

**HB 195**

# The Australian earth building handbook

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**THE  
AUSTRALIAN  
EARTH BUILDING  
HANDBOOK**

by

Dr Peter Walker MIEAust, CPEng.

and

Standards Australia

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This Handbook was prepared jointly by Dr Peter Walker, University of Bath, and Standards Australia. It sets out principles of accepted good practice and recommended design guidelines for lightly loaded, primarily single and two-storey, buildings constructed using unbaked earthen walls and floors. Source material for the Handbook has been taken from a variety of publications, knowledge of accepted good practice, results of recent research and development work, and out of the work of Committee BD-083, Earth Building.

Whilst some contents of this Handbook are derived from the work of Standards Australia Committee BD-083, the Handbook has not been published under the auspices of the committee, and therefore it should not be taken as representative of the views of committee members. However, thanks are due to those committee members and others who contributed their views, in particular Stephen Dobson, David Baetge, Kevan Heathcote, Chris Howe (EBAA) and David Oliver.

Throughout the Handbook reference is made to a number of Australian Standards, and extracts taken from AS 2870 and AS 3700 are included. Readers are, therefore, advised to consult the latest edition of the Standard or referenced material.

The contents of this Handbook will be kept under regular review. Any comments from readers on how it may be improved would be most welcome.

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## **CHAPTER 1**

# **INTRODUCTION**

### **1.1 SCOPE OF HANDBOOK**

This Handbook sets out principles of accepted good practice and recommended design guidelines for lightly loaded buildings built using unbaked earthen walls and floors. Provisions set out in this Handbook are primarily, but not exclusively, intended for single- or two-storey earth wall construction. The Handbook is not a comprehensive treatise on earth wall construction technology.

The guidance given is the culmination of a long and successful history of Australian earth wall construction. The Handbook seeks to promote continuity of this innovative tradition and encourage alternative solutions wherever possible. Therefore, in addition to the recommendations set out below, satisfactory construction may be demonstrated by precedence (with a verified service history), shown by experimental verification, or proven in accordance with rational design methods following accepted principles and undertaken by suitably qualified and experienced professionals.

Guidance on material selection, preparation and use is outlined in Chapter 2 of the Handbook. Earth walling covers a wide range of techniques, including masonry and monolithic forms of construction, which are also described in Chapter 2. Chapter 3 sets out recommendations for proven construction details for earth walls and floors. Measures for maintenance and repair are also provided. Design of earth walls covering durability and strength, together with deemed-to-comply provisions based on accepted best practice, are given in Chapter 4. Standard footing solutions for earth buildings are detailed in Chapter 5. These include solutions taken from AS 2870 [1], and proposals for earthen footings as well. Appendix A sets out standard test procedures for stabilised earthen materials and components. Deemed to comply solutions set out are restricted to design category A1 or H2 domestic structure for earthquake design and buildings in areas where the design wind speed does not exceed W41 [37].

The Handbook has been written primarily for a professional readership, including architects, builders, engineers and building inspectors. Whilst some parts of the Handbook, Chapter 4 for example, require an understanding of basic engineering principles, the Handbook is also intended to be accessible to a more general readership, including the owner-builder.

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