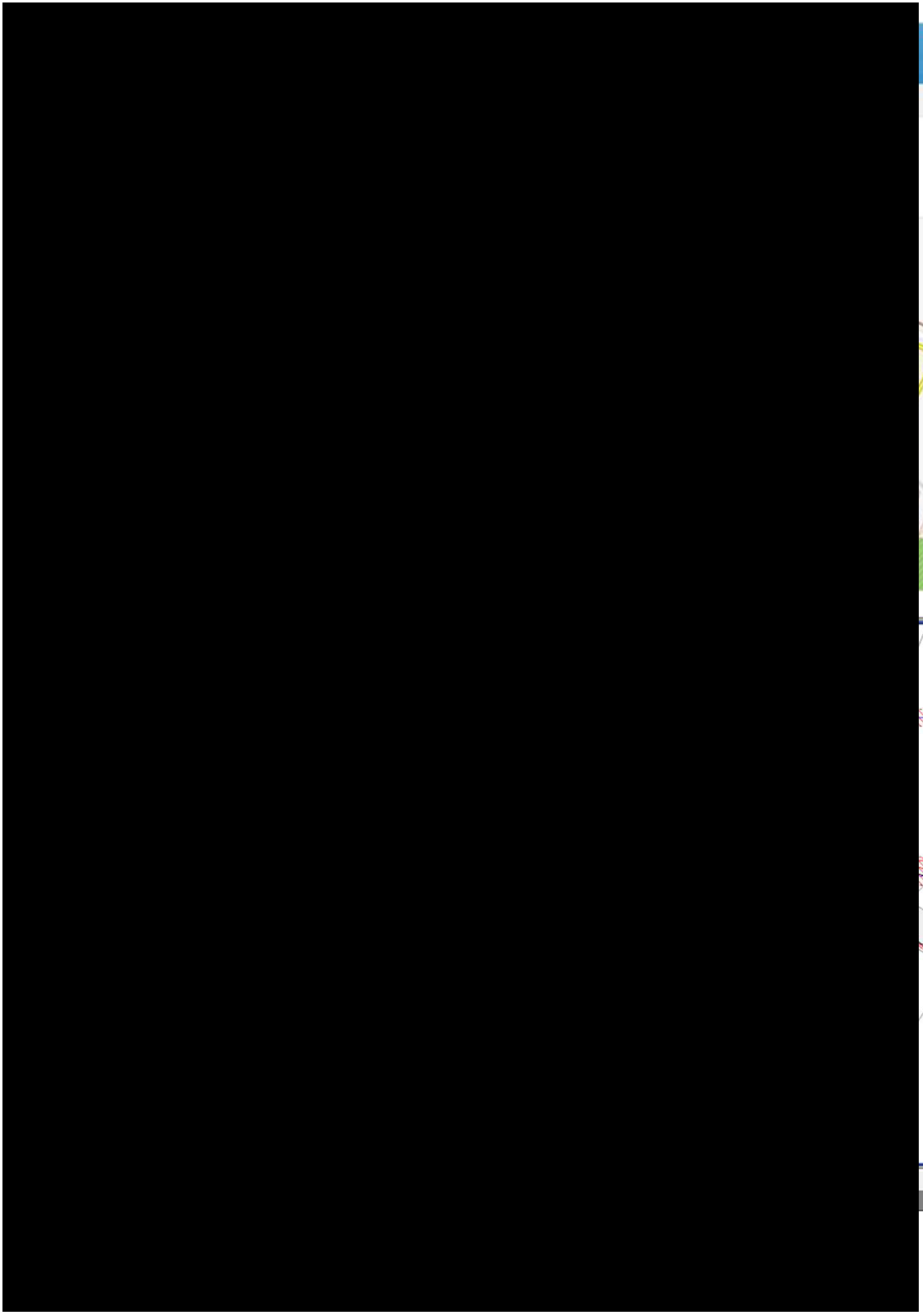

Last updated 7/4/2020

General Restrictions for Overhead Power Lines

Endeavour Energy wishes to provide the following list of 'General Restrictions' applicable to the **'Easement Area'**. It should be noted that these are indicative guidelines only and that this information should be administered in conjunction with the requirements of the Work Health and Safety (WH&S) Act and WorkSafe NSW (formerly WorkCover) legislation.

Endeavour Energy recommends a policy of **'prudent avoidance'** be adopted in relation to the use of the easement area for ongoing staff activities or work areas. Additionally, WH&S and WorkSafe legislation should be consulted in relation to this matter.

As existing ground levels throughout the easement are unknown, it is assumed that minimum design clearances exist within the easement area. As such, references to permissible heights on any activity may alter from that stated within this document. **Written approval** must be sought for any activity within the easement area. For such approval, detailed plans drawn to scale, and fully dimensioned showing property boundaries and other relevant information should be forwarded to Endeavour Energy.

Approval to encroach into the easement area will not be granted where an alternate site clear of the easement area exists. All approvals granted are subject to the encroachments being removed or relocated; at the owner's expense should Endeavour Energy require this for cable maintenance, construction or emergency works.

Should any earthing be disturbed whilst work is being carried out, all work should immediately cease, and Endeavour Energy notified so that the earthing can be reinstated.

1. Construction of *habitable* buildings (permanent or temporary) e.g. Houses, site-sheds with sleeping quarters, shipping containers, other substantial structures or parts thereof, includes eaves, guttering and footings, *shall not be erected within the easement area.*

1a. *Non-habitable* buildings will be considered if no other sites available. They must be earthed as per Endeavour Energy's 069575.dwg. The building cannot have electrical power connected, or store corrosives, explosives, combustibles or flammables. The building cannot exceed 2.5m height.

2. No encroachment into an overhead Transmission easement will be permitted within 10 metres of the closest steel structure and 5 metres of the closest pole.

2a. No encroachment into an overhead Distribution easement will be permitted within 5 metres of the closest pole.

3. Changes to ground levels within the easement area are not permitted without the prior written approval of Endeavour Energy. Applications are to be supported by a geo-technical report prepared by a civil engineer.

4. **Statutory clearances to the conductors must be kept always**.

   It should be noted that power lines are designed to allow for sag and swing sideways, consequently allowance for this needs to be considered always. The statutory clearance from 0 kV to 132 kV conductors is minimum 3 metres, in all directions, always. This clearance also applies but not limited to; persons, vehicles, hand tools, equipment, cranes, lifting gear, plant and load. Consideration needs to be given and the clearances increased where there is the likelihood of any inadvertent movement or swinging of the plant, crane, load or lifting gear towards the power lines.

5. Construction of roads, car and truck parking areas, and subdivisions will only be considered for approval if access to the structures is maintained and the layout is such that; sufficient building area is left clear of the easement, it will not create numerous utility crossings or later requests for encroachments.

6. If required, for Endeavour Energy to carry out the necessary calculations, the applicant must submit a Centre Line Profile, a recent survey, showing the following information:

REQUIREMENTS FOR PROFILE CLEARANCE TO TRANSMISSION LINES

Note: Clearances cannot be determined and will not be processed unless all the required information is submitted i.e. *Current levels **and** Proposed levels.*

THE INFORMATION TO BE SUPPLIED:

- In AutoCAD Format.
- Have a vertical exaggerated scale of 10:1. E.g. Horizontal Scales 1:1000 Vertical Scale 1:100 or Horizontal Scale 1:500 Vertical Scale 1:50.
- Information on the paper size that the drawing needs to be printed at for the scale to be correct e.g. Horizontal Scale 1:1000 Vertical Scale 1:100 when printed on A2.

THE CENTRE LINE PROFILE SURVEY IS TO INCLUDE ALL OF THE FOLLOWING INFORMATION:

- Lot and DP number of property.
- Clearly marked easement width.
- Total length of the conductor span affected.
- Conductor attachment height reading at each structure.
- Existing RL (Natural Ground Surface) and Final readings at the base of each structure.
- Indicate pole or structure identification numbers.
- Date, Time and Temperature at the time of each height reading taken.
- A height reading is required every 10 metres on the conductor closest to the ground of the Existing RL or as the terrain dictates for the entire span.

Note:

- The amount of distance required for each reading may be reduced on poles with smaller spans.

- Other information may be required where the structures are strained, or changes of direction occur on pole lines.

7. A second survey may be required upon completion of work.

8. Vehicles with elevating or extending components such as earth moving vehicles, concrete pumping vehicles, loaders, fork lift trucks, tip trucks, cranes, including Derrick style cranes and hoists, Hiabs, Palfingers including others, and are not to proceed under the conductors until such components are returned to the travelling position.
Note: Concrete pumping vehicles are not permitted to operate within an easement for electricity purposes.

9. Vehicles, plant or equipment having a height when fully extended that exceeds 4 metres shall not be brought onto an easement area without the prior written approval of Endeavour Energy.

10. The area within the easement is not to be used for the loading or unloading of trucks.

11. No soil or other material is to be stored, loaded or unloaded within the easement area.

12. The area within the easement is not to be used for storage or stacking of goods or materials, especially flammable or explosive material.

13. Application for approval for the erection of non-climbable flagpoles, CTV cameras, security lighting, weather vanes, signs and the like might be granted, subject to a height limitation of 4 metres and the earthing of all metallic parts.

MINIMUM APPROACH DISTANCES OF PLANT AND LOADS TO LIVE ELECTRICAL APPARATUS (FOR NON-AUTHORISED PERSONS)

NOMINAL VOLTAGE	MINIMUM APPROACH DISTANCE
Not exceeding 132,000V	**3 metres**
Above 132,000V but not exceeding 330,000V	**6 metres**
Above 330,000V	**8 metres**

Caution: *The operator of the plant must be able to identify the voltage level of the apparatus that they are approaching with the plant or assume 8 metres as a minimum.*

14. Extreme caution is to be observed when working within easements and around any structures, poles or wires including overhead or underground.

15. Dial Before You Dig service plans are required to check for underground utilities prior to any excavations works. Contact 1100 for assistance.

16. All personnel are to be advised of the hazards of working near high voltage overhead or underground wires.

17. All machinery or plant within an electricity easement is to be operated by adequately trained and accredited persons.

18. Endeavour Energy recommends the use of a suitably trained safety observer when work is being carried out within the easement area.

19. A hazard identification and risk assessment should be carried out within the easement area. A safe work method statement should be provided for any work carried out within the easement area. All staff should be briefed regularly, or when there are any changes, as to the contents of the risk assessment and safe work method statement.

20. For the attention of staff and visitors to the site and to ensure constant vigilance, Endeavour Energy recommends that clearly visible safety signs be erected, in accordance with the relevant safety standards, alerting attention to the transmission lines and associated hazards.

21. Flammable, combustible, corrosive or explosive materials, including gas bottles, are not permitted within the easement area. Flammable liquid carriers shall not be placed within the easement area.

22. Garbage, refuse or fallen timber is not permitted within the easement area. Burning off is not permitted within the easement area without the prior written approval of Endeavour Energy.

23. Any metallic fencing within the easement shall require earthing and isolating in accordance with the Australian Standards as per AS3000.

24. Structures such as detached garages, sheds, stables, carports, unroofed veranda's, shipping containers, water tanks, fixed plant and equipment, will only be considered for approval if no other practicable alternative site is available clear of the easement area.

24a. No approvals will be granted for any of the above where they are proposed within the minimum clearances.

24b. No access is to be restricted whilst maintaining safety clearances always.

24c. Furthermore, any proposed structures must not exceed 2.5 metres in height if climbable and 4.3m if not climbable.

***Please Note**: - Due to effects of induction and possible lightning/line fault step and touch potential, requests for pools, spas, open water features and some water tanks inside the easement will not be approved.*

25. Installation of utility services, such as power, telephone, gas, water and sewerage (overhead, underground, or on the surface) may be considered for approval by Endeavour Energy's Overhead and Underground Mains Manager. Proposed site dimensions in relation to assets are required.

26. Trees, plants or shrubs with a *mature height* that do not exceed 3 metres may be planted within the easement area provided they are no closer than 5 metres from the nearest structure (i.e. pole or tower). Mature trees must be a minimum 3 metres from the vertical projection of the nearest conductor (i.e. overhead power line). No plants are permitted in an area where they may obstruct access.

27. Dogs and livestock shall not be kept within the easement area if they are likely to create a dangerous situation for Endeavour Energy staff and thus restrict access.

28. Normal agricultural pursuits are permitted however, care should be taken when ploughing or operating mobile machinery near structures or supporting guys. Earthing systems are particularly prone to damage from such activities. It is imperative that access to the easement area and structures be available always. Whilst reasonable care will be taken, Endeavour Energy will not be responsible for any damage to crops caused whilst accessing and working within the easement area. The restrictions applying to the heights of mobile plant and equipment must be observed.

29. 24-hour 7 day a week access is required to the easement for emergency and maintenance purposes. Any locked gates are to have an Endeavour Energy lock incorporated in the locking system. Please contact Integrity Locking 1300 366 488 for details.

In addition to the above, details of some fencing restrictions are provided for your information. Written approval must be sought prior to the commencement of any work.

A. Brick, masonry walls or other substantial structures or parts thereof shall not be erected within the easement area.

B. All other types of fencing erected within the easement area are subject to a height limitation of 2.5 metres.

C. Fences must not encroach 5m of any asset without written permission.

D. The erection of any fencing is not permitted in a location that could create an unsafe working area for Endeavour Energy staff.

E. All metallic fences are required to be earthed and isolated in accordance with Endeavour Energy's specifications or Australian Standards AS3000.

F. Gates (4.2m wide) are required in boundary fences to facilitate longitudinal access to the easement area and associated structures by truck. All access gates are to include Endeavour Energy locks in the locking system. Please refer to the above point 29.

Document No: MDI 0044

Amendment No: 1

Mains Design Instruction

Easements and Property Tenure

IMPORTANT DISCLAIMER

As the information contained in this publication is subject to change from time to time, Endeavour Energy gives no warranty that the information is correct or complete or is a definitive statement of procedures. Endeavour Energy reserves the right to vary the content of this publication as and when required. You must make independent inquiries to satisfy yourself as to correctness and currency of the content. Endeavour Energy expressly disclaims all and any liability to any persons whatsoever in respect of anything done or not done by any such person in reliance, whether in whole or in part, on this document.

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MAINS DESIGN INSTRUCTION

ASSET STANDARDS & DESIGN	Document No Amendment No Approved By Approval Date	MDI 0044 1 GMAM 06/03/2017

MDI 0044 – Easements and Property Tenure

CONTENTS

1.0 PURPOSE

To set out Endeavour Energy's design requirements for new easements, other property tenure requirements, and the management of existing easements.

2.0 SCOPE

This instruction covers:

- The rights Endeavour Energy has within its own easements;
- The determination of the minimum easement size for an asset;
- Process for acquiring, modifying and removing easements;
- The definition of controls for the safe operation of activities within easements; and,
- The definition of activities which are prohibited within easements.

The instruction does not cover:

- The release process of easements, which is covered in Company Policy 9.2.4.
- The process for managing existing encroachments, which is defined in Company Procedure GAM 0098.

