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PLANNING AND DEVELOPMENT ACT 2005

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STATE PLANNING POLICY No. 5.1

**LAND USE PLANNING IN THE  
VICINITY OF PERTH AIRPORT  
2015**

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PREPARED UNDER PART THREE OF THE *PLANNING AND  
DEVELOPMENT ACT 2005* BY THE WESTERN AUSTRALIAN  
PLANNING COMMISSION



## PLANNING AND DEVELOPMENT ACT 2005

## State Planning Policy No. 5.1

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PERTH AIRPORT 2015****CONTENTS**

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## PLANNING AND DEVELOPMENT ACT 2005

## State Planning Policy No. 5.1

**LAND USE PLANNING IN THE VICINITY OF  
PERTH AIRPORT 2015****1. CITATION**

This is a State planning policy prepared under section 26 of the *Planning and Development Act 2005*. It may be cited as *State Planning Policy 5.1: Land Use Planning in the Vicinity of Perth Airport*. For the purpose of this document, it will be referred to as ‘the policy’.

**2. INTRODUCTION AND BACKGROUND****2.1 Importance of Perth Airport**

Perth Airport is fundamental to the continued development of the Perth metropolitan region and the State as a whole. Investment in airport infrastructure and the economic opportunities associated with the operation of the airport are now recognised as important and perhaps critical elements in the prosperity of a city such as Perth.

Accordingly, the airport and its ongoing development need to be recognised in the planning of the region, and its operation protected, as far as practicable, from development that could potentially prejudice its performance. One of the main issues to be addressed in the planning of areas in the vicinity of the airport is aircraft noise, which is the focus of this policy.

**2.2 Aircraft noise measurement**

The system of aircraft noise measurement used in Australia for the purposes of evaluating land use compatibility is known as the Australian Noise Exposure Forecast (ANEF) system. This system is employed to produce the following noise measures, which are usually illustrated in the form of noise exposure contours.

- ANEF—being a noise exposure *forecast* for a particular time in the future or based on particular circumstances such as ultimate capacity; and
- ANEI—being a noise exposure *index* based on data for a previous year where the exact numbers and types of aircraft that used the airport are known.

**2.3 Australian Noise Exposure Forecast**

This policy is predicated upon the ANEF prepared by Perth Airport Pty Ltd in consultation with Airservices Australia, which is incorporated by reference into this policy. A copy of the current ANEF can be found on the Perth Airport website and is a requirement of the *Airports Act 1996*. The noise modelling that determines the ANEF contours may be reviewed every five years in association with reviews of the master plan for Perth Airport. The updated ANEF resulting from such reviews will be automatically included in this policy by reference. Updates to the ANEF are subject to a public consultation process by the Perth Airport Pty Ltd. There will be no additional public consultation or separate amendment process to this Policy as the ANEF is updated from time to time, as amendments will occur automatically and concurrently. The effect of amendments to the ANEF may include alterations to the areas of land to which the development control provisions of this Policy apply.

**2.4 Policy measures**

Policy measures have been based on Table 2.1 from AS2021—*Building Site Acceptability Based on ANEF Zones*. However, the policy measures included in this policy provide more definitive guidance on those matters identified as discretionary in AS2021. It should be noted that AS2021 is purely advisory, and has no direct statutory application.

**3. APPLICATION OF THE POLICY**

This policy applies to land in the vicinity of Perth Airport, which is, or may be in the future affected by aircraft noise. Policy measures outlined in Section 5 apply to the land within the 20 ANEF noise contour.

#### 4. POLICY OBJECTIVES

The objectives of this policy are to—

- protect Perth Airport from unreasonable encroachment by incompatible (noise-sensitive) development, to provide for its ongoing development and operation; and
- minimise the impact of airport operations on existing and future communities with reference to aircraft noise.

#### 5. POLICY MEASURES

##### 5.1 Interpretation

###### ANEF level

Refers to the level of noise exposure forecast under the ANEF. Noise exposure contours are illustrated at intervals of five ANEF units, beginning at 20 ANEF and ranging up to 40 ANEF, with 40 being closest to the airport.

