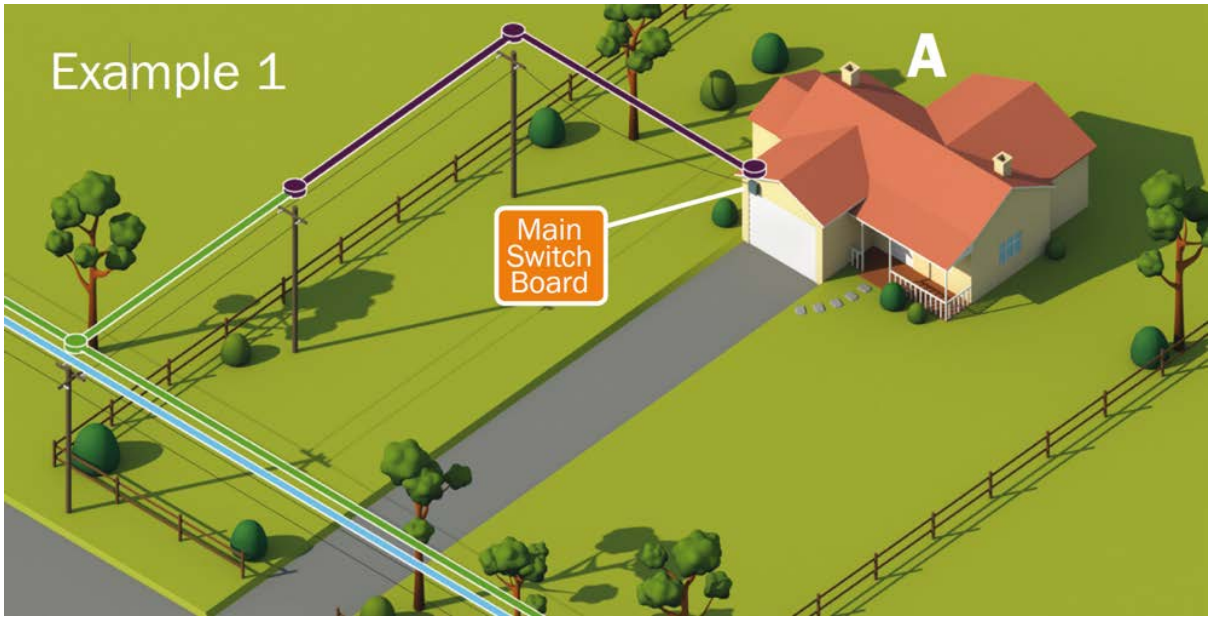
# ISSC 31

## Guideline for the Management of Private Overhead Lines

Minimum Requirement for Safety Management of Private Overhead Lines

September 2019



# Table of Contents

## 1. Name of document

This document is called the Guideline for the Management of Private Overhead Lines. It is made for the purposes of indicating the minimum safety requirements for those responsible for management of *private overhead lines* forming part of *consumers mains*.

## 2. Commencement

This guideline commences operation from September 2019.

## 3. Revision history

This 2019 guideline replaces the 2004 version. It is recommended that it is reviewed on a 5-year basis aligning with the Australian Energy Regulator's regulatory determination reset periods where possible.

## 4. Definitions

| | |
|---|---|
| Bushfire Prone Area (BPA) | an area of land that can support a bushfire or is likely to be subject to bushfire attack, as designated on a bushfire prone land map. A *bushfire prone area* may also be defined by the network operator utilising data, advice and mapping information provided by the Rural Fire Service or other available relevant sources - Refer to ISSC3 2016. |
| connection point | in relation to the premises of a *customer* or a class of *customers*, means the point of connection to an *electrical installation* supplying electricity to the premises as determined in accordance with the Service and Installation Rules of New South Wales, as in force from time to time, published by the Department of Planning, Industry and Environment (DPIE). |
| consumers mains | the conductors between the *connection point* and the main switchboard or service equipment enclosure and which form part of an *electrical installation*. *Consumers mains* may be overhead, underground or within a structure.<br>Noting that this guideline is only applicable to "overhead". |
| customer | an individual or entity who (either personally or through an agent) applies for or receives or makes use of a connection of an *electrical installation* to the *electricity supply's distribution network*. |