3.0 REFERENCES

Internal

- Company Policy 9.2.3 – Property Tenure for Network Assets
- Company Policy 9.2.4 – Network Easement Release
- Company Procedure GAM 0098 – Management of Existing Encroachments
- Company Procedure GAM 0114 – Granting Dispensation for Engineering Documents
- Environmental Management Standard EMS 0006 - Maintenance and construction of access tracks
- Mains Construction Instruction MCI 0006 – Underground distribution construction standard
- Mains Design Instruction MDI 0028 – Underground distribution design
- Mains Design Instruction MDI 0031 – Overhead distribution: Design standards manual
- Mains Design Instruction MDI 0047 – Overhead transmission design
- Substation Design Instruction SDI 100 – Distribution Earthing Design, Construct and Test
- Endeavour Energy General Terms & Conditions for Connection of Public Lighting Assets (March 2011)
- Network Management Plan November 2013

External

- *Electricity Supply Act* 1995*
- *Roads Act* 1993*
- *Land Acquisition (Just Terms Compensation) Act* 1991*
- *Conveyancing Act* 1919*
- State Environmental Planning Policy (Infrastructure) 2007
- ISSC 20 - Guidelines for the Management of Activities within Electricity Easements and close to Electricity Infrastructure (April. 2012)
- ENA National Electricity Network Safety Code (Doc 001-2008)

- AS / NZS 7000:2016 Overhead Line Design – Detailed procedures
- AS / NZS 4853:2012 – Electrical hazards on metallic pipelines

** - Act current as of 19/02/2016*

4.0 DEFINITIONS AND ABBREVIATIONS

4.1 Abbreviations

EPR
Earth Potential Rise

HV
High voltage

LV
Low voltage

LPI
Land and Property Information

4.2 Definitions

Easement
An easement is an encumbrance on the title of land (which may be limited in width and height above or below the land) conferring a right to inspect, construct, operate, maintain, repair, renew, replace or upgrade electrical infrastructure.

Positive Covenant
A type of property tenure that requires expenditure by the land owner is required to meet the terms of the covenant.

Property tenure
A broad term covering the rights of the company to carry out network operations within land not owned by the company – exercising statutory rights in accordance with relevant legal requirements and the creation of appropriate recognised property rights. Typical property tenure include easements, Restrictions on Use, Positive Covenant and long term leases.

Public road
Defined under the Roads Act 1993. A road usually includes a vehicle carriageway and associated footpath areas on each side of the carriageway.

Restrictions on use of land
Conditions imposed on the use of the land, to inform the landowner and put limitations on the use of land due to the risk that exists by the electrical asset being located within the burdened lot.

5.0 ACTIONS

5.1 General Requirements

This standard covers two aspects of easement (and other types of property tenure) management:

- The design requirements relating to easements – easement size, creation, modification and release, rights of way and community titles.
- The management of existing easements – encroachments, transfer hazards and rights granted by the Electricity Supply Act 1995.

The general philosophy behind Endeavour Energy's approach to design and management of easements is to secure both the safe operation of the electrical network and, the safety of its employees, contractors and the public. Where a design, activity or proposal could compromise the electrical network or put an employee or the public at risk, the Electricity Supply Act 1995 allows Endeavour Energy to restrict and/or prohibit the activity. Refer to Clause 5.11 for further details.

All Endeavour Energy easements must comply with the requirements of this document, which is based on ISSC 20 "Guidelines for the Management of Activities within Electricity Easements and close to Electricity Infrastructure". However, where this standard and ISSC 20 differ, this standard will take precedence.

All new/proposed transmission and distribution infrastructure, which is not constructed on public roads, an easement in favour of Endeavour Energy must be created in accordance with the requirements of this standard.

5.2 Management process of easements

The following flowchart details the management process for easements.

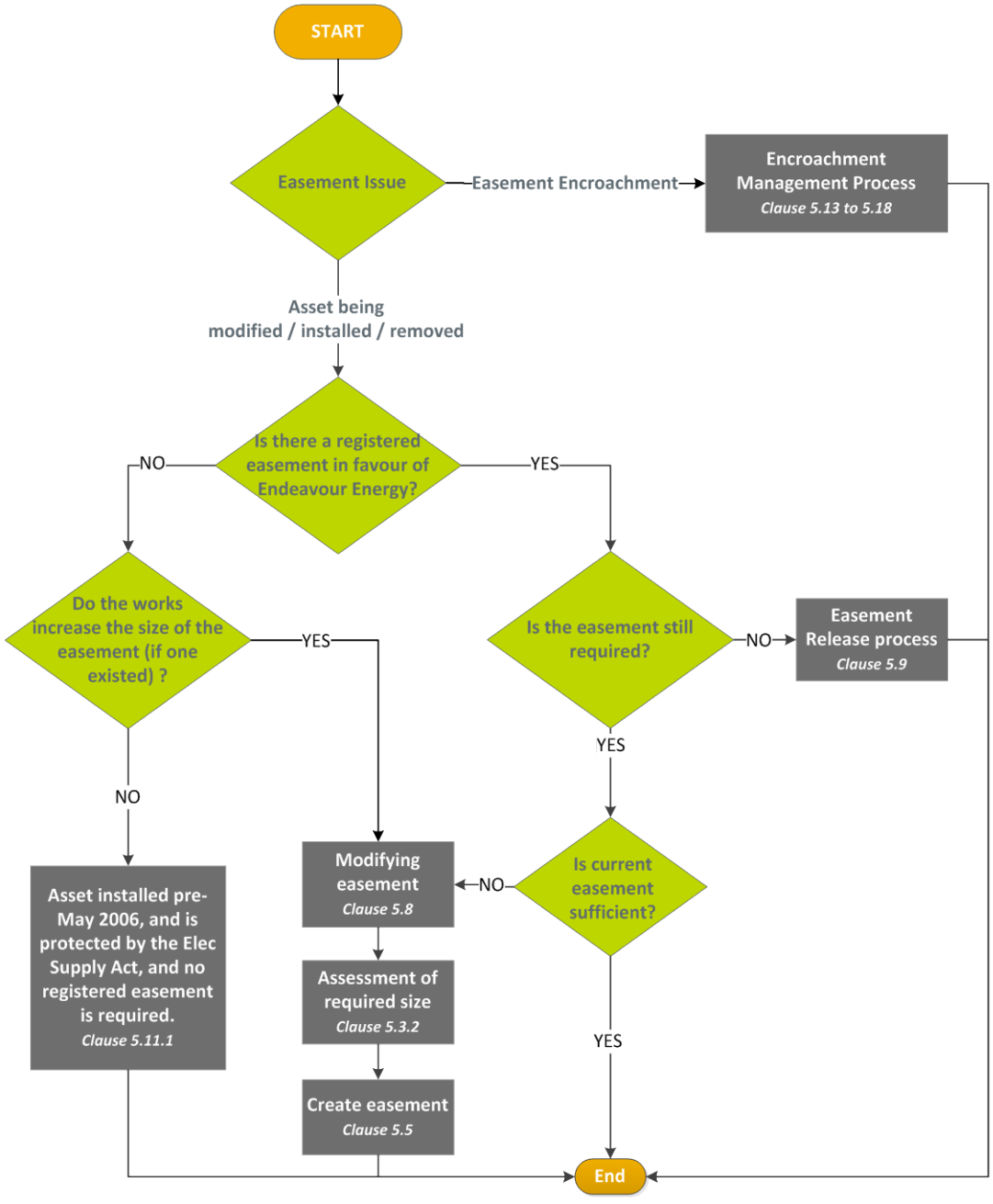


Figure 1 - Easement Management Flowchart

5.3 Minimum easement widths

The minimum easement widths are specified in Table 1. Larger easements may be specified and/or required on a project by project basis. All designs must certify that the easement widths in Table 1 are suitable for the span lengths / conductors used in the design.

5.3.1 Minimum easement required for overhead lines

For overhead lines, the minimum easement width for each span must be the greater width of the following three criteria:

- The width of the structure plus, two (2) times the sum of:
  - Conductor blowout, including insulator swing where applicable, (at 50°C and 500 Pa wind pressure); and,
  - The appropriate clearance from Table 3.7 of AS/NZS 7000 (Refer to Figure 2)
- Minimum maintenance requirements for the type of construction.
- The easement widths specified in Table 1.

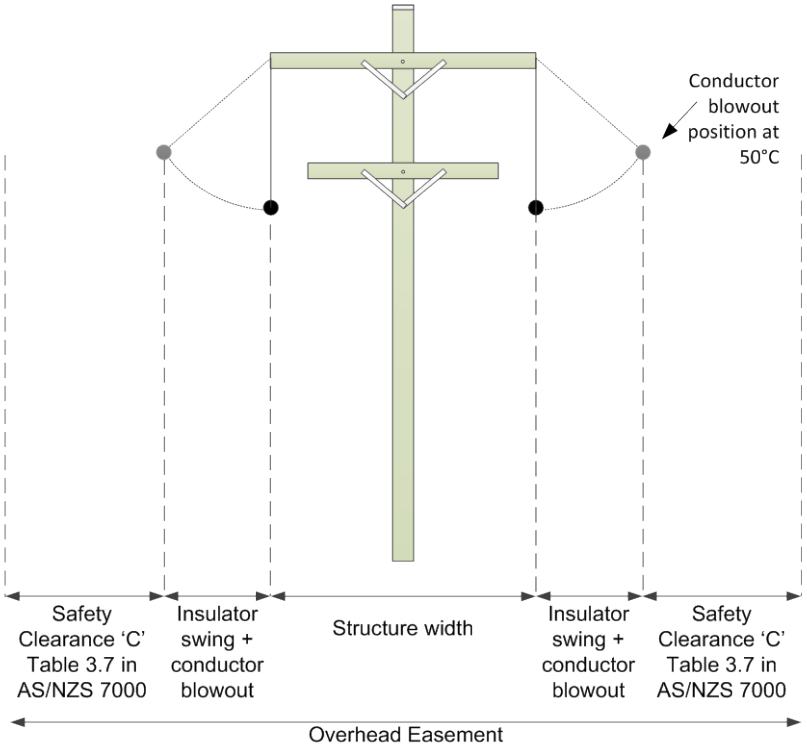


Figure 2 - Minimum overhead easement

New overhead assets must be fully contained within an easement (or other types of property tenure) and not encroach adjoining properties. Existing lines encroaching a property (without a formal easement) are permitted to remain, and may be replaced or uprated, as long as there is no increase in this encroachment. Refer to Figure 5.

5.3.2 Minimum easement required for network assets

The table below details the minimum easement widths for various network assets. Refer to Annexure 4 for graphical representation for a cable joint system; pole stay and padmount clearances.

Table 1 - Minimum easement widths

	Voltage	Asset Type	Construction	Minimum Easement (m)
Overhead Assets	400V–22kV	Bare Construction	All	9
		ABC		
		CCT		
	33kV / 66kV	Bare conductor *(see Note 2)*	Line post insulators	18
			33kV Suspension Insulators	18
			66kV Suspension Insulators	25
			H pole Structures	30
	132kV	Bare conductor *(see Note 2)*	Line post insulators	25
			H pole Structures	30
			Steel tower	30
Underground Assets	400V - 22kV	Cables	Underbore / Ducted / Direct buried	3
			Ducted < 100m and with concrete protection *(min 50 mm concrete cover at standard burial depth)*	1
	33kV - 132kV	Cables *(single feeder only)*	Ducted / Direct buried	5
			Cable Pits / Joint Bays	6
	-	Communications cables	Ducted / Direct Buried	1
		Earthing conductors		1
		Bonding leads		1
		Link Box / Comms Pit		2.0 x 2.0
Other	-	Streetlight Column / Service Pillar	-	1.0 x 1.0
		Switching Station		2.75 x 2.75 *(see clause 5.3.6)*
		Padmount Substation		2.75 x 5.5 *(see clause 5.3.6)*
		Auto Transformer		
		Indoor Substation		See clause 5.3.5
		Pole stays / Ground stays		See Note 2
	Rights of Access	Vehicle access tracks easement in rural areas *(see Note 3)*		5
		Vehicle access in urban areas		5 *(see Note 5)*
		Pedestrian access only		1.2

Notes:

1. All Network assets, except for padmounts / switching stations, must be positioned in the centre of the easement. Refer to Drawings [redacted] and [redacted] for easement details of padmounts and switching stations. For non-symmetrical assets, such as post insulators, the centre must be measured from the position of the conductors at rest.
2. The easement for a termination pole/structure or for an aerial / ground stay must extend at least half the easement width beyond the last network pole or stay.
3. For further details regarding the construction and maintenance requirements of access tracks, refer to EMS 0006.
4. For an overhead line which its operating voltage differs from its constructed voltage, the easement must be for the constructed voltage.
5. Applies to straight line of access only. If angles or bends are required in the access path, then width to be determined by assessing a truck turning diagram, and gaining approval from the relevant Endeavour Energy Operations Manager. .

5.3.3 Parallel overhead feeders

When considering overhead lines installed in parallel, an optimised easement width may be determined in accordance with the following principles:

- It is not necessary to consider the lines blowing toward each other with the maximum wind load. Instead consider the line with the larger sag blowing under maximum wind load toward the other line in its vertical position.
- Allowance must be given for physical movement of the line (conductors and insulators swinging), as well as electrical clearances and climbing corridors.
- Minimum horizontal separation between the two centrelines of the two feeders must be no less than 10m.

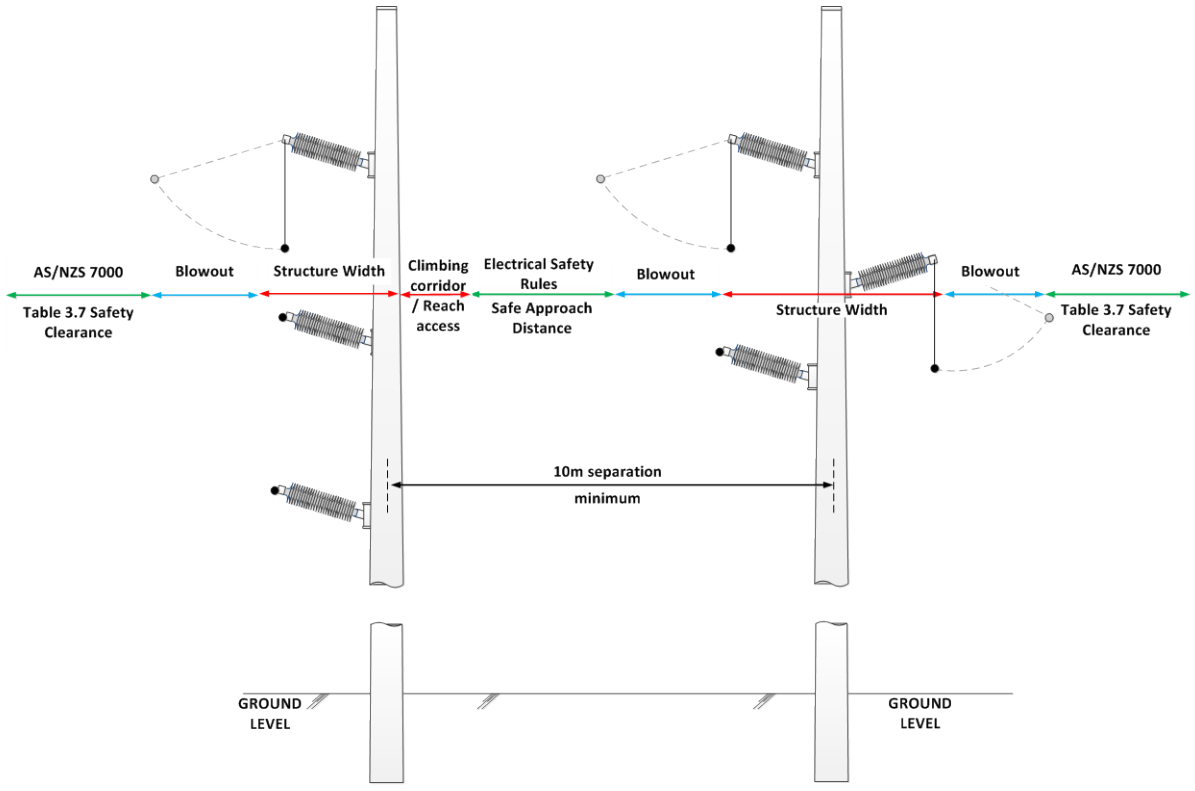


Figure 3 – Easement requirements for parallel feeders
(Structure on the right assumed to have the greatest conductor blowout)

5.3.4 Request for dispensation to the minimum easement width

A request for dispensation must be made to Endeavour Energy's Mains Assets Manager for any proposed easement that is smaller than the stated minimum width listed in Table 1. The submission must show there is no reduction in access for maintenance purposes and that the easement provides adequate electrical clearance to any existing and/or planned structures that may be built adjacent to the easement.