###### Noise exposure zone

Refers to the areas within a specified range of noise exposure levels as illustrated on the current Airservices Australia endorsed ANEF. Noise exposure zones referred to in this policy include—

- areas below 20 ANEF;
- areas between 20 ANEF and 25 ANEF; and
- areas above 25 ANEF.

In the case of sites that are dissected by one or more of the nominated noise exposure contours, the following interpretation shall apply—

- (i) where the site has an area less than 1,000m<sup>2</sup> the noise exposure zone for the whole site shall be deemed to be the level to which the majority of the site is subject; and
- (ii) where the site has an area greater than 1,000m<sup>2</sup> the noise exposure zone shall be determined separately for the individual parts of the site into which it is divided by the relevant noise exposure contour(s).

###### Building site acceptability

Refers to the acceptability of sites for particular building types within various ANEF zones. *Appendix 1* includes a classification of building site acceptability, which has been adapted from AS2021. Building types are classified as 'Acceptable', 'Conditionally Acceptable' or 'Unacceptable' depending on the sensitivity of associated use or occupation of the building and the level of noise exposure forecast for the site.

##### 5.2 Areas below 20 ANEF

There is no restriction on zoning or development within this noise exposure zone, which is identified as 'Acceptable' for all building types in the building site acceptability table in *Appendix 1*. According to AS2021 however, noise nuisance may still be experienced in areas below the 20 ANEF exposure level, particularly in the case of newly exposed communities.

##### 5.3 Areas between 20 ANEF and 25 ANEF

###### 5.3.1 Zoning

(1) Zoning and associated development control provisions should take into consideration the level of noise exposure forecast for the area and the building site acceptability for the particular noise exposure zone as identified in *Appendix 1*. This includes structure planning by which development is controlled.

(2) Land uses that provide for development of building types identified as 'Conditionally Acceptable' with reference to the building site acceptability table in *Appendix 1*, should be subject to discretionary control under local planning schemes. Such development includes—

- dwellings and caravan parks
- educational establishments
- child-care premises
- hospitals and nursing homes
- places of worship
- cinemas, theatres and exhibition centres.

(3) It is not intended that this policy would affect the existing use or zoning of land.

###### 5.3.2 Residential density

Where land is zoned for residential purposes or to permit residential development, the maximum dwelling density should generally be limited to R20, except where—

- land is identified as appropriate for more intensive development through strategic planning instruments such as a regional or sub-regional structure plan;
- a higher density coding is desirable to facilitate redevelopment or infill development of an existing residential area; and
- it can be demonstrated that the public benefits of higher density coding outweigh the negative impacts of exposing additional residents to aircraft noise.

### 5.3.3 Subdivision and strata subdivision

(1) Subdivision and/or strata subdivision may be approved, provided it is consistent with the zoning and density coding of the land.

(2) Where no density coding is prescribed for 'Residential' zoned land, the maximum density should generally be limited to R20, except as provided for in relation to the application of residential density controls under clause 5.3.2.

### 5.3.4 Development

(1) Development may be approved provided it is consistent with the zoning and density coding of the land under the local planning scheme, local development plan or local structure plan.

(2) In the case of development that is subject to discretionary control under a local planning scheme (as provided for under clause 5.3.1), the impact of aircraft noise on the users or occupiers of the development should be taken into consideration in the determination of applications, and where relevant, in the imposition of conditions of approval.

(3) Where no density coding is prescribed for 'Residential' zoned land, the maximum density should generally be limited to R20, except as provided for in relation to the application of residential density controls under clause 5.3.2.

### 5.3.5 Noise insulation

(1) Noise insulation is not mandatory for residential development within this noise exposure zone. Some areas however, may experience peak aircraft noise levels in excess of the Indoor Design Sound Levels specified in AS2021, and noise insulation is recommended in such cases. Guidance on noise insulation measures are contained within the Western Australian Planning Commission report, *Aircraft Noise Insulation for Residential Development in the Vicinity of Perth Airport, 2004*.