| | |
|---|---|
| electricity assets | for the purposes of this guideline, the above ground electrical assets of an *electricity supply distribution network* (including supporting and related infrastructure such as warning signs).<br>This may include assets under private or public ownership, and includes customer-owned connection assets – Refer to ISSC3 2016. |
| electricity supply distribution network | the *electricity assets* that are used to convey and control the supply of electricity to or from the *customer's connection point* (i.e. consumers or generators).<br>In NSW this typically includes electricity supply assets that operate up to and including a voltage level of 132kV – Refer to ISSC3 2016. |
| electricity supply authority | the operator of the electricity supply distribution network. |
| electrical installation | as defined in the Service and Installation Rules of NSW relevant at the time.<br>Extract of the Service and Installation Rules of NSW:<br>as defined by the *Gas and Electricity (Consumer Safety) Act 2017 (NSW)*: any fixed appliances, wires, fittings, apparatus or other electrical equipment used for (or purposes incidental to) the conveyance, control and use of electricity in a particular place, but does not include any of the following:<br>(a) Any electrical equipment used, or intended for use, in the generation, transmission or distribution of electricity that is:<br>(i) owned or used by an *electricity supply authority*, or<br>(ii) located in a place that is owned or occupied by such an authority.<br>(b) Any electrical article connected to, and extending or situated beyond, any electrical outlet socket.<br>(c) Any electrical equipment in or about a mine.<br>(d) Any electrical equipment operating at not more than 50 volts alternating current or 120 volts ripple-free direct current.<br>(e) Any other electrical equipment, or class of electrical equipment, prescribed by the regulations. |
| Electricity Network Safety Management System (ENSMS) | a safety management system as defined in the *Electricity Supply (Safety and Network Management) Regulation 2014 (NSW)*. |
| high voltage site or customer | a high voltage supply (>1000 volts) site which is privately owned and operated. Private *high voltage customers* operate under a special connection agreement and have greater responsibility and obligations than typical low voltage customers. |

| | |
|---|---|
| Installation Safety Management Plan (ISMP) | this plan is owned and developed by the high voltage installation responsible person (the *high voltage customer*) and considers the compliance requirements of the *Service and Installation Rules of NSW, AS/NZS 2067, AS/NZS 3000, Gas and Electricity (Consumer Safety) Act 2017(NSW), Gas and Electricity (Consumer Safety) Regulation 2018 (NSW), Electricity Supply Act 1995 (NSW), Electricity Supply (General) Regulation 2014 (NSW), Electricity Supply (Safety and Network Management) Regulation 2014 (NSW), Work Health and Safety Act 2011 (NSW), Work Health and Safety Regulation 2017 (NSW)* as well as the network operator's high voltage connection agreements and Standards. It is the customer's primary document relating to the electrical network within their high voltage *electrical installation*. It includes, but is not limited to site specific safety rules, switching instructions, maintenance procedures, commissioning and operating procedures. |
| ISSC | Industry Safety Steering Committee |
| network operator | for the purposes of this guideline the entity that has responsibility for the safe and reliable operation of an *electricity distribution supply network* in NSW, or its authorised representative.<br>The *network operator* may or may not be the owner of the *electricity assets* but will have legal responsibility for their safe operation in accordance with the *Electricity Supply (Safety and Network Management) Regulation 2014 (NSW)* and other relevant legislation. Refer to ISSC3 2016. |
| private overhead line | a private overhead line is an aerial powerline or aerial *consumers mains* which has been determined by the network operator to be the responsibility of a private entity or private landowner. |
| submains & subcircuits | low voltage overhead or underground mains, belonging to a *customer*, that extend beyond the main switchboard or metering unit. |

# 5. Legislation and standards referenced within this guideline

Many legislative instruments and standards are updated and republished from time to time. The following list provides a guide to the appropriate legislation at the time of this Guideline's publication.