All designs must consider the following factors when determining an easement width:

- Electrical safety clearance
- Insulator and conductor blowout
- Access for maintenance, repair and upgrading
- Future requirement for additional feeder(s)
- Public safety based on potential earth potential rise (EPR) and electromagnetic field (EMF) issues
- Radio and television interference
- Audible noise
- Cable duct / jointing bay requirements

5.3.5 Indoor substations

The boundaries of an easement for indoor substation must be defined by the internal face of the walls, ceiling, floor, and cable trenches of the substation room.

An easement for the cables that enter and exit the substation room will also be required if they are not installed within public roads and/or existing Endeavour Energy easements.

A right of access may also be required to give Endeavour Energy employees, vehicles, and equipment unrestricted access to the indoor substation at all times.

5.3.6 Padmount substations and switching stations

The easement size for a padmount substation must be increased when a retaining wall or safety bollard has been installed/built to protect a padmount substation from vehicle impact, as indicated in Figure 4.

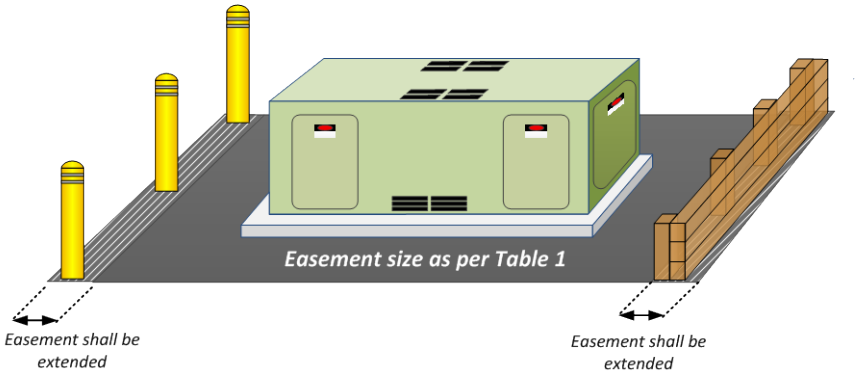


Figure 4 - Easements to include retaining wall or safety bollard

5.4 Assets within special areas

5.4.1 Assets within the road verge

Assets installed within a road carriageway cannot be provided with an easement. However, overhead assets proposed to be installed within the road verge still require the clearances specified in Table 1 and Clause 5.3.1.

As a minimum, the separation between the power line and the property line, must be the conductor blowout (at 50°C and 500 Pa wind pressure) and Safety Clearance 'C' from Table 3.7 of AS/NZS 7000.

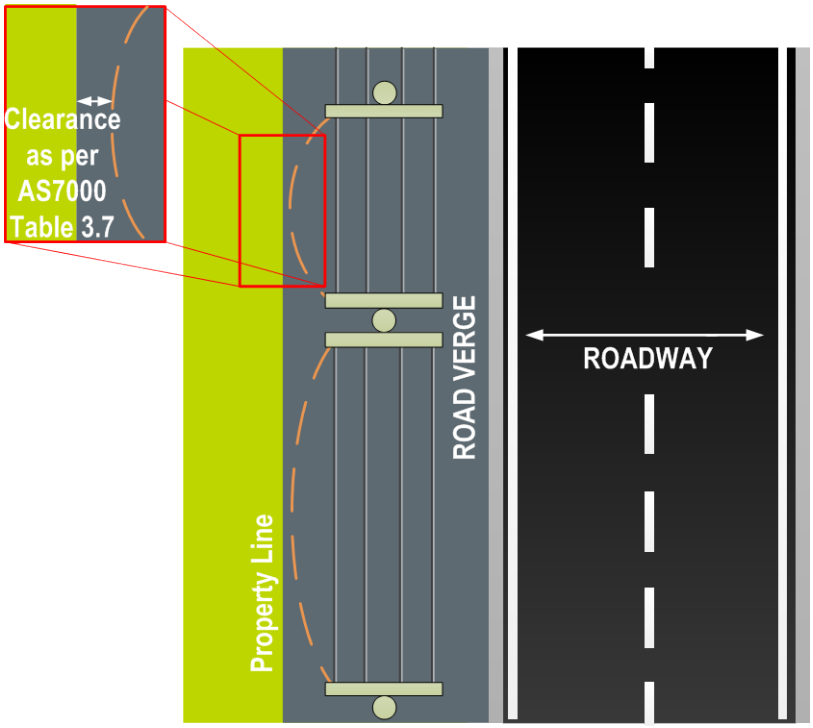


Figure 5 - Roadway requirements

5.4.2 Assets within roadways

Assets installed within a public road (as defined in the *Roads Act 1993*) requires the consent of the appropriate road authority to be obtained prior to the construction of any electrical works. Neither the *Roads Act 1993* or the *Electricity Supply Act 1995* requires an easement within public roads.

5.4.3 Overhead lines crossing private property

Where Endeavour Energy overhead lines cross private property, the line must be protected by a registered easement. The minimum width of this easement must be in accordance with the requirements in Clause 5.3.1 and 5.3.2.

5.4.4 Easement over Railway Corridor land

In 2002, Endeavour Energy entered into a *Master Access Deed* with Transport for NSW (then Railcorp), covering all new and existing Endeavour Energy network assets located within any rail corridor. This deed defines a rail corridor as any land owned by Transport for NSW. Network assets located within a rail corridor under the provisions of the *Master Access Deed* do not require easements.

Transport for NSW may also permit developers to install network assets in a rail corridor under an *Individual Access Deed* or *Deed of Release and Indemnity*. Any deed between the developer and Transport for NSW, will need to provide the same minimum requirements as those under the Master Access Deed and be transferable to Endeavour Energy for any new network assets installed by the developer.

Transport for NSW's process for third party works within the rail corridor is documented on its website, which includes the application form. Applications for rail corridor access must be submitted to the Rail Corridor Management Group in Sydney.

The ARTC website must be consulted for contact information regarding proposed rail corridor access.

5.4.5 Easements over National Park Land

Land dedicated as a wilderness area, national park, state recreation area, regional park, or nature reserve is managed by the NSW Office of Environment & Heritage.

Endeavour Energy is usually required to enter into a Formal Deed of Easement under Section 153 of the National Parks & Wildlife Act 1974 whereby compensation or an annual rent may be payable. The minimum easement dimensions given in Table 1 still apply, however, specific requirements will need to be negotiated with NSW Office of Environment & Heritage.

5.4.6 Easements over Forestry Land

Land dedicated as state forest is managed by Forests NSW/Department of Primary Industries and may be subject to native title.

Forests NSW will grant a limited form of property tenure under an Occupation Permit and an annual rent may be payable. The minimum easement dimensions given in Table 1 still apply, however, specific requirements will need to be negotiated with Forests NSW.

5.4.7 Easements in water catchment areas

Land that is classed as a water catchment area by the Sydney Catchment Authority, the standard easement terms do not always apply fully. The minimum easement dimensions given in Table 1 still apply, however, specific requirements will need to be negotiated with Sydney Catchment Authority.

5.4.8 Community Title developments

5.4.8.1 Asset ownership

The ownership of electrical assets (both HV and LV) within a community title development will only be accepted (owned and maintained) by Endeavour Energy if they are installed in accordance with Endeavour Energy's standard requirements and installation practices.

Endeavour Energy will generally own and maintain all high voltage electrical equipment within the development.

Endeavour Energy or the Community Title Association may own and maintain the low voltage electrical equipment and/or street lighting network.

Annexure 3 outlines the relevant by-laws that must be incorporated into the Community Title Management Plans to define the ownership and access requirements for the electricity assets within the development.

Community title developments and their management associations or developers are not considered to be public lighting customers under the NSW Public Lighting Code and therefore must meet the requirements stated in Endeavour Energy's *"General Terms and Conditions for Connection of Public Lighting Assets".*

5.4.8.2 Asset construction

For all assets the installation must provide the same level of security and access as normally would be found in standard urban residential development, this includes:

- All cables / spare conduits being located in the standard allocation within the road verge

- All pillars, padmount substations and switching stations are located in acceptable areas as stated in MDI 0028.
- No other assets and/or utilities being installed directly above the electrical assets
- Minimum distances between electrical assets and other utility services being maintained
- Sufficient access for Endeavour Energy vehicles (including trucks and EWP's) to access and maintain the assets without the need to close and/or block private roads.

5.4.8.3 Easements within Community Title developments

All assets owned by Endeavour Energy within a Community Title development and not installed within a public road, are to be provided with an easement to allow for future maintenance and repair.

For assets other than underground cables, the minimum easement widths defined in Table 1 must be achieved. However, the minimum easement widths for underground cables defined in Table 1, do not apply to Community Title developments. An easement the size of the trench width plus 500mm either side must be achieved as a minimum,

All easements must be created under a Section 88B of the Conveyancing Act 1919.

5.5 Easement creation

Easements must be created in favour of Endeavour Energy and can be created by one of the following three methods:

- Creation by Section 88B of the Conveyancing Act;
- Creation by Deed or transfer granting easement; and,
- Creation by compulsory process.

The easement must be defined on a plan, and registered at LPI.

A restrictive or positive covenant cannot be compulsory acquired.

5.6 Easement terms

The easement terms defines the rights and restrictions for an easement for Endeavour Energy and the landowner. The terms of an easement must be defined to the landowner in writing. Annexure 1 contains the standard easement terms for Endeavour Energy's:

- Overhead Lines, Underground Cables, Padmounts, Switching Stations and streetlighting;
- Indoor Substations; and,
- Rights of Access.

There may be additional rights and restrictions required for certain easements so that Endeavour Energy interests are protected.

An owner may have specific site requirements that require amendment to the standard terms. The details of any proposed amendment are to be submitted to Endeavour Energy's Mains Assets Manager for review prior to certification of the design for approval.

5.7 Other types of Property Tenure

Restrictions on the use of land are sought by Endeavour Energy on land on which its infrastructure exists to protect the integrity and security of its network, whilst still allowing the landowner to own and make use of their land.

A positive covenant is sought when Endeavour Energy will allow activities on the site but only with additional controls. An example of a positive covenant is requiring the installation of fire proof screen walls near Endeavour Energy's electrical assets.

In situations where Endeavour Energy requires covenants to be provided around electrical equipment / assets, the following standards terms defined in Annexure 3 must be used.

5.8 Modifying assets with an easement

Where an existing asset (post May 2006) is to be replaced/upgraded/modified, and there will be an increase to the existing easement size, then the designer must go through the process of applying for a new easement.

An easement may be reduced in size if:

- The easement meets the minimum size requirements as detailed in Table 1;
- If approval is sought and granted from Capacity Planning Manager, and the corresponding Regional Transmission/Distribution Manager.
- A design for the existing line demonstrating the asset will have sufficient access and clearance.

5.9 Easement release

Easements may be released if the need arises and the easement has no / limited benefit to Endeavour Energy. Easements releases must be managed in accordance with Company Policy 9.2.4.

5.10 Easement height

Easements do not have a specified height to which they apply. Endeavour Energy does not allow assets to be installed above its assets, as this presents access, safety and reliability risks. Where all other options have been exhausted, a dispensation must be submitted as described in Company Procedure GAM 0114.

5.11 Rights granted by the Electricity Supply Act

5.11.1 Protection of assets installed before May 2006

Section 53 of the Electricity Supply Act 1995, protects Endeavour Energy infrastructure that was constructed prior to the commencement of the *Electricity Supply Amendment (Protection of Electricity Works) Act* 2006 (26th May 2006), from action from the owner of the land in which Endeavour Energy infrastructure exists.

Endeavour Energy may maintain, operate, repair, replace or upgrade the infrastructure despite whether a registered easement exists. However, this protection does not exist for new assets which are constructed on private land after the 26th of May 2006, and as such, easements must be acquired for new assets.

5.11.2 General protection of network assets

The following summarises the powers Section 49 and 49A of the Electricity Supply Act 1995, grants Endeavour Energy:

Section 49 – Endeavour Energy may serve a written notice to a person who has control of a structure, which may interfere, destroy or damage Endeavour Energy's network to remove the imposing structure. This is regardless if the person owns the land on which Endeavour Energy's asset exists.

Section 49A - Endeavour Energy may serve a written notice to a person who is carrying out excavation work in, on or near its network which may destroy or damage Endeavour Energy's network to cease work immediately.

5.12 Works on assets without a registered easement

Endeavour Energy is legally required to provide a safe and reliable network. As such, where the need arises where a network asset is required to be modified or replaced, and does not have the benefit of an easement (installed before May 2006), Endeavour Energy will evaluate all possible options in the refurbishment/replacement of the asset.

In assessing the upgrade of the asset the following factors will be considered:

- If there will be an increase in the required size of the easement;
- Is it a like-for-like replacement.
- The impact on the customer and the aesthetic nature of the new asset;
- The risk to the customer, to the public or to Endeavour Energy employees of the current installation;
- The preference of the customer;
- The required access to maintain and install the new asset.

Where the evaluation has concluded that the asset needs to be replaced/modified, Endeavour Energy reserves the right to do so. However, where the rectification works will increase the size of the required easement width, an easement must be created for the rebuilt asset.

5.13 General requirements on encroachment management

For easements managed by Endeavour Energy, encroachments fall into three (3) categories – *permitted*, *prohibited* or *controlled*.

- Permitted activity – An activity which is allowed within an easement, but must still adhere to the minimum safety requirements within the easement.
- Prohibited activity – An activity that must not be performed under any circumstance within the easement.
- Controlled activity – An activity which is allowed only if it meets both the minimum safety requirements for that type of easement with additional controls which are specified in the appropriate clause detailed below. Approval from Endeavour Energy is required for any controlled activity.

The main principle behind these categories is to maintain a high level of safety of the public and Endeavour Energy employees, whilst also allowing Endeavour Energy to inspect, operate, maintain, access and upgrade its network.

The activities listed below are not exhaustive, and where an activity/encroachment is not covered, a request to Mains Assets Manager must be submitted, which is to include:

- a full risk assessment detailing the risk to the network and safety and suitable controls.
- an overview of the easement, all current and proposed Endeavour Energy assets as well as all current and proposed encroachments

Refer to Annexure 5 for the current list of identified encroachments, how Endeavour Energy manages these, and the applicable clauses.

Encroachments on assets which do not have a formal easement, must be treated as though an easement does exist as per clause 5.11, and how the applicable encroachment is handled in the following sections. Table 1 may be used as an indication as to the applicable easement width, however, an assessment of the minimum easement size required to maintain access and safe operation of the asset is required.

5.14 Encroachments on overhead line easements

5.14.1 Minimum safety requirements for overhead line easements

For an overhead line easement, the following criteria must always be met, to maintain the safe operation of the network and employees:

- Minimum ground clearances, as defined in MDI 0031 and MDI 0047 are maintained, when the conductor is operating at maximum design temperature;
- Sufficient clearance is maintained to accommodation for overhead line blowout (500Pa, with the conductor operating at 50ºC);
- Minimum separation clearances between the network and objects/structures are maintained to this standard and AS/NZS 7000.
- Does not allow a person to breach the safety clearances to the network, namely, allow any part of a person to be greater than 4.3m above the ground (See Figure 6) ;
- Access to Endeavour Energy assets are not reduced and the minimum requirements of Figure 6 and clause 5.19 are adhered to.

