ISSC 31
Guideline for the Management of Private Overhead Lines

1st July 2004
PREFACE

This Guideline was prepared for the Industry Safety Steering Committee by a working group of NSW electricity distribution network operators facilitated by the Department of Energy, Utilities and Sustainability (DEUS). Their final draft was forwarded for review by all affected industry parties with comments and alterations incorporated in the final document. The electricity distribution network operators included are responsible for the design, construction, operation and maintenance of electricity network infrastructure, including overhead power lines, for the purpose of supplying electricity to customers.

The Guideline is intended to provide a basis for electricity distribution network operators to establish and implement an effective management plan to ensure private lines forming part of consumers installations are maintained in a safe condition.

This Guideline is therefore intended to be used by electricity distribution network operators with the responsibility for ensuring private lines are maintained in bush fire prone areas.

The Office of Fair Trading administers the licensing provisions for qualified person(s) performing work on electrical installations. The construction, inspection, vegetation management, maintenance and repair of customer installations shall only be performed by appropriately trained, qualified, authorised and competent persons.

This Guideline sets minimum industry standards, but is advisory only. It does not substitute for, or override, any legislation, regulation or safety rules implemented by jurisdictional regulators or electricity distribution network operators.

The delineation of the point of supply, particularly of those which are covered by earlier agreements and policies prior to the commencement of the current NSW Service & Installation Rules is not within the scope of this guideline.

DISCLAIMER

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

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

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

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

The *Electricity Supply (Safety and Network Management) Regulation 2002* came into force on 1st September 2002. This regulation requires electricity distribution network operators, when directed by the Director General of the Department of Energy, Utilities and Sustainability (DEUS), to prepare a number of safety plans, including Customer Installation Safety Plans (CISP) and Bush Fire Risk Management Plans (BFRMP) and lodge them with the Department.

Under the provisions of Clause 29 of the *Electricity Safety Act 1945*, customers must ensure that the prescribed parts of an electrical installation, whilst it is connected to the supply, are maintained in accordance with the regulations to ensure the installation remains free from any defect likely to cause fire or otherwise make the installation unsafe.

A CISP under the regulation must include, but is not limited to, “design, construction and maintenance standards required of customers for their electrical installations”.

The new regulation introduced requirements designed to minimise the risk of electricity networks and private electrical installations or lines starting bushfires. Clause 9(2) (f) of the *Electricity Supply (Safety and Network Management) Regulation 2002* requires that a Bush Fire Risk Management Plan includes:

“...provisions that ensure that any private overhead electricity lines located in bush fire prone areas and capable of initiating a bush fire are inspected, tested and maintained in accordance with the maintenance schedule set out in the analysis of hazardous events in the network management plan, and that standards are enforced by the distributors”.

There are several approaches designed by electricity distribution network operators to satisfy this obligation. It was agreed that in the interests of safety, there should be some commonality in these approaches and that this could be best addressed by the development of an industry guideline. As such a guideline has a safety outcome, it was seen as appropriate to establish a Working Group reporting to the Industry Safety Steering Committee (ISSC).

Bush fire prone areas are defined in Appendix A.

2 SCOPE

The scope of this guideline is to give guidance on satisfying obligations under the *Electricity Safety Act 1945* and the *Electricity Supply Act 1995* and associated regulations. In particular guidance is provided in relation to the *Electricity Supply (Safety and Network Management) Regulation 2002* as it relates to Customer Installation Safety Plans (CISP) and Bush Fire Risk Management Plans (BFRMP).

This guideline applies to the customer installation which commences at the designated point of supply.

3 POINT of SUPPLY

The point of supply for a customer may be:

- Known and agreed to by the customer and the electricity distribution network operator;
• Documented by the electricity distribution network operator;
• Investigated by the electricity distribution network operator with the customer advised;
• Subject to disagreement, and yet to be determined; or
• Not yet determined.