(2) Noise insulation requirements for development other than residential that is identified as 'Conditionally Acceptable' in the building site acceptability table in *Appendix 1*, should be determined in consideration of—

- levels of aircraft noise likely to be experienced at the site;
- likely noise attenuation from the type of construction proposed;
- background noise level to which the site is subject;
- times of day or night when overflights are likely to occur;
- frequency of overflights by the various classes of aircraft; and
- occupational characteristics of the proposed development.

(3) Closure of windows and other openings to habitable rooms can significantly reduce the intrusion of aircraft noise. This will normally require forced ventilation, and may also necessitate some form of active cooling, such as refrigerative air conditioning. The operational management of buildings however, is outside the ambit of this policy, and will therefore be subject only to advice. (Refer clause 5.3.7).

### 5.3.6 Notification on title

A 'notice on title' advising of the potential for noise nuisance is to be required as a condition of any subdivision or planning approval within this noise exposure zone except where the proposed building type is identified as 'Acceptable' in the building site acceptability table in *Appendix 1*. Standard wording to be used in notices on title is included in *Appendix 3*.

### 5.3.7 Advice

(1) Information should be given to prospective purchasers of noise-sensitive premises about the potential for aircraft noise nuisance. Such advice should be provided by local government in conjunction with the issue of zoning certificates and/or property inquiries.

(2) Advice should be provided in association with applications for planning approval and building permits, of the potential for noise nuisance and any noise insulation requirements or recommendations in accordance with the provisions of clause 5.3.5. Developers should also be made aware of the benefits of window closure and the associated need for forced ventilation.

(3) Information about aircraft types and the timing and frequency of aircraft operations is available from Perth Airport Pty Ltd. AS2021 includes tables of noise levels for selected aircraft types and locations, in terms of distance, in specific proximity to airport runways.

## 5.4 Areas above 25 ANEF

### 5.4.1 Zoning

(1) Zoning and associated development control provisions should take into consideration the level of noise exposure forecast for the area and the building site acceptability for this particular noise exposure zone as identified in *Appendix 1*. This includes structure planning by which development is controlled.

(2) There is a presumption against zoning which may permit development involving building types identified as 'Unacceptable' with reference to the building site acceptability table in *Appendix 1*. This includes particularly residential zoning where the predominant type of development is likely to be housing.

(3) Where land has already been zoned to permit development defined as 'Unacceptable', and where in the opinion of local government, it is not practicable to allocate the land for alternative uses, existing zoning may remain.<sup>1</sup>

(4) Land uses that provide for development of building types identified as either 'Conditionally Acceptable' or 'Unacceptable' in the building site acceptability table in *Appendix 1*, should be subject to discretionary control under local planning schemes. Such development includes—

- dwellings and caravan parks
- educational establishments
- child-care premises
- hospitals and nursing homes
- places of worship
- hotels and motels
- residential buildings
- offices and shops
- medical centres
- restaurants.

(5) Under no circumstances should 'Rural' or other non-residential zoned land be rezoned for residential development or any other form of development involving building types identified as 'Unacceptable' with reference to the building site acceptability table in *Appendix 1*.

(6) In considering the practicability of alternative land uses, local government should give particular emphasis to areas forecast to be affected by noise exposure levels above 30 ANEF.

(7) It is not intended that this policy would affect the existing use of land.

#### 5.4.2 Residential density

(1) Where alternative (non-residential) zoning of existing 'Residential' zoned land is not practicable, the density of development should generally be limited to R12.5. Possible exceptions are where—

- a higher density is necessary to facilitate redevelopment or infill development of an existing residential area;
- land is identified as appropriate for more intensive development through strategic planning instruments such as a regional or sub-regional structure plan;
- it can be demonstrated that the public benefits of higher density coding outweigh the negative impacts of exposing additional residents to aircraft noise; and
- a higher density would facilitate the concurrent provision of noise insulation in accordance with the indoor design sound levels prescribed in AS2021.