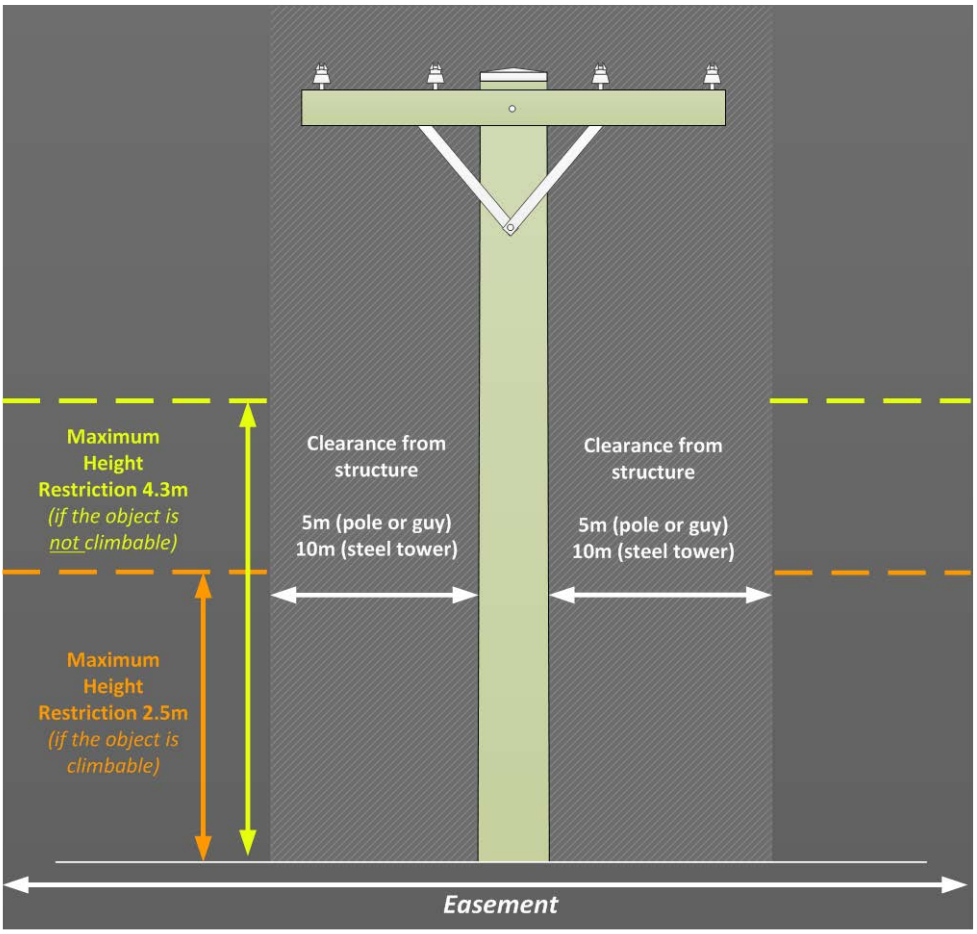


Figure 6 - Overhead line restriction within easement

5.14.2 Prohibited activities / encroachments

The following activities / encroachments listed below are prohibited within all Endeavour Energy easements and will not be approved:

- Construction of habitable buildings (permanent or temporary);
- Construction of garages or large sheds, whether permanent or temporary, or any other structure which may allow safety clearances to be breached;
- The installation of fixed plant (such as conveyor belts) or equipment, or its footings;
- The planting of trees that exceed a height of three (3) metres ;
- The placement of obstructions which may hinder access requirements;
- In-ground or above-ground swimming pools (permanent and / or temporary constructions);
- The storage and / or use of flammable, combustible, corrosive or explosive material;
- The storage and / or handling of conductive material of lengths in excess of three (3) metres;
- Lighting of any fires (this does not include back burning, refer to section 5.14.4.8);
- Parking of large vehicles (such as tankers and semi-trailers with large loads);
- The setting up of campervans or tents, which would allow persons to reside in the easement;
- The construction of flag poles and/or weather vanes which are taller than 4.3m;
- Electric fencing;
- Ploughing near electricity structures or stay poles/wires, that may impact the assets structural integrity;
- Use of any types of explosives;
- Flying of kites, model aircraft or drones;
- BMX bike riding (with jumps);
- Installation of flood lighting;
- Any activity which involves firearms.

Where an activity or encroachment is found to be being undertaken/installed and is on the above list, arrangement of its removal must be made. Any cost incurred will be at the expense of the owner of the land.

5.14.3 Permitted activities / encroachments

The following activities/encroachments are allowed within Endeavour Energy easements if it meets the minimum safety requirements detailed in clause 5.14.1:

- Low growing vegetation;
- Ground cover/surfaces such as wood chips and bluemetal stones;
- Storage of non-combustible, non-explosive, non-conductive, non-corrosive materials.

5.14.4 Controlled activities / encroachments

All controlled activities require approval to be sought from the applicable Regional Easement Officer of Endeavour Energy, in writing as set out in Clause 5.18.2. The Easement Officer will assess the activity/encroachment as defined Clause 5.18. The proposed activity must not commence unless approval is received in writing from Endeavour Energy Regional Easement Officer.

All these controlled activities must meet the required minimum safety requirements detailed in clause 5.14.1, as well as any additional controls listed below.

5.14.4.1 Minor structures

The following minor structures are permitted:

- clothes hoists;
- playground equipment;

- shade cloths / umbrellas;
- non-metallic fences (Endeavour Energy may require gates);
- small brick barbecues.

All metallic parts must be effectively earthed and no electrical supply must be brought within the easement.

If Endeavour finds that a structure impedes access or presents an unacceptable level of risk, Endeavour Energy reserves the right to have the structure removed, or to remove it at the owner's expense.

5.14.4.2 Non-habitable buildings (carports and metallic garden sheds)

Carports or metallic garden sheds can be installed within an overhead line easement provided they are effectively earthed, and no power is connected to the structure. Only metallic sheds which will not be inhabited must be approved.

5.14.4.3 Erection of conductive fencing / sound walls

All conductive fencing and/or sound walls crossing or running parallel to an easement are to be effectively earthed and / or have interval breaks in electrical continuity to prevent electromagnetic induction and transferred voltage hazards. Refer to drawing 242450, 242451 and 069575 for requirements for fencing.

A minimum 4.2 metre wide opening or gate (with provision to accept Endeavour Energy locks) for vehicle access will be a condition of approval.

5.14.4.4 Metal safety barriers and guardrails

Where a metal barrier (Armco guardrail or similar) crosses and continues beyond an easement, the following is required:

- The section of barrier within the easement must be earthed.
- A minimum 300 mm clear air gap must be left between the end of the barrier within the easement boundary and the starting point of the barrier beyond the easement boundary.

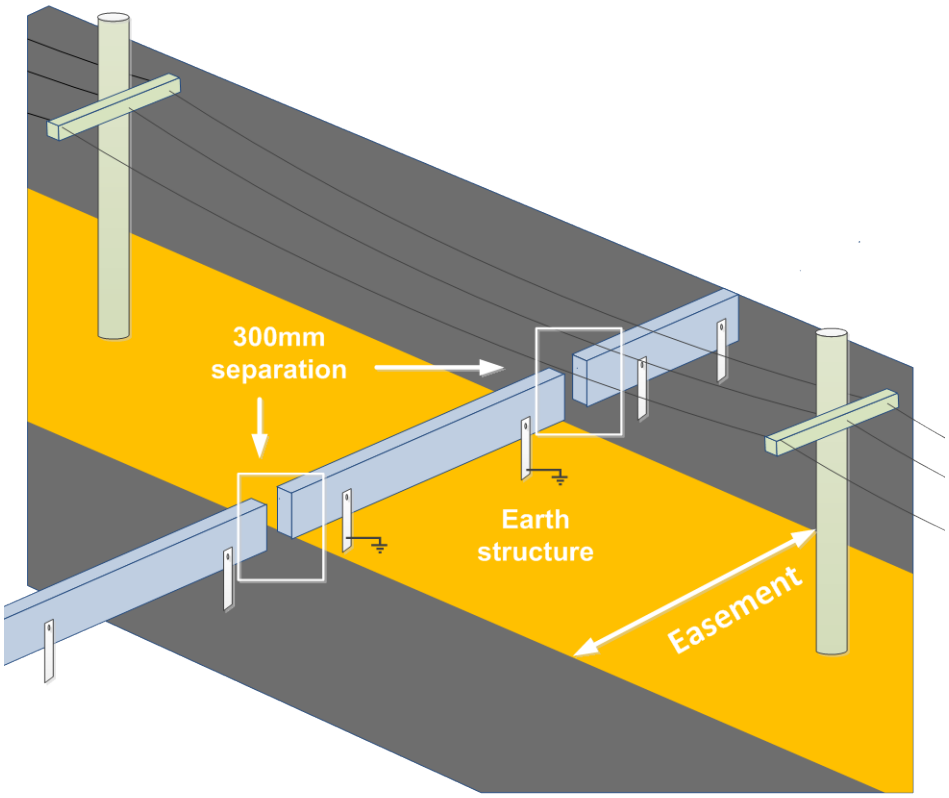


Figure 7 - Safety Barrier Requirement

5.14.4.5 Retaining walls

All proposed retaining walls must be made as to provide sufficient strength for any future work to be performed by Endeavour Energy, and must not impact the maintenance activities required on any assets within the easement.

5.14.4.6 Parking of vehicles or mobile plant

Parking within an overhead easement is subject to the vehicle:

- having a height limitation of 4.3 metres;
- is not occupied;
- is not connected to power; and,
- must be able to be readily removed if Endeavour Energy requires access to its assets.

5.14.4.7 Operation of mobile plant and equipment

No mobile plant and equipment must exceed a maximum height of 4.3 metres.

Within an overhead easement area, approval for the operation of mobile plant and equipment is dependent upon available clearances to the conductors under maximum operating conditions, power line voltages, vehicle operating heights and the level of accreditation of the vehicle operator.

Consequently, each application for the operation of mobile plant and equipment will be processed by the Regional Easement Officer and assessed for compliance with relevant Safework NSW legislation. A dedicated observer must also be present so that clearances are maintained.

Precautions must be taken to prevent collision or interference with overhead structures or stay poles.

5.14.4.8 Back burning

Back-burning operations carried out by fire authorities or bushfire brigades must be referred to Endeavour Energy's Control Room Manager and must include a map of the area showing the time, date and the area of the burn. An Endeavour Energy representative may attend back-burning procedures to maintain the safety of structures and conductors.

5.14.4.9 Agricultural pursuits

Agricultural pursuits, such as dusting, harvesting, netting and irrigation must have the following controls:

- Clear, defined vehicle access to structures is required to prevent damage to crops.
- Irrigation systems must not be placed within five (5) metres of the overhead conductors at any time.
- The location of any irrigation equipment must be such that it is not capable of projecting a solid jet of water to within three (3) metres of any overhead conductor.
- Gun type irrigators must have the water jet directed away from the conductors.
- Care must be taken when moving equipment around such as irrigation pipes or equipment, grain augers and the like.
- The equipment must not interfere with maintenance or safe operation of the power line, nor must it interfere with access to electricity assets.
- No electrical supply brought within the easement without prior approval of Endeavour Energy..

5.14.4.10 Rainwater tanks

Rainwater tanks must have the following controls:

- Above ground rainwater tanks, either for fire-fighting purposes or rainwater harvesting, erected within an easement, must be fully enclosed and of non-conducting material. (Concrete is considered to be a conductive material)
- All pipework is to be non-conductive and no electrical supply must be supplied to the tank for any purpose (including pumps and/or lighting).
- Any pumps and/or lights must be installed outside the easement.
- Ladders must not be installed on the rainwater tank.
- Rainwater tanks must not be installed within five (5) metres of a pole or stay pole, 10 metres from a steel structure or within five (5) metres of the vertical projection of the conductor.
- The tank and associated pipe work must not interfere with maintenance or access to electricity assets.

5.14.4.11 Detention basins

Applications for detention basins will be considered, subject to:

- The location has local council approval;
- The location is not within five (5) metres of a pole or stay pole or 10 metres from a steel structure;

- Sufficient clearance is maintained to all structures along the easement to allow unrestricted access.

5.14.4.12 Quarrying, filling, earthworks, or change of ground contours

Approval by the Easement Officer may be given, subject to:

- The maintenance of standard ground clearances (if conductor heights need adjustment, this will be at the proponents expense);
- Equipment/machinery performing earth works maintains standard clearances to the overhead lines;
- access maintained to all line structures;
- the subsoil stability and surface drainage in the vicinity of structures is not adversely affected; and,
- excessive quantities of dust are not generated.

5.14.4.13 Roads (other than access tracks)

For roads proposed within an existing easement, the minimum ground clearances as specified in MDI 0047 and MDI 0031 must be achieved.

Where alterations to conductor height and/or relocation of poles are required for the development of the road, this will be at the cost of the developer. This will include any work required to maintain safety clearances arising from activities in the easement after the road works are completed.

Where a road is proposed to run parallel to a feeder, a risk assessment evaluating the risk of impact with each structure as outlined in MDI 0031 must be submitted.

Earthing conductors may have been laid near, around and between the structures and must not have their electrical integrity compromised. Where a developer plans to construct a road which crosses the easement, the onus is on the developer to locate and avoid all earthing cables. If earthing cables are damaged, Endeavour Energy must be notified immediately.

Roads and driveways that are required for access to electrical infrastructure must be capable of carrying a 30 tonne truck.

5.14.4.14 Installation of utility services

Applications for the installation of telephone, water and sewerage services (overhead, underground, or on the surface) may be considered for approval by Endeavour Energy's Mains Assets Manager. The approval of the installation of these services will be based on:

- There is no practical alternative available;
- Any services within 15 metres of a structure must be constructed of non-conducting materials;
- The integrity of all line structures and stay pole/wires are to be maintained at all times;
- Designers and installers of utility services must consider any hazards associated with induced voltages and transferred earth potentials, in accordance with AS 4853, which must be controlled. Applications will require a risk assessment and proposed controls for each of the identified hazard.

Establishment of an easement for other utilities assets within Endeavour Energy's easement may be required.

5.14.4.15 Residential/Commercial subdivisions

Where subdivisions of property are proposed for land in which Endeavour Energy has an easement, the following requirements must be met:

- Unrestricted access to Endeavour Energy's structures are retained;
- No structures are to be erected within the easement;
- Structures suitably protected against motor vehicle impact;
- The number of crossings of Endeavour Energy's overhead line by utilities must be minimised, and complies with 5.14.4.14.

5.14.4.16 Domestic recreational activities and recreational facilities

Approval will be given for domestic recreation activities, but will not include activities that may interfere with clearances to the conductors, such as those listed in 5.14.2.

Approval will be given for recreational facilities, such as tennis courts, subject to:

- fencing is to be non-conductive material or must be effectively earthed (refer to section 5.14.4.3);
- Height of any fence is 4.3 metres or less;
- facilities surface construction will be required to withstand the movement of large heavy plant up to a 30 tonne truck; and,
- not located within five (5) metres from a power pole or ten (10) metres from a steel structure.

5.14.4.17 Storage of organic materials

Small amounts of organic materials, such as leaves and compost, may be stored underneath overhead powerlines, provided they do not impede access to structures and do not create a fire hazard.

5.15 Encroachments on underground easements

5.15.1 General information for underground asset easements

Where relocation of existing assets are proposed, the costs to enable the activity to proceed, will be borne by the applicant.