AS/NZS 2067 - Substation and high voltage installations AS/NZS 3000 – Electrical Installations (known as the Australian/New Zealand Wiring Rules)

Gas and Electricity (Consumer Safety) Act 2017 (NSW)

Gas and Electricity (Consumer Safety) Regulation 2018 (NSW)

Electricity Supply Act 1995 (NSW)

Electricity Supply (General) Regulation 2014 (NSW)

Electricity Supply (Safety and Network Management) Regulation 2014 (NSW)

Service and Installation Rules of NSW

Work Health and Safety Act 2011 (NSW)

Work Health and Safety Regulation 2017 (NSW).

# 6. Purpose of guideline

## 6.1. Purpose

The purpose of this guideline is to inform those with responsibility for *private overhead lines* of the safety obligations and requirements and to assist them to understand their obligations and, in particular, to support the objectives of the *Electricity Supply (Safety and Network Management) Regulation 2014 (NSW)* associated with:

(a) the safety of individuals and other members of the public and

(b) the safety of persons working on *private overhead lines* and

(c) the protection of property (whether or not belonging to *the customer)* and

(d) the management of protection of the environment (for example, preventing bushfires that may be ignited by private lines

(e) the management of safety risks that may arise in the network due to private aerial *consumers mains*.

This guideline is provided because *private overhead lines*, if not properly maintained, can become a potential source of electric shock and/or fire ignition.

The potential fire risk associated with private overhead lines is a major focus of this guideline.

The guideline's intended audience is:

- private landowners – to provide guidance on the managemnt of bushfire and safety risks asspociated with aerial conductors (covered by *AS/NZS 3000*) that are not service mains
- network operators – to provide guidance on the discharge of their responsibilities under the relevant Act and regulations relating to the role they play in management of risks associated with private overhead lines.

# 7. Scope and application of guideline

## 7.1. Scope

This document is to give guidance for satisfying the obligations under the *Electricity Supply Act 1995 (NSW)* and associated regulations. In particular, so that the risks posed by *private overhead lines* including aerial *consumers mains* are managed in accordance with the *Electricity Supply (Safety and Network Management) Regulation 2014 (NSW)* as it relates to safety and bushfire risk management. (Refer to Clause 7 of the Regulation). This includes privately owned or operated high voltage and Low Voltage overhead lines.

*Customer* / Owner Reference

It is recognised that Owner / Occupier (*customer*) tenancy agreements vary in regard to responsibilities for repairs and maintenance. The owner or property manager has ultimate responsibility for ensuring a property used by others is safe to occupy and use. Responsible ownership includes clear instructions to non-owner occupiers for dealing with urgent repairs or unsafe installations.

It is also recognised that the *network operators* typically deal directly with *customers* to whom they have connection agreements on matters of safety relating to an occupied property. Therefore, for the purpose of managing the safety of *private overhead lines* or aerial *consumers mains*, it is the *customers* or occupiers which may be initially notified of an unsafe situation by a *network operator* and it is the *network operator's* expectation that a *customer* or occupier will either act on behalf of, or pass such matters onto, the relevant parties responsible for rectification. This is no different to the expectations of occupiers for other general matters of safety relating to occupation of a property.

## 7.2. Exclusions

This guideline is applicable to *private overhead lines* including aerial *consumers mains*. It does not apply to:

- underground wiring systems or installations
- overhead *submains and subcircuits*

which are governed by AS/NZS 3000 Wiring Rules.

However, without obligation to do so, the *network operator* may identify and report private defects past the main switchboard or metering unit; namely, where the overhead *submains/subcircuits* form a continuous overhead line with a *private overhead line* or aerial *consumers mains* (i.e. the main switchboard is mounted on a pole) or *network operator* owned distribution mains (i.e. instances involving pole top transformers), at their discretion. For example they may exercise this discretion where the defects are readily observed in the course of routine inspection of a *private overhead line*.

### 7.3. Application

This guideline is applicable to overhead lines between the designated *connection point* and the *customer's* distribution board (i.e. *Consumers Mains*). Electrical assets downstream of a *Customer's* Distribution Board are governed by the AS/NZS 3000 Wiring Rules and operated in accordance with installation safety regulations.