(2) In areas subject to noise exposure levels above 30 ANEF, the permissible density of residential development should generally not be increased.

#### 5.4.3 Subdivision and strata subdivision

(1) No further subdivision or strata subdivision is to take place where it would result in an increase in the number of dwellings that may be developed, unless it is consistent with the zoning and density coding of the land under a local planning scheme.

(2) Where no density coding or minimum lot size is prescribed for 'Residential' zoned land, the maximum density should generally be limited to R12.5, except as provided for in relation to the application of residential density controls under clause 5.4.2.

#### 5.4.4 Development

(1) No further development is to take place where it would result in an increase in the number of people likely to be accommodated, unless it is consistent with the zoning and density coding of the land.

(2) In the case of development that is subject to discretionary control under an operative local planning scheme (as provided for under clause 5.4.1), the impact of aircraft noise on the users or occupiers of the development should be taken into consideration in the determination of applications and where relevant, in the imposition of conditions of approval.

(3) Where no density coding is prescribed for 'Residential' zoned land, the maximum density should generally be limited to R12.5, except as provided for in relation to the application of residential density controls under clause 5.4.2.

#### 5.4.5 Noise insulation

(1) Noise insulation is required as a condition of planning approval, for all development involving building types identified as 'Unacceptable' with reference to the building site acceptability table in *Appendix 1*. This includes in particular, all new residential development, educational establishments, hospitals and nursing homes.

(2) Noise insulation requirements for development involving building types identified as 'Conditionally Acceptable' in the building site acceptability table in *Appendix 1*, should be determined in consideration of—

- levels of aircraft noise likely to be experienced at the site;

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<sup>1</sup> Australian Standard 2021 recognises that many non-aviation factors have to be taken into account in decisions about land use, and that where established residential development exists, it is generally not appropriate to apply the recommended land use compatibility criteria unless the opportunity for re-zoning arises.

- likely noise attenuation from the type of construction proposed;
- background noise level to which the site is subject;
- times of day or night when overflights are likely to occur;
- frequency of overflights by the various classes of aircraft; and
- occupational characteristics of the proposed development.

(3) Where practicable, the standard of insulation required should be based on achievement of indoor design sound levels recommended for the particular building type or activity in AS2021. (Refer to *Indoor Design Sound Levels for Determination of Aircraft Noise Reduction in Appendix 2*).

(4) Deemed-to-comply noise insulation specifications for residential development are contained within section 6 of the Western Australian Planning Commission report, *Aircraft Noise Insulation for Residential Development in the Vicinity of Perth Airport, 2004*.

(5) Closure of windows and other openings to habitable rooms which is necessary to achieve the benefits of noise insulation, normally involves forced ventilation, and may also necessitate some form of active cooling, such as refrigerative air conditioning. The operational management of buildings however, is outside the ambit of this policy and will therefore be subject only to advice. (Refer clause 5.4.7).

(6) Heritage listed buildings and pre-existing housing within a designated heritage area may also be exempted from the requirements for noise insulation, as provided for under a local planning scheme.<sup>2</sup>

(7) Minor additions to existing residential development involving no more than two habitable rooms and no more than a 25 percent increase in habitable floor space should be exempted from the requirement for noise insulation.

(8) Where more substantial additions are proposed, the additional areas should be insulated in accordance with the recommended indoor design sound levels of AS2021 or otherwise as provided for in sub-clause (3) above. Noise insulation is not mandatory for the existing areas of the house, but is desirable and may, in some circumstances, be appropriate to meet the indoor design sound levels prescribed under AS2021 and or the variations provided for in sub-clause (3) above. According to AS2021, the requirement for different internal design sound levels for different indoor spaces could require the construction of substantial barriers between habitable spaces. Accordingly, consideration should be given to a uniform perimeter insulation approach.