Safework NSW (previously Workcover Authority of NSW) Publications provides guidance on risk control measures when working close to electricity infrastructures both below and above ground. Refer to *Code of Practice – Work near Overhead Power Lines* or *Work Near Underground Assets Guide*.

5.15.2 Minimum safety requirements for underground asset easements

For an underground asset easement, the following criteria must **always** be met, to maintain the safe operation of the network and employees:

- Before commencing any underground activity, all applicants are required to obtain advice from the ***Dial before You Dig*** **1100** service in accordance with the requirements of the Electricity Supply Act and associated Regulations.
- Ground contour does not substantially change, which would impact the rating of the conductors;
- Any storage of an asset is temporary in nature and can be moved at a given notice or the cost of removal of the encroachment will be at the expense of the owner, if Endeavour Energy requires access to its asset;
- No mechanical compacting is to occur within an easement.
- Access to Endeavour Energy joints/joint bays are not impeded.
- No excavation which is greater than 300mm deep must occur.

5.15.3 Prohibited activities / encroachments

The following activities / encroachments listed below are prohibited within all Endeavour Energy easements and will not be approved:

- Construction of habitable buildings (permanent or temporary)
- Installation of minor structures (such as shade cloths, clothes lines, flood lights, playground equipment, fences and BBQs.)
- Installation of all types of garages, sheds, shipping containers, or carports.
- Installation of sound walls or safety barriers.
- Installation of conductive fencing which runs through an easement.
- Installation of rainwater tanks;
- Electric fencing;
- Retaining walls running longitudinally above underground assets;
- The installation of footings for fixed plant or equipment;
- Plants with significant root systems that grow greater than 400 mm below ground level;
- In-ground or above-ground swimming pools and spas (permanent and / or temporary constructions)
- Ploughing that is greater than 300mm deep, or at a depth greater than 400mm above underground assets
- The storage and / or use of flammable, combustible, corrosive or explosive material
- Changing of the ground level such that relative depth of underground cables increases or decreases
- Permanent surfaces, such as asphalt or concrete;
- The placement of obstructions which may hinder access requirements
- Concrete driveways located above and/or that restrict access to existing cable joints/pits.
- Use of explosives;
- Installation of tennis courts;

Where an activity or encroachment violates the above requirements, arrangement of its removal must be made. Any cost incurred will be at the expense of the owner of the land.

5.15.4 Permitted activities / encroachments

The following activities/encroachments are allowed within Endeavour Energy easements if it meets the minimum safety requirements detailed in clause 5.15.2:

- Tents;
- Flag poles and/or weather vanes;
- Sound walls;
- Metal safety barriers;
- Parking of small vehicles;
- Shrubs with root systems that are less than 400mm;
- Alternative ground surfaces (such as Bluemetal stones and woodchips);
- Storage of non-combustible, non-flammable, non-explosive material;
- Rainwater tanks;
- Detention basins;
- General recreational activities, the flying of kites and model aircraft, and the use of firearms;

5.15.5 Controlled activities / encroachments

All controlled activities require approval to be sought, from Endeavour Energy's Regional Easement Officer, in writing as set out in Clause 5.18.2. The Easement Officer will assess the activity/encroachment as defined Clause 5.18. The proposed activity must not commence unless approval is received in writing from Endeavour Energy Regional Easement Officer.

Controlled activities must meet the minimum safety requirements detailed in clause 5.15.2, as well as any additional controls listed below.

5.15.5.1 Fencing

A minimum 4.2 metre wide opening or gate (with provision to install Endeavour Energy locks) for vehicle access will be a condition of approval of fencing on the boundary of the easement.

Where fencing runs through an easement, the posts must be located outside the easement.

5.15.5.2 Metallic pipes (greater than 3 metres)

The storage of metallic pipes greater than three (3) metres is acceptable provided the metallic pipes can be moved upon request.

5.15.5.3 Fixed plant and/or equipment

Fixed plant is generally not allowed within Endeavour Energy's underground easement areas. This is due to potential access issues as well as risk of damage to Endeavour Energy's assets for the installation fixed plant footings. A proposal where fixed plant crosses an underground easement perpendicularly, will be considered upon application.

5.15.5.4 Parking of Mobile plant, equipment or vehicles

Within an underground easement area, approval is dependent upon an adequate surface to support the mobile plant/vehicle (up to 30 tonne) or equipment likely to be parked to prevent the crushing of the cables/ducts or erosion of the ground. In some instances, the activity may require supervision by an Endeavour Energy representative at the operator's expense.

5.15.5.5 Agricultural pursuits

Agricultural pursuits, such as dusting, irrigation and grazing are permitted within an underground easement. However, any activity which is likely to affect the ground level (such as ploughing and the planting of crops) is not allowed within the easement.

Equipment and/or crops must not interfere with access to electricity assets.

5.15.5.6 Roads and concrete driveways

Roads and concrete driveways are permitted within Endeavour Energy underground easements where:

- Cables are in existing continuous ducts;
- The roadway/driveway is capable of supporting the heaviest vehicle likely to traverse the driveway;
- The thermal rating of the cable is not compromised by the installation;
- The concrete driveway is not proposed to be installed within a distance that would restrict access / maintenance of a joint / pit.
- The concrete driveway is not proposed to be installed over a joint / pit.

The need for (including size and quantity) spare conduits must be confirmed with Network Capacity Planning prior to construction within Endeavour Energy's easements. All required conduits must be funded by the applicant.

If a roadway/driveway is found to be installed without the installation of spare ducts, the owner of the driveway must bear the cost of installing additional ducts, which will be done either by digging up the driveway or under-boring if required by Endeavour Energy at a future stage.

5.15.5.7 Installation of utility services

The installation of underground services must comply with MCI 0006 and Drawing 403230 Sheets 1 – 12.

5.15.5.8 Residential/Commercial subdivisions

Where subdivisions of property are proposed for land in which Endeavour Energy has an easement, the following requirements must be met:

- Unrestricted access to Endeavour Energy's structures are retained;
- No structures are to be erected within the easement;

5.15.5.9 Retaining walls

Retaining walls must not be approved where they run longitudinally over an underground easement.

Retaining walls which encroach on an underground easement, must be:

- Built using concrete material (for example, *Besser* blocks, concrete / clay bricks);
- Have mustow foundations;
- Must be a maximum of one (1) metre in height

Where foundations require digging post holes, these must be located outside the easement.

5.16 Encroachments on Padmount Substation or Switching Station easements

5.16.1 General information for padmount substation easements

For the purpose of this section, wherever a padmount substation is referenced, this also applies a ground substation, padmount substation and switching station.

Where the relocation of existing assets is proposed, the costs to enable the activity to proceed will be borne by the applicant.

Workcover Authority of NSW Publications provides guidance on risk control measures when working close to electricity infrastructures both below and above ground. Refer to *Code of Practice – Work near Overhead Power Lines* or *Work Near Underground Assets Guide*.

5.16.2 Minimum safety requirements for padmount substation easements

The minimum safety requirements padmount substations easements are outlined below and must **always** be met to maintain the safe operation of the network and employees:

- Screening vegetation for padmount substations must be planted outside the easement. Any vegetation adjacent to the easement must not obstruct access to the padmount substation and must be maintained in such a manner as to allow easy access to Endeavour's assets.
- The ground contour surrounding the padmount substation does not substantially change;
- Storage of an object/machinery is temporary in nature and can be moved at a given notice and if Endeavour Energy requires access to its asset the cost of removal of the encroachment will be at the expense of the owner;
- No building overhangs within the six (6) metre airspace above a padmount substation site;
- No construction must occur within the padmount substation / switching station easement;
- No mechanical compacting is to occur within an easement.
- Access to Endeavour Energy joints/joint bays and the padmount substation must not be impeded and must comply with clause 5.19.

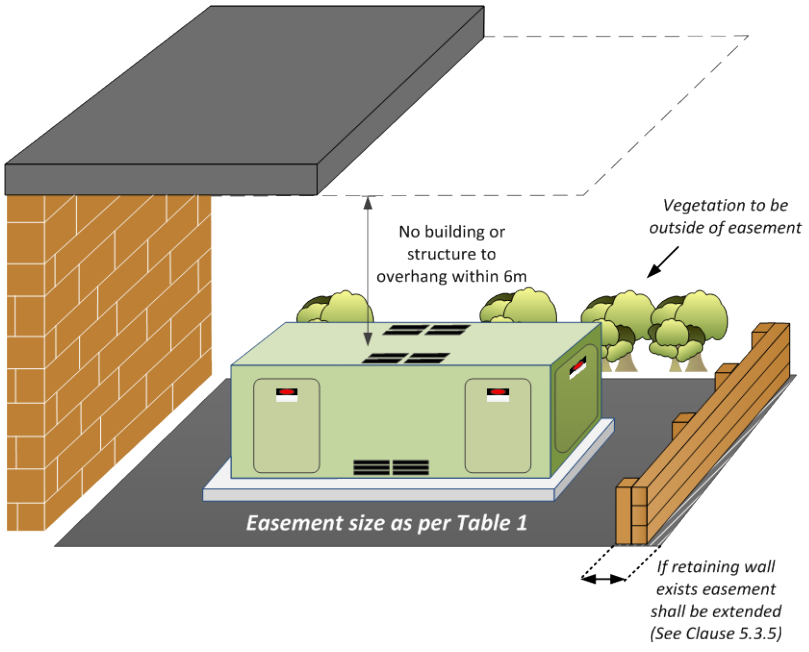


Figure 8 - Padmount Substation Easement Requirements

5.16.3 Prohibited activities / encroachments

Most activities are prohibited within the padmount substation easement. For a full list refer to Annexure 5 – Encroachment reference guide.

5.16.4 Permitted activities / encroachments

The following activities/encroachments are allowed within Endeavour Energy easements if it meets the general requirements in Clause 5.16.2.

- The use of mobile plant and/or equipment;
- Planting of vegetation with a root system not greater than 400mm;
- The installation of easily removable surfaces other than grass (bluemetal or woodchips);

5.16.5 Controlled activities / encroachments

All controlled activities require approval to be sought, from Endeavour Energy's Regional Easement Officer, in writing as set out in Clause 5.18.2. The Easement Officer will assess the activity/encroachment as defined Clause 5.18. The proposed activity must not commence unless approval is received in writing from Endeavour Energy Regional Easement Officer.

All controlled activities must meet the minimum safety requirements detailed in Clause 5.16.2, as well as any additional controls listed below.

5.16.5.1 Mobile plant/equipment and Parking of vehicles

Where a padmount substation is in the vicinity of a parking facility, suitable crash and impact protection from vehicles must be installed. These must be positioned in such a way to allow access to the substation to be maintained. Any proposals for the installation of suitable vehicle impact protection measures are subject to approval from the Regional Easement Officer.

5.16.5.2 Agricultural pursuits

Agricultural pursuits are prohibited within a padmount substation easement. Grazing would be the only activity that would be permitted.

5.16.5.3 Roads and concrete driveways

Roads and concrete driveways are permitted within the padmount easements where:

- Cables are in existing continuous ducts;
- The roadway/driveway is capable of supporting the heaviest vehicle likely to traverse the driveway;
- The thermal rating of the cable is not compromised by the installation;
- Suitable crash and impact protection must be installed, positioned in such a way to allow access to the substation to be maintained.

5.16.5.4 Retaining walls

Retaining walls built around distribution substations or switching stations, as part of reticulation requirements, must be outside the standard easement Refer to 5.3.6.

Proposed retaining walls must not impact the maintenance activities performed by Endeavour Energy on any assets within the easement.

5.16.5.5 Fencing

For fencing requirements around a padmount substation refer to MCI 0006 – Section 7.

Fencing surrounding an easement must comply with Table 2.

Table 2: Fencing near a Padmount Substation

Padmount Earthing	Fence Allowed	
	On easement boundary	Through easement
Common Earthed	YES	NO
Separately earthed	If within 4m of padmount, fence posts must be insulated and a touch-voltage assessment required.	NO

5.17 Transfer earth hazards

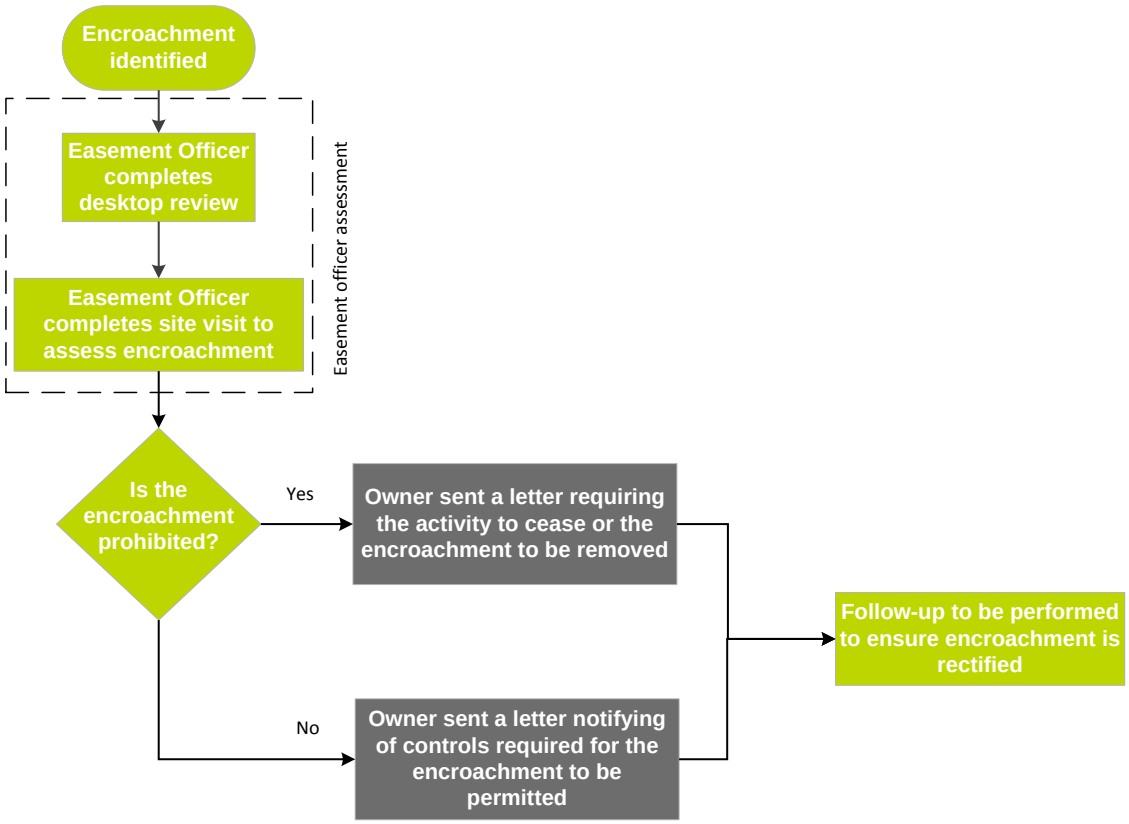
In addition to all requirements stipulated in this standard the risk of transfer earth hazards associated with Endeavour Energy's assets and/or equipment, structures or objects must be managed in accordance with SDI 100 "Distribution earthing design, construct and test".

This requirement may impose restriction zones around Endeavour Energy's assets limiting the use of land within the defined area(s).

5.18 Encroachment management process

5.18.1 Existing encroachment management process

Endeavour Energy will manage existing encroachments that have not been previously approved, according to the flowchart below:



5.18.1.1 Easement Officer Review

Once identified, the Easement Officer will perform both a desktop assessment and a site visit to determine whether the encroachment is permitted, controlled or prohibited, as defined in Clause 5.11, or whether with possible controls can overcome / lessen the encroachment.