The delineation of the point of supply, particularly those situations which are covered by earlier agreements and policies prior to the commencement of the current NSW Service & Installation Rules is not within the scope of this guideline.

4 PURPOSE

The purpose of this guideline is to give guidance on the approach needed to meet the objectives of the plans electricity distribution network operators are required to lodge and implement under the Electricity Supply (Safety and Network Management) Regulation 2002, regarding the provision of safe overhead power lines within electrical installations.

Relevant objectives of this guideline include but are not limited to:
• Enhancing the safety of electrical installations, including vegetation safety clearances;
• Improving public safety; and
• Minimising the possibility of fire ignition by private overhead electricity lines;

5 APPLICATION

The Guideline is to be used for determining an approach to the Management of Private Overhead Lines to ensure that network operators, customers, property owners, contractors, Accredited Service Providers, local councils and government agencies and other relevant stakeholders move towards a clearer understanding of the ownership and responsibility for private lines.

In addition the intent of the Guideline is to ensure that private overhead lines in bushfire-prone areas are maintained in accordance with the Electricity Supply (Safety & Network Management) Regulation and the Bush Fire Risk Management Plan.

The guideline is also intended to enhance the understanding in the community of the responsibility of customers for the maintenance of their electrical installations.

6 AVAILABILITY

The Guideline shall be available to stakeholders from the web sites of the Department of Energy, Utilities and Sustainability and electricity distribution network operators.

7 DESIGN

Private overhead lines are to be designed to AS/NZS 3000: the Wiring Rules, the NSW Service and Installation Rules and the electricity distribution network operator’s requirements, in accordance with Clause 9 (2) (d) of the Electricity Supply (Safety and Network Management) Regulation 2002. Insulated aerial conductors or underground cables should be used for Low Voltage private lines, particularly in bush-fire prone areas.
8 CONSTRUCTION

Construction of private overhead lines shall only be carried out by competent persons who are appropriately licensed or exempted (such as employees of electricity supply authorities whose principal work is not electrical wiring work, but is part of their normal duties) under Clause 15 of the Home Building Regulation 1997.

Testing, connection and notification of work performed shall be carried out in accordance with the procedures required by the Electricity Safety (Electrical Installations) Regulation 1998 and the requirements of the electricity distribution network operator for contractors undertaking electrical installation work.

9 INSPECTION AND MAINTENANCE

Private overhead lines shall be subject to the following inspection and maintenance procedures in accordance with the Electricity Safety Act and regulations and standards determined by the electricity distribution network operators. Procedures should include, but are not limited to:

- Checking periodically by appropriately qualified persons;
- Visual inspection for obvious defects on an annual (in bush fire prone areas) basis prior to the commencement of the bush fire season;
- Maintenance of vegetation safety clearances;
- Inspection on a regular detailed basis, including below ground examination of the pole and the pole top hardware and conductors;
- Repairs in a timely manner of any identified defects such as broken wires, damaged insulators, crossarms or poles and unevenly sagging conductors; and
- Fitting of conductor spreaders to low voltage lines (where necessary).

Maintenance of private overhead lines shall only be carried out by competent persons, appropriately qualified to carry out the tasks involved.

10 INFORMATION FOR CUSTOMERS

Network operators shall make available to customers information which may lead to improved management of private overhead lines. Such information may include:

- Details of equipment types or construction methods which have become known in their operation or design to have potential to cause a risk to persons or property;
- Information about the potential fire hazard associated with overhead power lines, particularly from vegetation and during storms or conditions of high fire hazard;
- Information describing the locations of bush fire prone areas should be available from the relevant local council (see Appendix A); and
- Electricity distribution network operators’ powers to enter private property to carry out inspections of customer’s private lines (including below ground pole inspection) and to require production of maintenance records are provided under the Electricity Safety Act 1945 and the Electricity Supply Act 1995. (These powers are presently being revised as part of the review of the Acts.)
11 APPROACH TO MANAGING PRIVATE LINES

Electricity distribution network operators will adopt a risk management approach to the management of the maintenance of private overhead lines by customers. The following are recommended elements of a guideline for electricity distribution network operators.

