



**Acoustics—Aircraft noise intrusion—
Building siting and construction**



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 - Aircraft Noise Ombudsman
 - Australian Acoustical Society
 - Australian Airports Association
 - Australian Association of Acoustical Consultants
 - Australian Helicopter Industry Association
 - Australian Local Government Association
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Australian Standard[®]

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PREFACE

This Standard was prepared by the Standards Australia Committee EV-011, Aircraft and Helicopter Noise, to supersede AS 2021—2000.

This Standard provides guidance on the siting and construction of buildings in the vicinity of airports to minimize aircraft noise intrusion. The assessment of potential aircraft noise exposure at a given site is based on the Australian Noise Exposure Forecast (ANEF) system (for processes and details of this system refer to Appendices A and B).

This edition provides expanded aircraft noise tables and incorporates various associated amendments to the text. A new Appendix has been added to describe the process that should be followed in producing an Australian Noise Exposure Forecast (ANEF) chart for use in applying this Standard.

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

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FOREWORD

Aircraft noise intrusion within a building depends substantially on—

- (a) the location, orientation and elevation of the site relative to the aircraft flight paths;
- (b) the types and frequency of aircraft operating from the aerodrome;
- (c) meteorological conditions;
- (d) the types of activity (including sleep) to be, or being, accommodated in the building;
- (e) the type of layout, construction and ventilation used; and
- (f) the internal acoustic environment.

The data contained in the aircraft Noise Level Tables (Tables 3.4 to 3.58) are based on modelling, which in turn is based on actual measurements and are estimates of the noise levels emitted by the aircraft currently operating. These data will be amended as new aircraft are commissioned and as otherwise necessary.

Exposure prediction below 25 ANEF may be significantly inaccurate, and therefore caution should be exercised in the evaluation of locations outside the 25 ANEF contour. In addition, the extent of noise reduction required for a building may depend in part on the amount of noise from sources other than aircraft. Because of these factors and of the special acoustic requirements of certain types of building, it will sometimes be necessary to undertake supplementary noise measurements so that a sufficiently representative prediction of the noise exposure at the site under evaluation can be obtained. This is also true for aerodromes at which a significant number of training circuits occur. Such measurements should be performed only by personnel appropriately qualified in acoustics.

Human reaction to aircraft noise is known to depend not only on the amount of noise, but also on psychosocial factors such as personal sensitivity to noise, fear of aircraft crashing and attitudes towards aviation. Thus some individuals will be seriously disturbed by aircraft noise even when the building is sited and constructed according to this Standard.

This Standard has been developed to assist in building construction and land use planning in the vicinity of airports. It is not intended as a guide to the presentation of information about aircraft noise to the general public. A Handbook that is in preparation at the time of releasing this Standard will be developed by Standards Australia describing ways in which such information should be provided.

Some experience has shown that communities that are newly-exposed to aircraft noise (e.g. as a result of the construction of new runways, or the redesign of flight paths near an aerodrome) tend to be more sensitive to such noise than communities that are accustomed to it. Land use planning must by necessity use a long-term horizon, and the building siting acceptability recommendations in this Standard are based on the reactions of noise-accustomed communities. Regulatory authorities are cautioned that a transient heightened reaction could result from substantial new noise exposure.

STANDARDS AUSTRALIA

Australian Standard

Acoustics—Aircraft noise intrusion—Building siting and construction

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard, together with the relevant Australian Noise Exposure Forecast (ANEF) chart or locality map available for the aerodrome under consideration, provides guidelines for determining—

- (a) whether the extent of aircraft noise intrusion makes building sites ‘acceptable’, ‘unacceptable’ or ‘conditionally acceptable’ for the types of activity to be, or being, undertaken (Clause 2.3);
- (b) for ‘conditionally acceptable’ sites, the extent of noise reduction required to provide acceptable noise levels indoors for the types of activity to be, or being, undertaken; and
- (c) the type of building construction necessary to provide a given noise reduction, provided that external windows and doors are closed (see Note 1).

This Standard deals specifically with noise from take-off, landing and circuit training operations at civil aerodromes or military airfields.

The acceptability of outdoor spaces is not covered by this Standard.

NOTES:

- 1 The recommendations for building construction are based on the assumption that external windows and doors are shut. If external windows or doors are opened for ventilation or other purposes, the noise attenuation values for various components given in Clause 3.3 will not be achieved. Item (c) above implies that mechanical ventilation will need to be installed when external windows and doors are shut to provide adequate protection against aircraft noise intrusion. Whether or not sufficient ventilation can be achieved by mechanical or other means should be considered before the selection of building components described in Clause 3.3.
- 2 There may be a significant increase in costs incurred in buildings designed to provide higher than normal noise attenuation for their type.

1.2 OBJECTIVE

This Standard is concerned with land use planning and building treatments in the vicinity of an airport. The objective is to provide guidance to regional and local authorities, organizations, communities and others associated with urban and regional planning and building development on the siting and construction of new buildings against aircraft noise intrusion and on the acoustical adequacy of existing buildings in areas near aerodromes.

This Standard is not intended to be applied for the purposes of assessing the effects of noise from aircraft. However, it should be noted that the effects of noise from aircraft are not confined to areas where the noise exposure exceeds 20 ANEF and may occur at or below 20 ANEF (see Appendix A for a description of the ANEF system).

1.3 APPLICATION

Application of this Standard should be considered when a building site may be affected by aircraft noise.