On completion of the assessment, a letter will be sent to the owner, identifying:

- Explanation of the terms of the easement;
- Identifying the hazards to themselves, members of the public and Endeavour Energy's employees;
- Providing advice on possible solutions to overcome / lessen the encroachment.
- The outcome of the assessment:
    - Where the encroachment is determined to be a "controlled activity", conditional approval for it to continue must be given only if the applicable controls (as defined in Clause 5.11) are used.
    - Where the encroachment is determined to be a prohibited activity/structure, the owner will be required to remove the encroachment or cease the activity.

A follow-up site visit will be completed within 30 days to check whether the encroachment has been adequately managed.

Legal action will be considered when all other avenues are exhausted.

The local council must be included in correspondence to highlight the need for their approval process to include a corresponding approval from Endeavour Energy where easements are involved.

5.18.2 Applications for controlled encroachments

All applications for an activity or encroachment, or requests for advice, must be referred to Endeavour Energy's Regional Easement Officers. Applications must be addressed to:

Regional Easement Officer – North / Central / South *(see table below)*
Endeavour Energy
PO Box 811
Seven Hills NSW 1730

Endeavour Energy's network franchise area has three (3) regions, responsible for the local government areas set out in the following table:

Region	Local government areas
North	Bathurst, Baulkham Hills, Blacktown, Blue Mountains, Hawkesbury, Lithgow, Parramatta, Penrith, plus parts of Hornsby, Mid-Western and Ryde.
Central	Camden, Campbelltown, Fairfield, Cumberland (Holroyd), Liverpool, Wingecarribee, Wollondilly, plus parts of Bankstown.
South	Kiama, Shellharbour, Shoalhaven, Wollongong.

5.18.2.1 Application requirements

Due to the varied circumstances that apply to easements, all applications will be assessed individually, and will be site specific.

All applications require the following:

- The application is to be made in writing.
- The application is to include detailed plans, drawn to scale and with full dimensions, showing property boundaries, lot number, Deposited Plan (DP) number, any electricity structures, and other relevant information.
- A survey plan of an easement for padmount substation must show the substation number and at least two (2) offsets from adjacent sides of the concrete plinth to the easement boundary.
- Each application will require an impact and risk assessment and must be assessed on the site-specific circumstances and Endeavour Energy's risks assessment company procedure of the proposal.

5.18.2.2 Easement Officer Review

After the application has been received, the easement officer will perform a desktop review of the application and if required, a site visit.

Where Endeavour Energy is uncertain about the impact of the controlled activity or encroachment, the applicant/s will be asked to arrange an independent study of the risk at their own expense. Endeavour Energy will consider the outcome of the study when deciding on the application.

Where additional testing is required, the applicant will be responsible for:

- Arranging the test with an organisation acceptable to Endeavour Energy;
- Paying for the test;
- Supplying the test results to Endeavour Energy.

5.19 Access and Rights of Way

Where possible, access to Endeavour Energy assets must be made possible by access tracks located within Endeavour Energy easements.

Consideration must be given to securing access by the way of a land tenure agreement and/or other legal instruments such as 'Right of Ways', where:

- access tracks must traverse outside of easements;
- access options to assets is limited;
- significant investment has been outlaid to upgrade and/or construct an access; or,
- there is future development planned for an area that may affect or obstruct access routes.

The appropriate land tenure agreement and or legal instrument must be discussed with the Property, People and Services Branch.

5.19.1 Locking arrangements for shared access gates

In some cases, access to land with electricity easements is shared by Endeavour Energy with others – utilities, customers, and organisations such as the NSW National Parks and Wildlife Service or the Rural Fire Service.

Where access is through a gate protected by dedicated locks, an EL specification lock must be installed. The preferred arrangements for single or multiple locks are shown in Figure 9. Where there is more than one lock, the locks must be spaced as evenly as possible by joining with equal lengths of chain.

The entire chain must be of exact length to allow the gate to be fully secured, while allowing for the chain to be rotated so that access to the locks is possible from either side of the gate.

When replacing locks after entering or leaving, the correct ends of the chain must be connected with the lock, so that it remains a continuous loop.

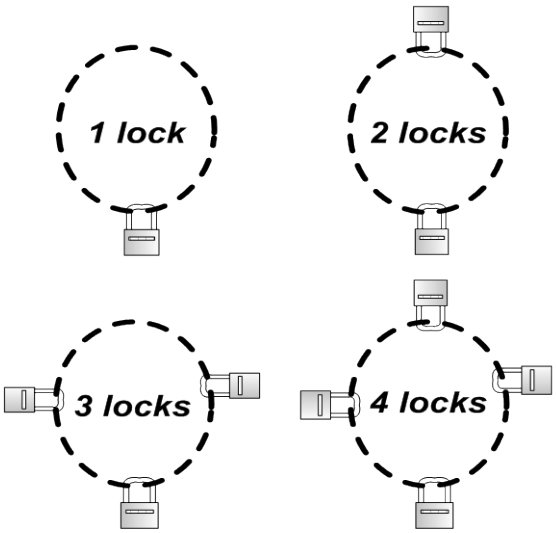


Figure 9 – Locking arrangements for shared access gates

5.20 Recording of easements in GIS

When an easement is created, the easements must be reflected in the Endeavour Energy's GIS system.

5.21 Drawings

Drawing No	Amendment	Title
016665	S	11kV and 22kV Padmount substation easement layout
086232	K	Minimum clearances near structures
282551	A	Size 16 Switching Station easement layout
289702 (Sheets 1 – 7)	A	Fencing arrangement for padmount substation easement details
403230 (Sheets 1 – 12)	A	Shared trenching arrangements
242451	B	Chain wire fence – isolation panel and earthing installation detail
069575	G	Solid Metallic Fence – Isolated panel and earthing installation detail
242450	A	Transmission Line Structure – Metallic fence clearance and isolation panel requirements.

6.0 AUTHORITIES AND RESPONSIBILITIES

General Manager Asset Management has the authority and responsibility for approving this instruction.

General Manager, Network Services has the authority and responsibility for all new distribution and transmission projects complying with the contents of this instruction.

Manager Asset Standards & Design has the delegated authority and responsibility for approving this instruction and the endorsing of non-standard/reductions in easement widths.

Manager Network Connections has the authority and responsibility for new contestable works electrical designs complying with this instruction.

Mains Assets Manager has the authority and responsibility for:

- Endorsing the content of this instruction;
- Keeping the content of this instruction is kept up to date;
- Approval for encroachments within easements.

Substation Assets Manager has the authority and responsibility for providing input into the content of this instruction.

Earthing and Power Quality Manager is responsible for the assessment and approval of earthing issues within easements.

Easements Officers are responsible for:

- Reviewing easement encroachment applications;
- Performing investigations into possible encroachments;
- Providing advice and consultation to stakeholders.

7.0 DOCUMENT CONTROL

Documentation content coordinator: Mains Assets Manager

Documentation process coordinator: Branch Process Coordinator

Annexure 1 STANDARD EASEMENT TERMS

A1.1 - Overhead Lines, Underground Cables, Padmounts, Switching Stations, Street Lighting, Pole/Ground Stays

1.0 Definitions:

1.1 **easement site** means that part of the lot burdened that is affected by this easement.

1.2 **electrical equipment** must be defined as stated below for each of the easement terms associated with the following asset classes:

1.2.1 *Overhead Power Lines* - includes pole, tower, overhead electrical conductors, underground earthing system, and ancillary equipment.

1.2.2 *Underground Cables* - includes underground electrical cable, duct, service pillar, underground earthing system, and ancillary equipment.

1.2.3 *Padmount Substation / Switching Station* - includes electrical transformer (padmount only), switchgear, protective housing, concrete plinth, underground electrical cable, duct, underground earthing system, and ancillary equipment.

1.2.4 *Pole Stays / Ground Stays* – includes stay pole, concrete strainer block, stay cable, stay wire, and ancillary equipment.

1.2.5 *Street Lighting* – includes the column, lantern and foundations of the street light.

1.3 **Endeavour Energy** means Endeavour Energy and its successors (who may exercise its rights by any persons authorised by it).

1.4 **install** includes construct, repair, replace, maintain, modify, use, and remove.

1.5 **owner** means the registered proprietor of the lot burdened and its successors (including those claiming under or through the registered proprietor).

1.6 **services** includes Network gas, telephone, communications, water, sewage, and drainage services.

1.7 **structure** includes building, wall, retaining wall, carport, and swimming pool; but excludes garden furniture and garden ornaments.

2.0 Endeavour Energy may:

2.1 install electrical equipment within the easement site,

2.2 excavate the easement site to install the electrical equipment.

2.3 use the electrical equipment for the transmission of electricity,

2.4 enter the lot burdened using the most practical route (with or without vehicles, machinery or materials) at all reasonable times (and at any time in the event of an emergency) and remain there for any reasonable time. This may include the installation of gates in existing fencing if access is not readily available,

2.5 install its own access gates and locks,

2.6 trim or remove any vegetation from the lot burdened that interferes with or prevents reasonable access to the easement site or the electrical equipment, and

2.7 remove any encroachments from the easement site and recover the costs of carrying out the removal work and repairing any damage done to the electrical equipment by the encroachment.

3.0 In exercising its rights under this easement Endeavour Energy will take reasonable precautions to minimise disturbance to the lot burdened and will restore the lot burdened as nearly as practicable to its original condition.

4.0 The owner agrees that, without the written permission of Endeavour Energy and in accordance with such conditions as Endeavour Energy may reasonably impose, it will not:

4.1 install or permit to be installed, any services or structure within the easement site, or

4.2 alter the surface level of the easement site, or

4.3 do or permit to be done anything that restricts access to the easement site by Endeavour Energy

5.0 Lessee of Endeavour Energy's Distribution System

5.1 Notwithstanding any other provision in this easement, the owner grants to Endeavour Energy the easement and acknowledges and agrees that any lessee of Endeavour Energy's distribution system, and any nominee of such lessee (which may include a sublessee of Endeavour Energy's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of Endeavour Energy as if that lessee or nominee were Endeavour Energy, but only for so long as the lessee leases Endeavour Energy's distribution system from Endeavour Energy.

5.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of Endeavour Energy.

A1.2 - Indoor Substation

1.0 Definitions:

1.1 **building** means the building within which the electrical equipment is located.

1.2 **easement site** means that part of the lot burdened that is affected by this easement.

1.3 **electrical equipment** includes electrical transformer, electrical switchgear, electrical cable, duct, services, ventilation, and ancillary equipment.

1.4 **Endeavour Energy** means Endeavour Energy and its successors (who may exercise its rights by any persons authorised by it).

1.5 **install** includes construct, repair, replace, maintain, modify, use, and remove.

1.6 **owner** means the registered proprietor of the lot burdened and its successors (including those claiming under or through the registered proprietor).

1.7 **services** includes Network gas, telephone, communications, water, sewage, and drainage services.

2.0 Endeavour Energy may:

2.1 install electrical equipment within the easement site,

2.2 use the electrical equipment for the transmission of electricity,

2.3 enter the lot burdened using the most practical route (with or without vehicles, machinery or materials) at all reasonable times (and at any time in the event of an emergency) and remain there for any reasonable time. This may include the installation of gates in existing fencing if access is not readably available,

2.4 install its own security doors to gain access to the electrical equipment and to prevent access by others, and

2.5 install conduits, cables, and pipes on, under or through the building for the purpose of connecting the electrical equipment with any services and to operate those services.

3.0 Endeavour Energy agrees that it will not cut, drill, alter or demolish any part of the building necessary to install or operate the electrical equipment without the written permission of the owner and in accordance with such conditions as the owner may reasonably impose.

4.0 In exercising its rights under this easement Endeavour Energy will take reasonable precautions to minimise disturbance to the lot burdened and will restore the lot burdened as nearly as practicable to its original condition.

5.0 The owner agrees that, without the written permission of Endeavour Energy and in accordance with such conditions as Endeavour Energy may reasonably impose, it will not:

5.1 install or permit to be installed any thing within the easement site, or

5.2 interfere with, allow to be interfered with, or prevent the ventilation of the easement site, or

5.3 direct or allow to be directed drainage into the easement site, or

5.4 do or permit to be done anything that restricts access to the easement site by the Endeavour Energy

6.0 Lessee of Endeavour Energy's Distribution System

6.1 Notwithstanding any other provision in this easement, the owner grants to Endeavour Energy the easement and acknowledges and agrees that any lessee of Endeavour Energy's distribution system, and any nominee of such lessee (which may include a sublessee of Endeavour Energy's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of Endeavour Energy as if that lessee or nominee were Endeavour Energy, but only for so long as the lessee leases Endeavour Energy's distribution system from Endeavour Energy.

6.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of Endeavour Energy.

A1.3 – Rights of Access

1.0 Definitions:

1.1 **access site** means that part of the lot burdened that is affected by this right of access.

1.2 **Endeavour Energy** means Endeavour Energy and its successors (who may exercise its rights by any persons authorised by it).

1.3 **owner** means the registered proprietor of the lot burdened and its successors (including those claiming under or through the registered proprietor).

2.0 Endeavour Energy may:

2.1 by any reasonable means pass across the access site for the purpose of exercising or performing any of its powers, authorities, duties or functions, and

2.2 do anything reasonably necessary for passing across the access site, including:

2.2.1 Entering the lot burdened;

2.2.2 taking anything on to the lot burdened; and,

2.2.3 carrying out work within the site of the easement, such as constructing, placing, repairing or maintaining trafficable surfaces, driveways or structures.

3.0 In exercising its rights set out in Clause 2.0, Endeavour Energy must:

3.1 complete all work properly;

3.2 take reasonable precautions to minimise disturbance to the lot burdened and owner of the lot;

3.3 cause as little damage as is practicable to the lot burdened;

3.4 restore the lot burdened as nearly as practicable to its former condition; and,

3.5 make good on any collateral damage;

4.0 Lessee of Endeavour Energy's Distribution System

4.1 Notwithstanding any other provision in this easement, the owner grants to Endeavour Energy the easement and acknowledges and agrees that any lessee of Endeavour Energy's distribution system, and any nominee of such lessee (which may include a sublessee of Endeavour Energy's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of Endeavour Energy as if that lessee or nominee were Endeavour Energy, but only for so long as the lessee leases Endeavour Energy's distribution system from Endeavour Energy.

4.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of Endeavour Energy.

Annexure 2 Terms of Restrictions on the Use of Land

A3.1 Safety Clearance between Padmount Substations and Adjacent Buildings

Terms of Restrictive Covenant numbered [xx] in the plan

1.0 Definitions:

1.1 **"120/120/120 fire rating"** and **"60/60/60 fire rating"** means the fire resistance level of a building expressed as a grading period in minutes for structural adequacy / integrity failure / insulation failure calculated in accordance with Australian Standard 1530.

1.2 **"building"** means a substantial structure with a roof and walls and includes any projections from the external walls.

1.3 **"erect"** includes construct, install, build and maintain.

1.4 **"restriction site"** means that part of the lot burdened affected by the restriction on the use of land as shown on the plan.

2.0 No building must be erected or permitted to remain within the restriction site unless:

2.1 the external surface of the building erected within 1.5 metres from the substation footing has a 120/120/120 fire rating and

2.2 the external surface of the building erected between 1.5 metres and 3.0 metres from the substation footing has a 60/60/60 fire rating

2.3 and the owner provides the authority benefited with an engineer's certificate to this effect.

3.0 The fire ratings mentioned in Clause 2.0 must be achieved without the use of fire fighting systems such as automatic sprinklers.