11.1 Customer Awareness

11.1.1 Customer Obligation – Information and Ownership

In order for customers to be able to ensure that the maintenance of their private overhead lines is carried out, it is necessary that the point of supply and their responsibility for maintenance of their installation be clearly communicated to and understood by customers. Consequently, electricity distribution network operators shall make information available in an appropriate form to achieve this aim.

Electricity distribution network operators should where possible have typical diagrams identifying the point of supply, and documentation available which will enable customers, and the qualified persons carrying out maintenance activities on behalf of customers to identify those assets for which customers are responsible.

It is recognised that due to the evolutionary nature of the electricity industry in NSW that a range of points of supply may exist. Previous organisations have merged to form expanded electricity distribution network operators and there may be alternate agreements which are still valid which will alter the typical arrangements. For example, some customers may have easements covering extended consumers mains and have shared maintenance responsibilities.

Where the point of supply cannot be readily determined and clearly communicated to customers, the electricity distribution network operator shall ensure that the inspection and maintenance is carried out.

The electricity distribution network operators shall also ensure that information regarding safety and bush fire prevention measures is available to customers with private electrical installations including private overhead lines connected to its network.

Electricity distribution network operators shall also include information advising that all work on or near overhead power lines poses a high risk to persons or property. Such work should only be undertaken by appropriately qualified and suitably competent for the task professionals in accordance with all relevant prescribed safe working procedures.

This information may be provided via electricity retailers or other means appropriate to each electricity distribution network operator.

Customers are responsible for ensuring owners of the electrical installation are advised of the need for the maintenance of the private electrical installation which may include private overhead lines. Tenants should therefore ensure that the information is conveyed to the property owner where necessary.

Each electricity distribution network operator should therefore establish a program to disseminate information to customers aimed at progressively leading to improved understanding by customers of the point of supply and their consequent responsibility. Such communication is likely to occur over a period of time.
11.1.2 Relevant Standards

The electricity distribution network operator shall advise the customer or the appropriately qualified persons engaged by the customer of the availability of the relevant electricity network industry guidelines which describe the inspection and preventative maintenance process for each element of the customer’s installation. For example, this may include information regarding the manner and frequency of inspection for items such as poles, pole fittings and overhead conductors and safety clearances to vegetation.

The following standards and guidelines will provide the benchmark for maintenance of private powerlines. However where individual electricity distribution network operators have issued guidelines, these will take precedence.

Relevant Industry Guidelines may include, but are not limited to the current editions of:

- *EC8 February 1993 Electricity Council of NSW Guide to the Inspection, Assessment and Preservation of Wood Poles*;
- *ISSC3 Guide to Managing Vegetation near Power Lines – Integrating Community, Safety and Environmental Values*;
- *Requirements for High Voltage Customers* (refer to Appendix B of this guideline);
- *Installation of LV Spreaders on Existing Uninsulated LV OH Conductors* (refer to Appendix C of this guideline);
- *Relevant NENS Guidelines* (e.g. Safe Approach Distances Guideline etc.)

The above documents will generally be available on the Department’s web-site or from the Electricity Supply Association of Australia.

11.2 Network Operator Review

Network operators should institute a review process to establish:

- Private overhead lines are being inspected and maintained in accordance with the *Electricity Safety Act* and the *Electricity Supply (Safety and Network Management)* Regulation.
- The level of compliance with guidelines for inspection and maintenance of private overhead lines;
- The effectiveness and timing of any identified necessary maintenance works.

Where private overhead lines have not been inspected and maintained or contain identified defects which have not been rectified or repaired, then the relevant part of the customer’s installation may be subject to disconnection.

Electricity distribution network operators shall consider the results of this review process, by analysis of data from sources such as regulatory reports and their own incident reporting systems. Formal audit processes shall be instituted if found necessary to ensure the aims identified above.