*Customers* may be advised of unsafe aerial *consumers mains* and attachments by the *network operator* where the *network operator* considers a public safety hazard exists such as potential for electrical shock and/or bushfire risk.

### 7.4. Responsibilities

The ***owner*** of a *private overhead line* has a responsibility to ensure that line is designed, constructed, inspected and maintained to the relevant standards (AS/NZS 3000 Wiring Rules and NSW Service and Installation Rules). This includes engaging appropriately qualified persons to undertake works.

Private poles and overhead powerlines that aren't properly maintained can become a serious bushfire or safety risk. Owners are responsible for the safe maintenance and operation of such electrical assets located on their premises. Responsibility may include the ongoing maintenance and inspection of private poles, powerlines, related fittings and the removal of vegetation growing too close to powerlines, by qualified persons.

Where a ***customer*** occupies a property and is not the owner or property manager, they should take actions to ensure matters of safety that come to their notice are acted on by the relevant persons in a timely manner.

The *electricity supply distribution network* operator may have specific bushfire risk management requirements for *private overhead lines* connected to its network. These requirements may form part of their *Electricity Network Safety Management System* (ENSMS) requirements.

*Customers* and /or property owners should attend to the following matters:

- maintenance of adequate clearance of *private overhead lines* to trees (refer to ISSC3: Guide for the Management of Vegetation in the Vicinity of Electricity Assets for guidance on minimum safety clearances)
- ensuring overhead wires and associated components remain in serviceable working order, and due to their condition, are not likely to pose a fire ignition risk or other public safety risk

- private poles and other overhead structures used to support overhead lines are inspected and maintained such that their mechanical strength, insulation quality and clearances meet required standards and are fit for purpose
- *private overhead lines* are constructed to the standards of the AS/NZS 3000 Wiring Rules, the Service and Installation Rules of NSW. This includes meeting the bushfire mitigation requirements of the *network operator*
- defects notified by a *network operator* are attended to in accordance with the notice requirements to avoid disconnection of supply, or other action by the network operator.

***Network operators*** will determine the demarcation point between the network and *private overhead lines*.

Safety network regulations require network operators to apply an EENSMS that amongst other things, manages bushfire risk associated with aerial consumers mains.

The *network operator* may give directions under Division 2A of Part 5 of the *Electricity Supply Act 1995 (NSW)*. This is as described in the *Electricity Supply (Safety and Network Management) Regulation 2014 (NSW).* Refer to Part 2, Division 1, Clause 7.

### 7.4.1. Special powers - Part 5 Division 2A Electricity Supply Act 1995 (NSW)

The Intent of the special powers for bushfire prevention provided in the *Electricity Supply Act 1995 (NSW)* is to ensure individuals and communities are protected from the risk of bushfires due to poorly maintained private aerial *consumers mains*. These require timely rectification of notified private defects that could be the source of fire ignition.

The *network operator* may issue defect notices to the *customer* to undertake bushfire risk mitigation work when it has determined that the *customer*'s aerial *consumers mains* may pose a fire ignition risk. *Network operators* may periodically inspect overhead *consumers mains* where such inspections form part of the *network operator*'s network safety management system. The inspection(s) will be conducted in accordance with the *network operator*'s requirements and standards.

Defects (directions for bushfire risk mitigation work) identified on aerial *consumers mains* will be referred to the *customer* (see 7.4.2) for rectification, and managed in accordance with Division 2A of the *Electricity Supply Act 1995 (NSW)* and the *network operator*'s procedures.

#### 7.4.1.1. Failure to undertake bushfire risk mitigation work on private land

If bushfire risk rectification works are not undertaken within the timeframe specified by notice, the *network operator* may enter the property and carry out the required work and recover reasonable costs as a debt owed by the owner in accordance with the *Electricity Supply Act 1995 (NSW)*.

### 7.4.2. *Customer* notices

Defects, corrective and replacement works identified on aerial *consumers mains* will generally be referred to the *customer* by written notice. Other notification methods may be used where the matters are urgent. Costs for rectification are generally the *customer's* responsibility.