4.0 Lessee of Endeavour Energy's Distribution System

4.1 Notwithstanding any other provision in this easement, the owner grants to Endeavour Energy the easement and acknowledges and agrees that any lessee of Endeavour Energy's distribution system, and any nominee of such lessee (which may include a sublessee of Endeavour Energy's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of Endeavour Energy as if that lessee or nominee were Endeavour Energy, but only for so long as the lessee leases Endeavour Energy's distribution system from Endeavour Energy.

4.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of Endeavour Energy.

A3.2 Fire Proof Screen Walls

Terms of Positive Covenant numbered [xx] in the plan:

1.0 Definitions

1.1 **"fire proof screen wall"** means a wall of brick or concrete necessary to achieve a 120/120/120 fire rating up to a minimum height of **[***xx***]** metres from the level of the substation footing.

1.2 **"owner"** means the registered proprietor of the lot burdened and its successors (including those claiming under or through the registered proprietor).

1.3 **"prescribed authority"** means Endeavour Energy (and its successors).

1.4 **"120/120/120 fire rating"** means the fire resistance level of a building structure expressed as a grading period in minutes for structural adequacy/integrity failure/insulation failure calculated in accordance with Australian Standard 1530.

2.0 The owner covenants with the prescribed authority that the owner:

2.1 Will construct fire proof screen **[***wall/s***]** adjacent to the **[***northern, southern, eastern, western***] [***boundary/ies***]** of the easement for padmount substation.

2.2 Will maintain the fire proof screen **[***wall/s***]** in a satisfactory state of repair and in accordance with any reasonable conditions that the prescribed authority may impose.

3.0 Lessee of Endeavour Energy's Distribution System

3.1 Notwithstanding any other provision in this easement, the owner grants to Endeavour Energy the easement and acknowledges and agrees that any lessee of Endeavour Energy's distribution system, and any nominee of such lessee (which may include a sublessee of Endeavour Energy's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of Endeavour Energy as if that lessee or nominee were Endeavour Energy, but only for so long as the lessee leases Endeavour Energy's distribution system from Endeavour Energy.

3.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of Endeavour Energy.

A3.3 Fire Proof Walls and Roof

Terms of Positive Covenant numbered [xx] in the plan:

1.0 Definitions

1.1 **"fire proof wall"** means a wall of brick, concrete or other material necessary to achieve a [60/60/60 or 120/120/120] fire rating up to a minimum height of 6 metres from the level of the substation footing. It also includes any structures attached to the wall such as eaves and gutters.

1.1 **"fire proof roof"** means a roof constructed of concrete or other material necessary to achieve a [60/60/60 or 120/120/120] fire rating.

1.2 **"owner"** means the registered proprietor of the lot burdened and its successors (including those claiming under or through the registered proprietor).

1.2 **"padmount substation"** means padmount substation No. [xxxx]

1.3 **"prescribed authority"** means Endeavour Energy (and its successors).

1.4 **"60/60/60 or 120/120/120 fire rating"** means the fire resistance level of a building structure expressed as a grading period in minutes for structural adequacy/integrity failure/insulation failure calculated in accordance with Australian Standard 1530.

2.0 The owner covenants with the prescribed authority that the owner:

2.1 Will construct fire proof **[***wall/s***]** adjacent to the **[***northern, southern, eastern, western***] [***boundary/ies***]** of the easement for padmount substation.

2.2 Will maintain the fire proof **[***wall/s***]** in a satisfactory state of repair and in accordance with any reasonable conditions that the prescribed authority may impose.

2.3 Will construct fire proof roof above the padmount substation.

2.4 Will maintain the fire proof roof in a satisfactory state of repair and in accordance with any reasonable conditions that the prescribed authority may impose.

3.0 Lessee of Endeavour Energy's Distribution System

3.1 Notwithstanding any other provision in this easement, the owner grants to Endeavour Energy the easement and acknowledges and agrees that any lessee of Endeavour Energy's distribution system, and any nominee of such lessee (which may include a sublessee of Endeavour Energy's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of Endeavour Energy as if that lessee or nominee were Endeavour Energy, but only for so long as the lessee leases Endeavour Energy's distribution system from Endeavour Energy.

3.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of Endeavour Energy.

A3.4 Separation of Metal Structures to an Earth Grid

Terms of Restrictive Covenant numbered [xx] in the plan

1.0 Definitions:

1.1 **"erect"** includes construct, install, build and maintain.

1.2 **"restriction site"** means that part of the lot burdened affected by the restriction on the use of land as shown on the plan.

2.0 Except as provided in Clause 3.0, no metal structure must be erected or permitted to remain within the restriction site.

3.0 Metallic fencing may be erected within the restriction site if the fence panels are insulated from the fence posts and from the ground.

4.0 Lessee of Endeavour Energy's Distribution System

4.1 Notwithstanding any other provision in this easement, the owner grants to Endeavour Energy the easement and acknowledges and agrees that any lessee of Endeavour Energy's distribution system, and any nominee of such lessee (which may include a sublessee of Endeavour Energy's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of Endeavour Energy as if that lessee or nominee were Endeavour Energy, but only for so long as the lessee leases Endeavour Energy's distribution system from Endeavour Energy.

4.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of Endeavour Energy.

A3.5 Separation of Swimming Pools to an Earth Grid

Terms of Restrictive Covenant numbered [xx] in the plan

1.0 Definitions:

1.1 **"erect"** includes construct, install, build and maintain.

1.2 **"restriction site"** means that part of the lot burdened affected by the restriction on the use of land as shown on the plan.

2.0 No swimming pool or spa must be erected or permitted to remain within the restriction site.

3.0 Lessee of Endeavour Energy's Distribution System

3.1 Notwithstanding any other provision in this easement, the owner grants to Endeavour Energy the easement and acknowledges and agrees that any lessee of Endeavour Energy's distribution system, and any nominee of such lessee (which may include a sublessee of Endeavour Energy's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of Endeavour Energy as if that lessee or nominee were Endeavour Energy, but only for so long as the lessee leases Endeavour Energy's distribution system from Endeavour Energy.

3.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of Endeavour Energy.

Annexure 3 COMMUNITY TITLE BY-LAWS

To maintain access to assets the following by-law must be incorporated into all community title management statements where HV or LV (including street lighting) assets are owned and maintained by Endeavour Energy:

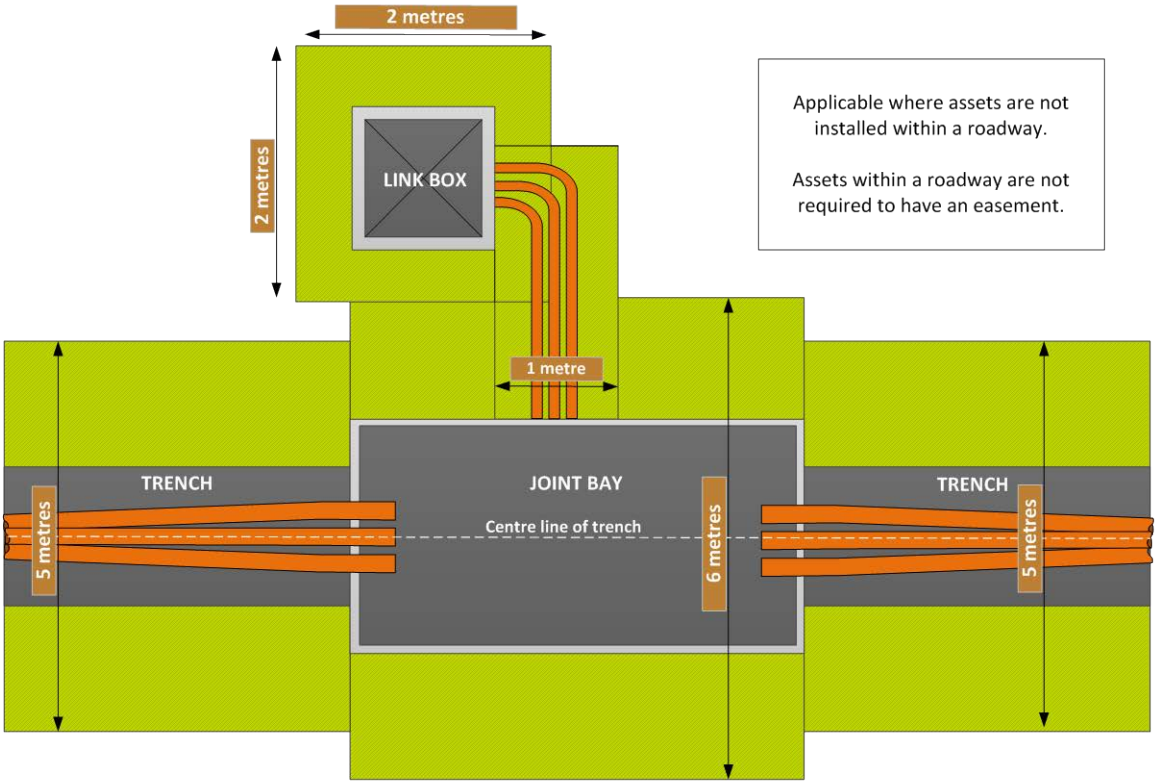
> **BY-LAW [X] ENDEAVOUR ENERGY – Access Ways**
>
> *The Association agrees that if the surface of the access ways does not support the heavy vehicles, machinery and materials necessary to maintain Endeavour Energy's electrical equipment, the Association will be responsible for repairing any damage caused to the surface of the access ways during such maintenance.*
>
> *This provision applies despite any other easement term to the contrary.*

Where the ownership of any part of the electricity network (HV, LV or street lighting) within the community title development is to be the responsibility of the community association, the following by-law must be incorporated into the community title management statement:

> **BY-LAW [X] ENDEAVOUR ENERGY – Ownership of Assets by the Association**
>
> *The low voltage electricity system is defined on the prescribed diagram as [eg "electricity"].*
>
> *This electricity system is Association property.*
>
> *The Association is responsible for the maintenance, repair, refurbishment, and augmentation of this electricity system.*
>
> *The design of this electricity system has been based on a maximum demand of [as advised by the designer] Amps per dwelling.*