Following this review process, the customer awareness and inspection programs of electricity distribution network operators shall have such amendments and changes made as is found necessary to remedy any identified deficiencies.
This review shall form part of an on-going management process to ensure that the safety and bush fire prevention management of customer installations remains effective.

Network operators may notify the Office of Fair Trading where their review of the operation of this process suggests that action by the Office of Fair Trading may be necessary to ensure that private lines are being maintained satisfactorily.

12 COMPETENCY REQUIREMENTS / PERSONNEL

The Office of Fair Trading administers the licensing provisions for qualified person(s) performing work on electrical installations. The construction, inspection, vegetation management, maintenance and repair of customer installations shall only be performed by appropriately trained, qualified, authorised and competent persons.
APPENDIX A: DEFINITIONS

Accredited Service Provider: means a person who has been accredited through an accreditation scheme, approved by the Minister, to undertake contestable works.

Bush Fire Prone: The Rural Fires and Environmental Assessment Legislation Amendment Act 2002 requires councils to map bush fire prone land within their local government area, and for councils to request the Commissioner of the NSW Rural Fire Service to designate land within a council area to be bush fire prone. For the purposes of this guideline, the bush fire prone land and property maps produced by local councils may be used by electricity distribution network operators to designate land which is bush fire prone.

Conductor Spreader: means an insulated device attached to conductors in the span between the supporting structures to maintain the separation between the conductors and so prevent conductor clashing;

Consumers Installation: as defined in the Electricity (Consumer Safety) Act means all the electric wires, cables, appliances, fittings, insulators and apparatus installed in, on, under or over any land or premises and used for, or for purposes incidental to, the conveyance, measurement, control or use of electricity supplied (or intended to be supplied) by an electricity distributor, but does not include:

- an electricity distribution system or service line, meter or apparatus being the property of an electricity distributor, accredited meter provider or retail supplier and used solely for the conveyance, measurement or control of electricity supplied to any land or premises, or
- movable electrical equipment.

Contestable Works: means works on the electricity network, funded by and undertaken at the request of customers or other external parties;

Contractor: means any person or organisation carrying out work for a customer;

Customer: means an individual or entity who (either personally or through an agent) applies for or receives or makes use of a connection of a consumers installation to an electricity distributor’s distribution system.

Industry Safety Steering Committee: means a committee instituted by the Department of Energy, Utilities and Sustainability formed of representatives of the electricity transmission and distribution industry, trade unions and other relevant stakeholders to examine and provide recommendations and documentation for use by the industry to improve safety for the public and workers;

Inspection: means an especially careful examination;

Point of Supply: means the junction of the electricity distributor’s conductors with the consumers mains, formerly known as the consumers terminals (AS / NZS 3000: 2000 definition 1.4.71);

Private Line: means an electricity line (either overhead or underground) which is part of the electrical installation as defined in the Electricity (Consumer Safety) Act;

Test: means a logical methodology with or without test instruments to ascertain whether an electrical installation meets required performance standards;

Vegetation Safety Clearances: means the required clearance distances between vegetation and the electricity conductors.
APPENDIX B: SUGGESTED FORM OF ADVICE LETTER FOR HV CUSTOMER

HV Customer
ZZZ Company
xxx
yyy
Bushfire Area

Date

Dear Sir

IMPORTANT SAFETY INFORMATION
Inspection of Electrical Equipment Prior to Each Bush Fire Season

If your electrical installation, including any private powerlines or poles cause injury or damage to property, you may be legally liable.

Bush fires pose a risk to life, property and the environment in rural and urban areas throughout New South Wales.

As our customer, you have a legal obligation under the Electricity Safety Act 1945 to ensure that your electrical installation, including any powerlines and poles are free from any defects that may cause a fire or other hazard. Overhead powerlines which have not been maintained may clash or be brought down by strong winds, or trees and branches which are too close to the power line or by defective poles or fittings. This may create a serious safety and fire risk.

