SA/SNZ HB 331:2020
(Incorporating Amendment No. 1)

Handbook

Overhead line design handbook

SA/SNZ HB 331:2020

This Joint Australian/New Zealand Handbook was prepared by Joint Technical Committee EL-052, Electrical Energy Networks, Construction and Operation. It was approved on behalf of the Council of Standards Australia on 19 December 2019 and by the New Zealand Standards Executive on 12 December 2019.

This Handbook was published on 17 January 2020.

The following are represented on Committee EL-052:

Australian Energy Market Operator
Australian Services Union
Communications, Electrical and Plumbing Union — Electrical Division
Concrete NZ
Electrical Regulatory Authorities Council
Electricity Engineers Association of New Zealand
Energy Networks Australia
Engineers Australia
National Electrical and Communications Association
NSW Department of Planning and Environment

This Handbook was issued in draft form for comment as DR SA/SNZ HB 331:2019.

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ISBN 978 1 76072 694 2

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Originated as HB 331—2012.
Second edition 2020.
Reissued incorporating Amendment No 1 (October 2020).

Preface

This Handbook was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-052, Electrical Energy Networks, Construction and Operation, to supersede SA HB 331—2012.

This Handbook incorporates Amendment No. 1 (October 2020). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The objective of this Handbook is to provide guidance for both transmission and distribution lines in relation to the application of AS/NZS 7000:2016. Typical distribution voltages are 230/400 V, 230/460 V [referred to as low voltage (LV)] and 6.6 kV, 11 kV, 12.7 kV, 19.1 kV, 22 kV [referred to as high voltage (HV)]. Typical sub-transmission voltages are 33 kV, 66 kV, 110 kV, 132 kV and transmission voltages are 220 kV, 275 kV, 330 kV, 400 kV and 500 kV.

This Handbook is intended to supplement and be read in conjunction with AS/NZS 7000:2016, *Overhead line design*. This document is informative and the examples given are guidance only.

Standards Australia and the Committee would like to acknowledge the expertise of Working Group EL-052-08 in the revision of this Handbook.

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Section 1 Scope and general

1.1 Scope

This Handbook is a companion to and is intended to be read in conjunction with AS/NZS 7000:2016, *Overhead line design* (referred to as AS/NZS 7000 in this Handbook). AS/NZS 7000 outlines the requirements for the design of overhead power lines.

This edition of the Handbook supersedes the original edition published in 2012.

1.2 Significant changes to this Handbook

Significant enhancements made in this edition of the Handbook include the following:

(a) Safety in design principles (new).

(b) Electromagnetic fields (updated and NZ requirements included).

(c) Earthing guidelines (updated and NZ requirements included).

(d) Design and construction in bushfire prone areas (new).

(e) Safety by design for poles in clear zones (new).

(f) Non-conventional conductors (updated).

(g) Using computer programs for layout design (updated).

(h) Concrete poles (updated).

(i) Stay analysis for variety of stay types (new).

(j) High voltage live working considerations in design (new).

(k) Residual static loads (updated with new formulas).

(l) Vegetation management and clearing (updated with risk included and allowance for reduced wind in dense vegetation).

1.3 Structure of Handbook

This Handbook comprises the following:

Sections 1 to 4 are a guideline and commentary on the application of AS/NZS 7000, including commentary on some of the more complex Appendices.

Sections 5 to 13 are a guide to the line design process, with key areas covered in more detail.

Section 14 provides worked examples for the line design process for a 132 kV single circuit pole line.

Section 15 contains a number of miscellaneous worked examples for a range of line components.

Sections 16 onwards cover particular topics such as special and covered conductors, line fittings and climbing structures.

1.4 Referenced documents

See Bibliography for a list of informative documents referenced in this Handbook.