Annexure 4 Typical easement layouts

A4.1 - Underground assets



A4.2 – UGOH and Stay pole easements

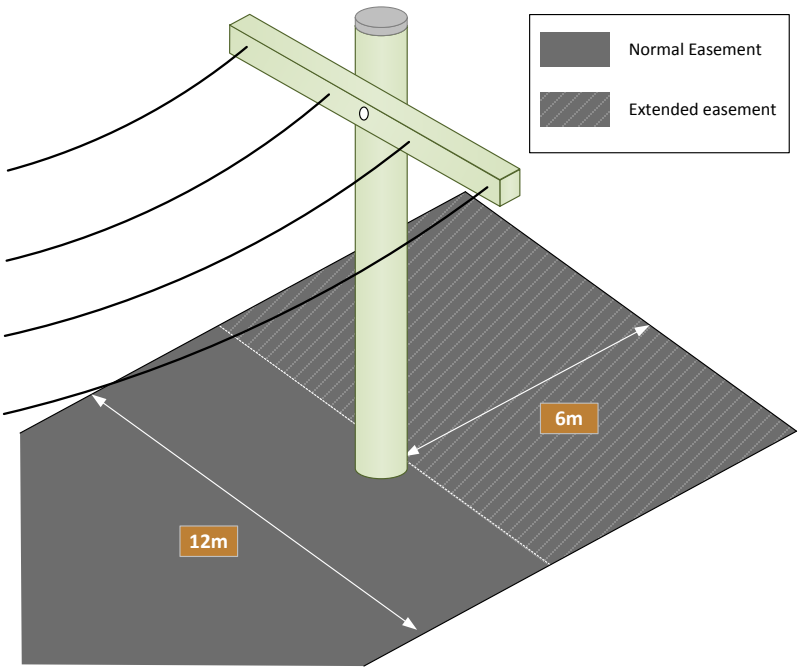


Figure 10 –UGOH pole easement

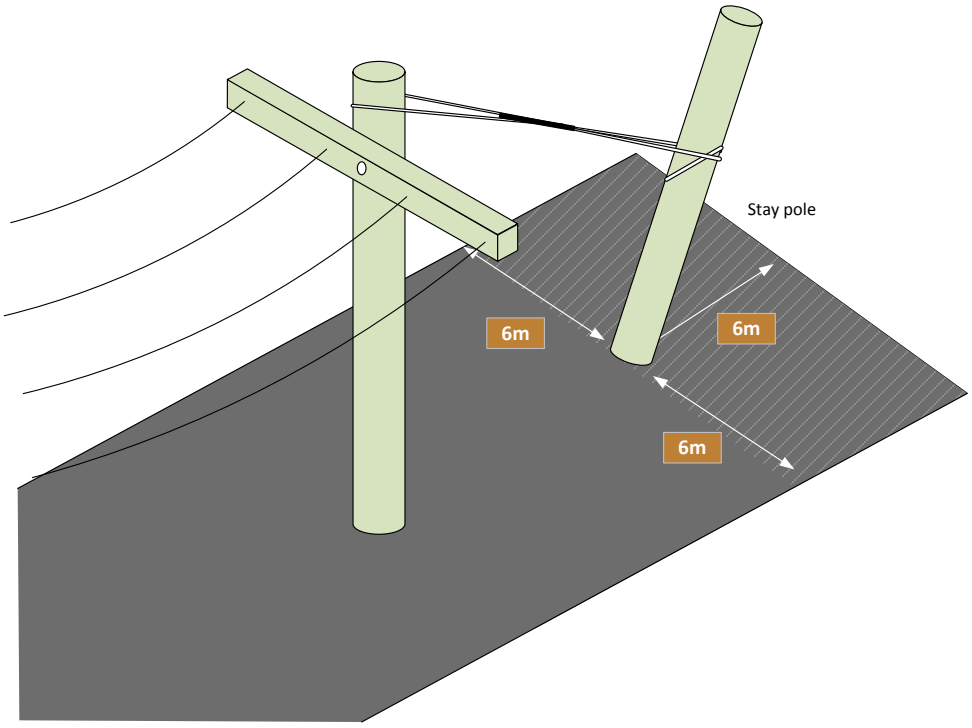


Figure 11 – Stay / Ground pole easement

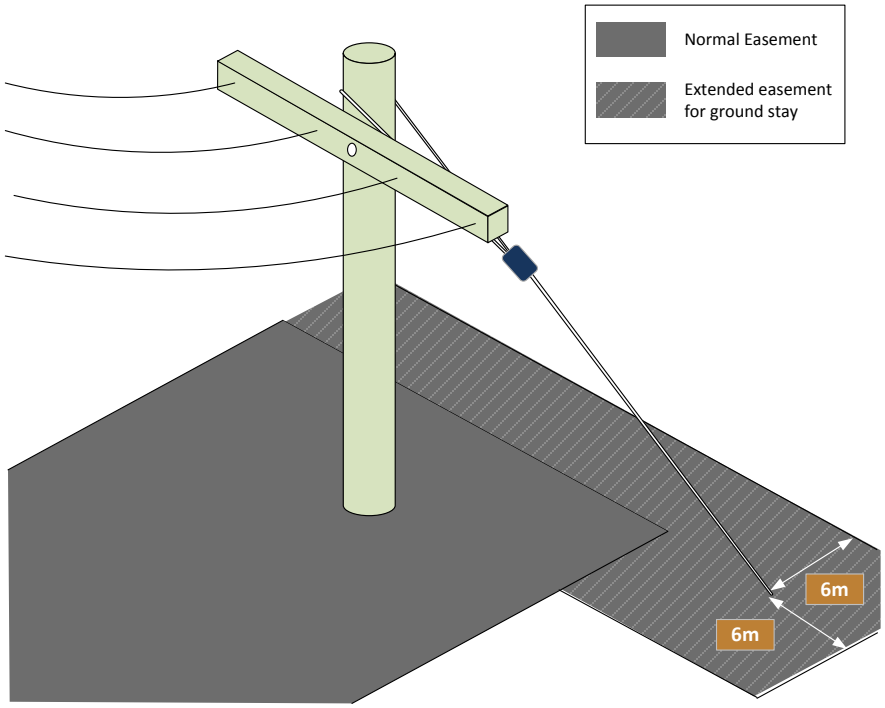
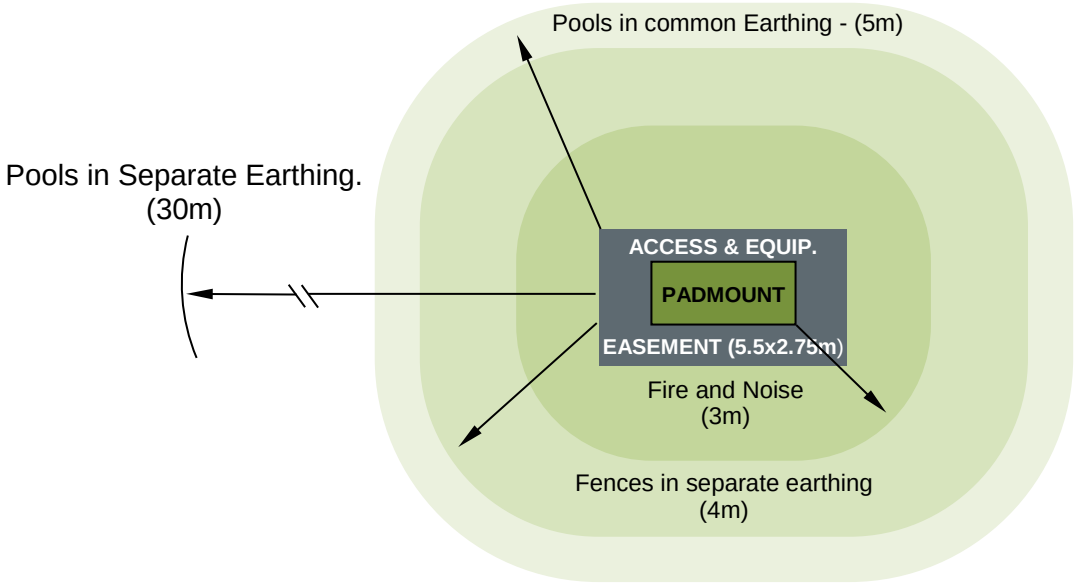


Figure 12 – Ground stay easement

A4.3 - Padmount easements and clearances



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Annexure 5 – Encroachment reference guide

Allowed - An activity which is allowed within an easement, but must still adhere to the minimum safety requirements within the easement stated in this document.
Prohibited - An activity that must not be performed under any circumstance within the easement.
Controlled - An activity which is allowed only if it meets both the minimum safety requirements for that type of easement with additional controls which are specified in the corresponding clause. Approval from Endeavour Energy is required for any controlled activity.

Category	Encroachment	Overhead				Underground				Padmount Substations			
		Allowed	Prohibited	Controlled	Clause	Allowed	Prohibited	Controlled	Clause	Allowed	Prohibited	Controlled	Clause
Buildings/ Structures	Buildings (habitable)		✓				✓				✓		
	Tents – Commercial or Recreational		✓			✓					✓		
	Shade Cloths / Umbrellas			✓	5.14.4.1		✓				✓		
	Minor structures (clothesline, playground equipment, non metallic fences and bbqs)			✓			✓				✓		
	Garages, large sheds and shipping containers (habitable)		✓				✓				✓		
	Non-habitable buildings (Carports and metallic sheds), and shipping containers (uninhabited)			✓	5.14.4.2		✓				✓		
	Flag pole / weather vane		✓				✓				✓		
Barriers/Walls	Sound walls			✓			✓				✓		
	Conductive fencing through an easement			✓	5.14.4.3			✓	5.15.5.1		✓		5.16.5.5
	Conductive on boundary of an easement			✓				✓			✓		
	Metal safety barriers			✓	5.14.4.4		✓				✓		
	Electric fencing		✓				✓				✓		
	Retaining walls			✓	5.14.4.5			✓	5.15.5.9			✓	5.16.5.4
	Metallic pipes in lengths greater than 3m		✓					✓	5.15.5.2		✓		
Fixed/ Mobile plant	Footings of Fixed plant		✓				✓				✓		
	Fixed Plant or equipment		✓				✓		5.15.5.3		✓		
	Mobile plant or equipment			✓	5.14.4.7			✓	5.15.5.4	✓			5.16.5.1
	Parking of tall vehicles, trucks, caravans, campervans		✓					✓			✓		
	Parking of other vehicles			✓	5.14.4.6	✓					✓		5.16.5.1
Vegetation	Shrubs with roots < 400mm	✓				✓				✓			
	Planting of trees which grow less than 3m	✓					✓				✓		
	Planting of trees which exceed 3m		✓				✓				✓		
	Storage of organic matter (leaves, compost)			✓	5.14.4.17			✓	5.14.4.17		✓		
Swimming Pools	Spas and Swimming pools – above ground		✓				✓				✓		
	Swimming pools – in ground		✓				✓				✓		

Category	Encroachment	Overhead				Underground				Padmount Substations			
		Allowed	Prohibited	Controlled	Clause	Allowed	Prohibited	Controlled	Clause	Allowed	Prohibited	Controlled	Clause
Fires	Lighting of fires		✓				✓				✓		
	Back burning			✓	5.14.4.8		✓				✓		
Agricultural use of the land	Agricultural pursuits such as dusting, harvesting, netting, irrigation			✓	5.14.4.9			✓	5.15.5.5			✓	5.16.5.2
	Ploughing near structures		✓			N/A					✓		
	Ploughing not near structures	✓					✓				✓		
Other	Objects which may hinder access		✓				✓				✓		
	Storage of combustible/flammable/corrosive material		✓				✓				✓		
	Storage of non-combustible, non-flammable, or non-corrosive material	✓				✓					✓		
	Rainwater tanks			✓	5.14.4.10		✓				✓		
	Detention basins			✓	5.14.4.11		✓				✓		
	Earth works – reducing cover or filling			✓	5.14.4.12		✓				✓		
	Permanent surfaces (asphalt, concrete etc)	✓					✓				✓		
	Different surfaces (bluemetal, woodchips)	✓				✓				✓			
	New Roads			✓	5.14.4.13			✓	5.15.5.6			✓	5.16.5.3
	Concrete driveways			✓				✓					
	Installation of Utility services – telecoms, water, LV elec, sewerage			✓	5.14.4.14			✓	5.15.5.7		✓		
	Residential/ Commercial subdivision lots			✓	5.14.4.15			✓	5.15.5.8	N/A			
	Use of explosives		✓				✓				✓		
Recreational Activities	Recreational activities – general (not including activities listed below)	✓				✓					✓		
	Recreational activities – flying kites, model aircraft, balloons		✓			✓					✓		
	Recreational activities – Flood lighting, grandstands		✓				✓				✓		
	Recreational activities – firearms		✓			✓					✓		
	Recreational activities – tennis courts			✓	5.14.4.16		✓				✓		

Note: Highlighting within the Encroachment column indicates a category which has been added since the last amendment. However, highlighting within the Overhead, Underground or Padmount columns represents a change in approach to the management of the encroachment since the last amendment.

How often does Endeavour Energy carry out vegetation maintenance?

Endeavour Energy inspects its power lines throughout the year. If vegetation is growing too close and has become unsafe it will be cleared.

Generally we find that tree branches need to be cleared on an annual basis.

Does Endeavour Energy remove vegetation from special trees?

Endeavour Energy uses qualified arborists, works closely with local councils and inspects state registers to identify trees that are officially classified as:

- heritage, memorial or significant trees
- threatened species.

While we are still required to ensure these trees are kept a safe distance from power lines, before work takes place we decide whether our normal pruning practices will be harmful.

If necessary, other options are considered. These may include cutting the tree more frequently (so less vegetation has to be removed each time) or using different vegetation removal practices.

Who carries out the vegetation maintenance program?

Endeavour Energy employs qualified staff and contractors specifically trained to manage vegetation growing close to and underneath power lines.

How can you help?

If vegetation maintenance is taking place in your street please keep safe and stay away from the work.

If you are planting near power lines please consider shrubs that do not grow above three metres. In rural and bushfire prone regions keep the areas under and near power lines clear of materials that may start fires.

If you notice vegetation growing too close to power lines please call Endeavour Energy on **131 081**.

How can I find out more?

If you have received notification of vegetation clearance taking place in your street please call the number on your letter.

To find out more about Endeavour Energy's Vegetation Maintenance program please call **131 081** or visit our website at www.endeavourenergy.com.au and search for 'vegetation maintenance'.

SAFETY EXCELLENCE

IN EMERGENCIES CALL 131 003

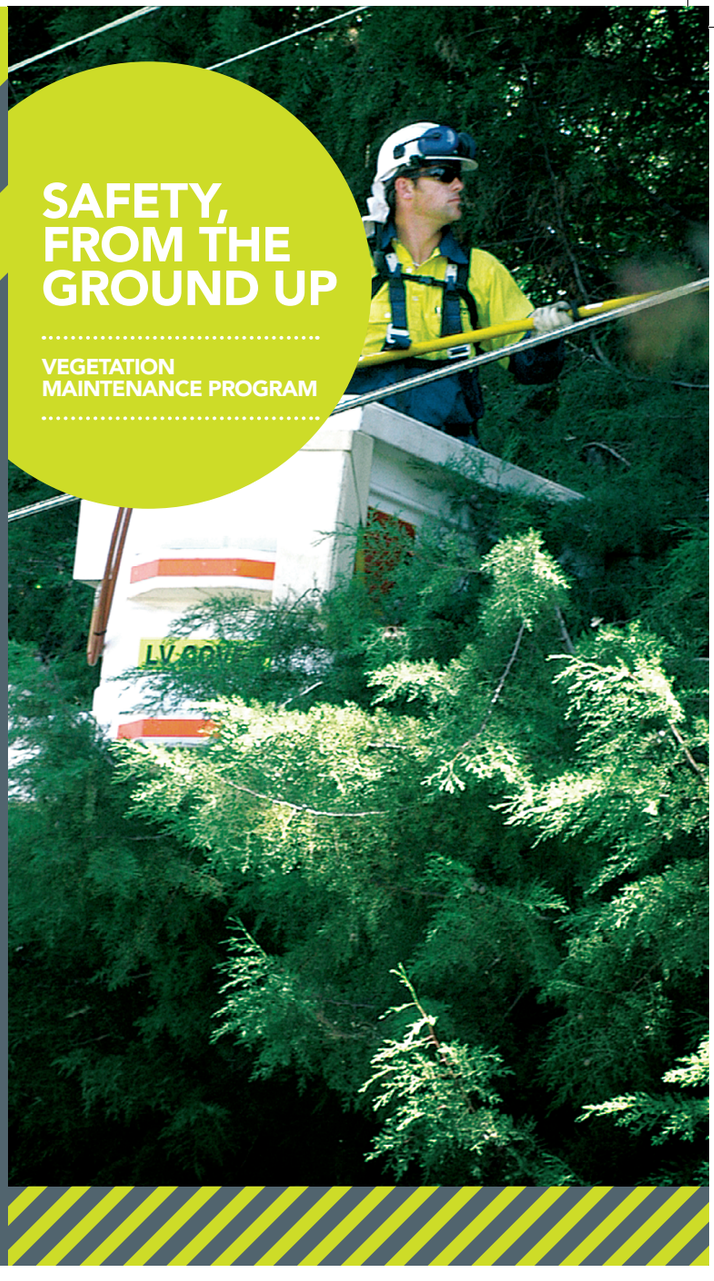
24 hours a day, 7 days a week

If you have any questions about what you should do to stay safe around damaged power lines and other electrical infrastructure please call 131 081 or visit us at www.endeavourenergy.com.au

20205-0711-ENE2373

SAFETY, FROM THE GROUND UP

VEGETATION MAINTENANCE PROGRAM



51 Huntingwood Drive
Huntingwood NSW 2148
PO Box 6366 Blacktown NSW 2148
T: 131 081 • F: 61 2 9853 6000

Endeavour Energy

Call 131 081 and put safety first.
www.endeavourenergy.com.au

Endeavour Energy

VEGETATION MAINTENANCE

Endeavour Energy manages one of Australia's largest electricity networks distributing electricity to over 2.1 million people in households and businesses across Greater Western Sydney, the Blue Mountains, Illawarra, and the Southern Highlands of NSW.

With over 33,000 kilometres of underground and overground cables, an important part of maintaining our network is the management of trees and other vegetation near power lines.

While safety is our number one priority, Endeavour Energy understands the value communities place on trees. We aim to strike a balance between safety, protection of the natural environment and keeping the lights on for our customers.

Why is it important to keep vegetation away from power lines?

Safety is Endeavour Energy's number one priority. Trees and other vegetation growing close to power lines are dangerous.

Keeping vegetation a safe distance from our network reduces the chance of power lines starting bushfires. It also minimises opportunities for people to climb trees and risk electrocution from wires.

Branches rubbing or falling on power lines is a major cause of blackouts. Vegetation clearance helps us keep the lights on for our customers.

How much vegetation does Endeavour Energy remove from a tree?

How much vegetation Endeavour Energy removes from a tree depends on a number of factors. Typically we need to keep clearances of 2.5 to 4.0 metres between power lines and trees. While some branch clearing may look severe immediately after cutting, most trees regrow at a normal rate.

THINGS WE NEED TO CONSIDER INCLUDE:

Safety clearances

We need to keep a safe distance between our power lines and a tree. The distance will depend on voltage, length of the line between poles, national guidelines and tree species.

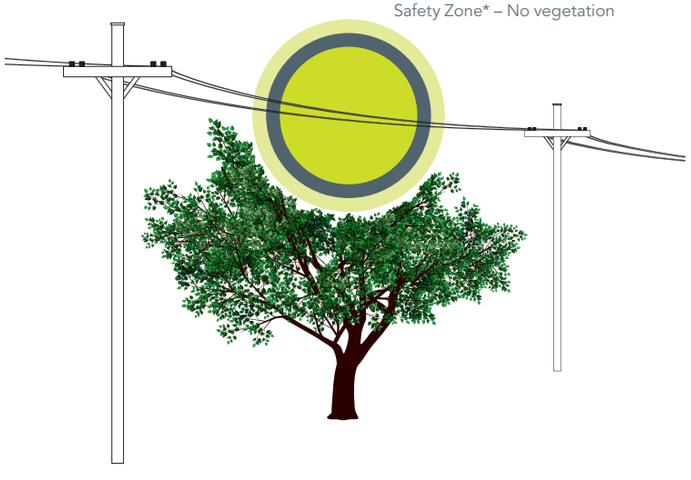
An allowance also has to be made for regrowth of the tree to ensure the minimum safety clearance is kept for 12 months.

Keeping the tree healthy

Endeavour Energy prunes each branch to the nearest point that will protect the tree from infection and encourage strong, healthy regrowth.

Bushfire prevention

In bushfire prone areas, approximately 0.5 metres extra clearance is required around power lines to reduce the chance of vegetation igniting from electricity.



- 2.5 – 4.0m safety clearance
- 1.0m for regrowth
- Cut to point that protects tree from infection

WILL THE TREE GROW BACK?

Endeavour Energy's practices ensure the tree growth is healthy and strong. How quickly a tree grows back depends on the time of year and species of tree.

Vegetation removal can sometimes reveal existing dead branches in a tree. While this might not be attractive it is not an indication of an unhealthy tree.

Shortly after vegetation clearance

Nine months after vegetation clearance