The *network operator* may issue a defect notice to the *customer* with respect to any tree located on their premises, any structure or thing or any bushfire risk mitigation work required to be done on their land or premises.

Communications by way of a notice will specify particulars about the defect and an appropriate timeframe for rectification which may depend on the level of assessed risk. This may include safety defects identified other than those relating to bushfire risk e.g. with potential for public shock or electrocution.

### 7.4.3. Disconnection for failure to act on notices

Notwithstanding section 7.4.1.1 for rectification on bushfire prone lands, if rectification works are not undertaken within the timeframe specified by notice, and the *network operator* reasonably considers that a *private overhead line* or installation is or is likely to become unsafe if left connected, the *network operator* may disconnect supply, subject to its obligations under the principal energy laws relating to disconnection. These include the *Gas and Electricity (Consumer Safety) Act 2017 (NSW), Gas and Electricity (Consumer Safety) Regulation 2018 (NSW), Electricity Supply Act 1995 (NSW), Electricity Supply (General) Regulation 2014 (NSW), Electricity Supply (Safety and Network Management) Regulation 2014 (NSW), National Energy Retail Law (NSW),* and the *National Energy Retail Rules*.

Reasonable Considerations include:

- if reasonable to do so, notifying each *customer* in respect of the premises of its intention to disconnect the premises, and the steps (if any) that the *customer* can take to avoid the premises being disconnected or
- if it reasonably considers that there is an immediate danger to life or property, or an immediate risk of starting a fire, immediately disconnect the premises without notice.

## 7.5. Private *high voltage customers*

Private *high voltage Customers* have additional responsibilities to private low voltage *customer*. *High voltage customers* must inspect, maintain, and operate lines in accordance with the provisions set out in the *Service and Installation Rules of NSW* and the network connection agreement. They may be required to provide an *electricity supply distribution network operator* with documents as evidence of compliance to safety standards and conditions set out in their network connection agreement.

*Customer*s who take supply at high voltage must bear the responsibility and costs associated with the private network including:

- transformer energy losses
- the purchase, installation, operation, testing and maintenance of high voltage equipment
- spare equipment
- insurance, interest and depreciation
- compliance with the electricity distributor's Safety Management System.

### 7.5.1. *High voltage customer* Safety Management Plan

Each *high voltage customer* shall have a *high voltage Installation Safety Management Plan (ISMP)*. This plan considers the compliance requirements of the *Service and Installation Rules of NSW* and other relevant codes, guides, and plans. The *ISMP* shall also consider requirements of relevant acts, regulations, and connection agreements (including bushfire risk).

A *high voltage customer* is wholly responsible for the safe maintenance and operation of the private electrical network within their *high voltage site*. An unsafe electrical network may pose a serious bushfire threat or safety risk to properties or people beyond the physical place in which it is located.

### 7.5.2. New *high voltage customer* connection requests

The *network operator* may adopt connection processes to confirm that the *ISMP* covers maintenance of the private network taking into account risk(s) such as bushfire. This applies for *high voltage customer*s wishing to connect to the *network operator's* network in the future.

### 7.5.3. *High voltage customer* notification and bushfire risk assurances

In accordance with the *network operator's* policies of the *Service and Installation Rules of NSW*, existing *high voltage customer*s with overhead connections to the network located within *bushfire prone areas*, may be required to provide the following assurances, prior to the start of each bushfire danger period:

- the *high voltage customer* has an *ISMP* in place and complies with their *ISMP*
- the *ISMP* covers maintenance for the whole private network (including mains and equipment) taking into account risk(s) such as bushfire
- the *high voltage customer*'s electrical network is free from defects that could pose a potential bushfire risk
- the *high voltage customer* responds to the *network operator* request for written assurances in a reasonable timeframe to meet the safety regulator's (Independent Pricing and Regulatory Tribunal or IPART) reporting requirements.

### 7.5.4. Actions where safety risks are identified

The *network operator* may disconnect private *high voltage sites* from the network in cases where the public risk or risk to the network is unacceptable – refer to 7.4.3.