Helping prevent accidents, including bush fires is a responsibility we all must share. Just as (Distribution Network Operator Name) maintains the powerlines and poles that it owns, high voltage customers with privately-owned powerlines are required to do the same.

Your Obligation

(Distribution Network Operator Name) requires you to arrange for an inspection to be undertaken annually in bushfire prone areas by appropriately qualified professionals, prior to the start of the bushfire season, of any overhead powerlines and poles that are part of your electrical installation(s). This inspection must cover the identification of any defects that may be capable of initiating a fire. You must also ensure that any such defects are corrected by appropriately qualified professionals prior to the commencement of each bush fire season. This includes the clearance of vegetation that may be within the standard clearance envelope. You are also responsible for regularly organising a detailed...
inspection of your private powerlines and poles (including below ground pole inspection and treatment) by qualified persons.
In order that both your company and (Distribution Network Operator Name) may meet the obligations under the Electricity Supply Act and the Electricity Safety Act, you are advised to document a statement of compliance with the above process (i.e. the identification and correction of any defect capable of initiating a fire) as part of the electrical installation maintenance plan in your occupational health and safety risk management system. (Distribution Network Operator Name) or NSW government agencies may require production of this statement as part of a review of installation safety or following an electrical accident or incident.

Given the importance of this requirement we encourage you to contact (Distribution Network Operator Name) should you require any further clarification of your obligations. Information including the ISSC 31 Guideline for the Management of Private Overhead Lines is available on our website. We thank you for your assistance in our joint efforts to ensure the safety of our customers and environment during the next summer.

Yours faithfully

(Name)
(Title)
(File number)
APPENDIX C: INSTALLATION OF SPREADERS ON BARE CONDUCTOR LOW VOLTAGE OVERHEAD MAINS IN BUSH FIRE PRONE AREAS

Low voltage spreaders are required in all spans of low voltage distribution, street lighting, and service mains, consisting of open wire (bare conductors) for both horizontal and vertical construction located in bush fire prone areas as follows:

- Two-wire lines (horizontal construction) - where the shorter cross arm length in the span is less than 1.0m - one spreader (mid-span) for span length between 30 and 45 m, two spreaders (spaced equally) for span lengths exceeding 45 m.
- Two-wire lines (vertical construction) - where the vertical separation in the span is less than 1.0m - one spreader (mid-span) for span length between 30 and 45 m, two spreaders (spaced equally) for span lengths exceeding 45 m.
- Three- and four-wire lines (horizontal construction) and all vertical construction – as per Table D1.

<table>
<thead>
<tr>
<th>Horizontal Construction</th>
<th>Vertical Construction</th>
<th>One spreader (mid-span)</th>
<th>Two spreaders (spaced equally)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shorter cross arm length in span</td>
<td>Vertical separation between outer conductors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.8m</td>
<td>1.5m</td>
<td>Span 30-45 m</td>
<td>Span &gt;45 m</td>
</tr>
<tr>
<td>2.1m</td>
<td>1.75m</td>
<td>Span 45-90 m</td>
<td>Span &gt;90 m</td>
</tr>
<tr>
<td>2.4m or greater</td>
<td>2.0m or greater</td>
<td>Span 55-110m</td>
<td>Span &gt;110m</td>
</tr>
</tbody>
</table>

Table D1: Low voltage spreader requirements for 3 and 4 wire lines.

In addition to the above, consideration should be given to the fitting of spreaders in low voltage spans less than 45 metres in any of the following situations where:

1. The conductors have different levels of tension;
2. The conductors are in line with trees which require on-going pruning;
3. There are overhanging trees; or
4. The line is constructed from dissimilar conductor material types, e.g. copper and aluminium

During maintenance and augmentation work, the Works Coordinator shall be responsible for ensuring that low voltage spreaders are re-installed to the above requirements.