



Standard

Transmission Line Signage Standard

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Authorisations

Action	Name and title	Date
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Reviewed by	David Eccles, Senior Asset Strategy Engineer, Network Asset Strategy	18/12/2020
Authorised by	Darryl Munro, Team Leader, Network Asset Strategy	26/03/2021
Review cycle	30 months	

Responsibilities

This document is the responsibility of the Asset Strategy Team, Tasmanian Networks Pty Ltd, ABN 24 167 357 299 (hereafter referred to as "TasNetworks").

Please contact the Network Asset Strategy Team Leader with any queries or suggestions.

- Implementation All TasNetworks staff and contractors.
- Compliance All group managers.

Minimum requirements

The requirements set out in TasNetworks' documents are minimum requirements that must be complied with by all TasNetworks team members, contractors, and other consultants.

The end user is expected to implement any practices which may not be stated but which can be reasonably regarded as good practices relevant to the objective of this document.

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Record of revisions

Section number	Details
All	Amended to reflect TasNetworks branding and document numbering

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1 General

1.1 Purpose

To define the technical requirements for the design and installation of transmission line signage under the responsibility of Tasmanian Networks Pty Ltd (hereafter referred to as TasNetworks).

1.2 Scope

This standard applies to signage installed on, or in the vicinity of, transmission lines owned by TasNetworks, including accessories required for the attachment of signage to structures or other transmission line assets.

1.3 Objective

TasNetworks has developed this standard for transmission line signage design, specification, installation and maintenance to ensure:

- a) protection of personnel and public safety;
- b) the relevant legal requirements are met;
- c) ease of installation and maintenance;
- d) realise whole-of-life value; and
- e) support of TasNetworks' strategic performance objectives.

1.4 Precedence

Any apparent conflict between the requirements of this standard and the law, mandatory requirements, industry standards, project specifications, non-statutory standards or guidelines, and any other associated documents should be brought to the immediate attention of TasNetworks for resolution and no action must be taken that might result in a breach of law or mandatory requirement.

Where there may be a conflict between the requirements of this standard and any:

- a) law, mandatory requirement or industry standard, then that law or statutory requirements will prevail over this standard;
- b) non-mandatory standard, or guideline, then this standard will prevail over that standard or guideline; and
- c) project specification, then the contract documentation will prevail over this standard.

Approval for a deviation to this standard may only be provided if it does not reduce the quality of workmanship, pose a safety risk to personnel or equipment and does not deviate from the intent of this standard. Deviations, if any, must be specifically requested and approved in writing by TasNetworks' Network Asset Strategy Team Leader.

1.5 Related standards

This standard is to be read in conjunction with other relevant standards as applicable. Unless otherwise specified, the equipment shall be in accordance with the latest edition and amendments of the standards listed below.

AS 1319

Safety signs for the occupational environment

AS 3891.1	Air navigation - Cables and their supporting structures - Marking and safety requirements - Permanent marking of overhead cables and their supporting structures for other than planned low-level flying
AS 3891.2	Air navigation - Cables and their supporting structures - Marking and safety requirements - Low level aviation operations
AS 6947	Crossing of waterways by electricity infrastructure
AS/NZS 7000	Overhead line design

1.6 Drawing references

This standard is to be read in conjunction with other drawings as applicable. Unless otherwise specified, the equipment shall be in accordance with the latest edition and amendments of the drawings listed below.

A2-03917	Transmission lines – typical danger sign location
TSD-SD-808-0007-001	Transmission lines structure and circuit identification labels – details
TSD-SD-808-0007-002	Transmission lines structure and circuit identification labels – tower installation
TSD-SD-808-0007-003	Transmission lines structure, circuit and danger signage – single circuit pole – installation
TSD-SD-808-0007-004	Transmission lines structure, circuit and danger signage – double circuit pole – installation
TSD-SD-808-0007-005	Transmission lines pole supplementary label – details and installation
TSD-SD-808-0010-001	Transmission lines tower line access identification labels – details
TSD-SD-808-0012-001	Transmission lines pole aerial label – details and installation
TSD-SD-808-0012-002	Transmission lines tower aerial label – details and installation
TSD-SD-808-0013-001	Transmission lines pole danger sign – Type 3 – details
TSD-SD-808-0013-003	Transmission lines pole danger sign – Type 4 – details
TSD-SD-808-0080-001	Transmission lines tower danger sign – Type 2 – details

2 General requirements

Transmission line signage is necessary to:

- provide warning to the general public of the danger of climbing structures and approaching high voltage conductors;
- provide advice to TasNetworks employees or contractors regarding the location or name/number of a particular structure, circuit, transmission line or other transmission line asset; and
- provide warning to TasNetworks employees or contractors performing both ground based and aerial asset inspection activities, where those activities bring personnel into close proximity to energised or other potentially hazardous assets.

Depending on the type and function, Transmission line signage is required to be fitted on or near transmission line assets, and on those transmission line assets that are located close to populated areas, posing a higher risk of public exposure. This includes, but is not limited to, tower legs, tower tops, poles, fences and gates.

TasNetworks will continuously monitor older transmission lines, or transmission lines in population or other growth areas, to ensure that the risk to the public, staff and Contractor personnel is sufficiently mitigated through the retrofitting of transmission line signage as required by this standard.

All transmission line signage will be designed utilising the minimum dimensions, font size, colour schemes and nomenclature specified within Australian Standards AS1319, AS3891.1, AS3891.2, and AS6947.

Any deviation from these Australian Standards must be approved in writing by TasNetworks' Network Performance and Strategy Manager.