## 7.6. Scenarios requiring *network operator* review and specific determination

Due to policy legacy issues, in a small number of cases the classification and responsibility of a *private overhead line* site may require a specific review and determination by the *network operator*. The *network operator* may consider these on a 'case by case' basis.

## 7.7. NSW safety regulator (IPART) requirements

The safety regulator has an interest in matters of safety relating to *private overhead lines.* This includes how the risks are managed within the framework of an ENSMS.

## 7.8. Ringfencing of works associated with *private overhead lines*

The economic regulator (Australian Energy Regulator) has introduced ringfencing guidelines in regard to works on *private overhead lines*.

The ringfencing guidelines can be found at the AER's website (https://www.aer.gov.au/networks-pipelines/ring-fencing).

The AER ringfencing guidelines prevent the network operator doing work considered to be contestible works within the responsibility of electrical contractors or ASPs.

## 7.9. Replacement or construction consideration in *bushfire prone areas*

Persons responsible for *private overhead lines* including aerial *consumers mains* requiring replacement or maintenance should consider conversion to underground given the potential risks of aerial lines. The cost of an alternative low voltage underground cable may be comparable to any required overhead works, particularly when considering costs over the life of the installation.

*Customer*s should consider the whole of life cost of a *private overhead line*, including:

- the initial installation costs
- ongoing maintenance and inspection costs, including maintenance of vegetation clearances
- the potential legal and insurance costs which may arise from *private overhead lines* which fail resulting in third party property damages or injury, for example associated with bushfires or public shock events
- safety responsibility for occupants, workers, and visitors whilst on private property.

Underground *consumers mains* provide benefits over overhead including:

- reduced bushfire risk
- reduced public safety risk due to avoidance of inadvertent contact with overhead lines associated with agriculture activities, fallen lines due to storms and/or trees, and vehicle collision with poles or stays
- reduced risk exposure for electrical workers (e.g. avoiding the need to work at heights)
- aesthetic value (which may improve property value)
- lower maintenance costs
- better reliability (less storm and tree damage exposure).

For these reasons, private property owners are encouraged to adopt underground private lines when considering replacement or maintenance of existing overhead lines or for new installations, particularly in *bushfire prone areas*.

Connection of newly constructed aerial *consumers mains* to networks may not be permitted by *network operators* in *bushfire prone areas*. Installers should contact Councils and the relevant *network operator* to ascertain requirements before installing aerial systems.

The applicable requirements are specified in:

- *Electricity Supply (Safety and Network Management) Regulation 2014 (NSW)*

  Part 2; Division 1 *Preliminary and General*; Clause 7 *Content of a safety management system* Clause (1)(b)(v) *management of bushfire risk relating to aerial consumers mains on bushfire prone land that is private land in respect of which the network operator may give directions under Division 2A of Part 5 of the Act*

- AS/NZ3000: 2018 Electrical Installations – "The Wiring Rules". Clause 3.12 Aerial Wiring Systems

  *Note: The use of aerial wiring systems may be prohibited by the relevant regulatory authority in some areas, particularly those areas at risk of bushfire.*

- Service and Installation Rules of New South Wales – November 2018

  Overhead Services: Clause 3.1.1 Approval for an Overhead service;
  3.3 Aerial Consumers Mains: Clause 3.3.3 Maintenance.

# 8. Contributions and disclaimer

In the development of this guideline, the following parties are represented on the working group:

### 8.1. NSW Electricity Distributors

Essential Energy

Endeavour Energy

Ausgrid

### 8.2. NSW Government agencies

Department of Planning, Industry and Environment, New South Wales

SafeWork NSW

### 8.3. Other stakeholders review

National Electrical and Communications Association (NECA)

### 8.4. Disclaimer

The State of NSW, its agents and employees expressly disclaim and do not verify any information or representation, express or implied in this document and are not liable (whether by reason of negligence, error or omissions, lack of care or otherwise) to any person for any damage, cost, loss or expense whatsoever which has occurred or may occur in relation to that person relying on the accuracy of this document, or taking or not taking (as the case may be) action in respect of any information or representation referred to above in respect of the document.