Detailed instructions for the preparation and attachment of transmission line signage can be found on the associated drawing(s) for each sign. These drawings are referenced in Table 1.

When affixing signs it is TasNetworks' preference to utilise galvanised self -drilling 12 gauge hex fasteners with seal.

2.1 Service conditions

Transmission line signage must be capable of operating under typical Tasmanian environmental conditions, including ambient temperatures ranging from -20°C to +70°C, without loss of integrity or function.

Transmission line signage must not cause a material degradation in the condition of the asset to which the signage is affixed.

2.2 Performance

Transmission line signage must be designed for a service life of at least:

- five years, for those transmission lines that have been identified for decommissioning within the next ten years; or
- fifteen years, for all other transmission lines

Table 1 Transmission line signage summary

Signage Type	Asset Type	Description/Purpose	Location	Drawing Reference
Danger signs	Lattice tower	To provide warning to the general public of the danger of climbing towers, or approach to high voltage wires.	To be affixed to two faces of all lattice towers. The two faces shall be those normally approached by the public. Where this cannot be readily determined, they shall be the two transverse faces of the tower.	TSD-SD-808-0080-001 A2-3917
	Pole		Where H-structures are installed, to be affixed to one face of the right hand pole such that the sign is visible when patrolling the transmission line in ascending order of pole number. Where single poles are installed, to be affixed to each pole such that the sign is visible when patrolling the transmission line in ascending order of pole number.	TSD-SD-808-0013-001 TSD-SD-808-0013-003 TSD-SD-808-0007-003 TSD-SD-808-0007-004
Ground based identification labels	Lattice tower	To provide operational information to TasNetworks or Contractor employees. One label describes both the transmission line number and tower number. This is commonly known as the 'Tower ID' label. A second label describes the circuit abbreviation for the circuit located above the tower leg on which the sign is installed. This is commonly known as the 'Circuit ID' label.	The 'Tower ID' label is to be affixed to Leg 4 of all lattice towers. The 'Circuit ID' label is to be affixed to both Leg 1 and Leg 4 of all lattice towers, with each label corresponding to the circuit installed above the leg. Both 'Circuit ID' and 'Tower ID' labels are to be affixed such that they can be read when patrolling the transmission line in ascending order of tower number.	TSD-SD-808-0007-001 TSD-SD-808-0007-002

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Signage Type	Asset Type	Description/Purpose	Location	Drawing Reference
	Pole	<p>To provide operational information to TasNetworks or Contractor employees.</p> <p>One label describes both the transmission line number and pole number. This is commonly known as the 'Pole ID' label.</p> <p>A second label describes the circuit abbreviation for the circuit located above the pole on which the sign is installed. This is commonly known as the 'Circuit ID' label.</p> <p>For multi-pole structures only, a third label ('a', 'b' or 'c') provides discrimination between the poles that comprise the structure. This is commonly known as the 'Pole Letter' label.</p>	<p>The 'Pole ID' label is to be affixed to the same face of the pole to which the danger sign has been affixed.</p> <p>For double circuit, single poles, 'Circuit ID' labels are to be affixed to transverse sides of the pole, directly underneath the circuit to which each label corresponds.</p> <p>For single circuit, single poles, the 'Circuit ID' label is to be affixed to the same pole and face as the 'Pole ID' label.</p> <p>For single circuit H-structures, the 'Circuit ID' label is to be affixed to the same pole and face as the 'Pole ID' label.</p> <p>For multi-pole structures, the 'Pole Letter' label is to be affixed to the same pole and face as the 'Pole ID' label.</p>	<p>TSD-SD-808-0007-001</p> <p>TSD-SD-808-0007-003</p> <p>TSD-SD-808-0007-004</p> <p>TSD-SD-808-0007-005</p>
Aerial identification labels	Lattice tower	<p>To provide operational information to TasNetworks or Contractor personnel performing work from a helicopter.</p> <p>Includes the tower or pole number.</p>	<p>To be affixed to the side of the structure that will be visible to personnel located in a helicopter.</p> <p>To be affixed to every structure with a structure number that is a multiple of ten. eg. tower T10, T20, T30, T40 etc.</p>	TSD-SD-808-0012-002
	Pole			TSD-SD-808-0012-001
Aerial warning	Any transmission line structure	<p>To provide operational information to TasNetworks or Contractor personnel performing work from a helicopter.</p> <p>Provides warning of upcoming overcrossings.</p>	All aerial warning signs are to be affixed as per the requirements specified in AS3891.2.	<p>Size and colour of <u>overcrossing</u> warnings to meet the requirements of AS1319 and AS3891.2.</p> <p><u>Undercrossings</u> do not require warning signage.</p>

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Signage Type	Asset Type	Description/Purpose	Location	Drawing Reference
Water crossing warning		To provide warning to members of the public utilising a waterway, advising the location where a transmission line crosses the waterway.	All water crossing signs are to be affixed as per the requirements specified in AS6947.	Size and colour of water crossing warnings to meet the requirements of AS1319 and AS6947.
Access identification	Easement	To provide operational information to TasNetworks or Contractor employees. Includes the numbers and abbreviations for any transmission line and transmission circuits located within the easement.	To be affixed to the gate providing access to the transmission line easement.	TSD-SD-808-0010-001
Special signs	Various	Specific circumstances may arise where a localised or unusual hazard exists in the vicinity of a transmission line structure. Any warning sign for this purpose must be designed in accordance with AS1319, AS3891.1 and/or AS3891.2 and approved in writing by TasNetworks' Asset Strategy Engineer prior to installation. Any such sign approved for use must also be subsequently incorporated into this standard for future reference.		