#### 5.4.6 Notification on title

A 'notice on title' advising of the potential for noise nuisance is to be required as a condition of any subdivision or planning approval, except where the proposed development is identified as 'Acceptable' for the relevant ANEF level in the building site acceptability table in *Appendix 1*. Standard wording to be used on notices on title is included in *Appendix 3*.

#### 5.4.7 Advice

(1) Information should be given to prospective purchasers of noise-sensitive premises about the potential for aircraft noise nuisance. Such advice should be provided by local government in conjunction with the issue of zoning certificates and/or property inquiries.

(2) Advice should be provided, in association with applications for planning approval and building permits, of the potential for noise nuisance and any noise insulation requirements or recommendations in accordance with the provisions of clause 5.4.5. Developers should also be made aware of the benefits of window closure and the associated need for forced ventilation.

(3) Information about aircraft types and the timing and frequency of aircraft operations is available from Perth Airport Pty Ltd. AS2021 includes tables of noise levels for selected aircraft types and locations, in terms of distance, in specific proximity to airport runways.

## 6. IMPLEMENTATION

It is intended that this policy be implemented using a combination of the following measures—

- zoning and density coding;
- development controls;
- subdivision control;
- referral arrangements; and
- notification and advice.

### 6.1 Zoning and density coding

(1) Local government should have due regard to the objectives and policy measures outlined in Section 5 when reviewing local planning schemes. This relates to all land forecast to be affected by noise exposure levels above the 20 ANEF contour.

(2) In those areas with potential for further subdivision or redevelopment, consideration should be given to ways in which the effects of aircraft noise can be reduced. Where practicable, noise-sensitive uses should be prohibited in noise exposure zones for which the relevant building type is classified as 'Unacceptable' in the building site acceptability table in *Appendix 1*.

<sup>2</sup> Local planning schemes prepared in accordance with the *Model Scheme Text* (clause 7.5) already provide for variations to development requirements where desirable to facilitate the conservation of heritage buildings or preservation of heritage values in a designated heritage area.

## 6.2 Development control

(1) Where practicable, local governments should include special control areas, or other provisions, in local planning schemes to provide an additional head of power to control development in areas within the 20 ANEF contour.

(2) As well as being defined on local planning scheme maps, special control areas should provide for supplementary control of development in order to address the policy measures detailed in Section 5. Relevant provisions should include—

- requirement for planning approval for all noise-sensitive development, including particularly single houses in noise-affected areas;
- discretionary provisions to enable applications to be refused where the development would be inconsistent with this policy;
- discretionary provisions to facilitate the imposition of conditions to address the requirements of this policy with respect to noise reduction in buildings, i.e. insulation; and
- discretionary provisions to facilitate the registration of notices on title where land is affected by aircraft noise above 20 ANEF.

## 6.3 Subdivision control

(1) The Western Australian Planning Commission is responsible for the control of subdivision under the *Planning and Development Act, 2005* as well as certain classes of strata subdivision under the *Strata Titles Act, 1985*. In exercising its discretion in relation to applications for subdivision and strata subdivision the Western Australian Planning Commission will have due regard to this policy.

(2) Local government should also have regard to this policy in making its recommendations to the Western Australian Planning Commission on applications for subdivision and those classes of strata subdivision for which the approval of the Commission is required or in making its decision where local government is the delegated authority.

## 6.4 Referral arrangements

Proposals involving any of the following should be referred by the relevant local government or in the case of subdivision, the Western Australian Planning Commission, to Perth Airport Pty Ltd for comment and advice.

### Scheme amendments

- Increase in density coding above R20 in areas between 20 ANEF and 25 ANEF.
- Changes of zoning and/or density coding in areas above the 25 ANEF noise exposure contour, which have the potential to enable an increase in population density.

### Subdivision

- Subdivision of land for residential purposes, where the lot sizes would enable development at a density in excess of that provided for under this policy.

### Development

- Development identified as 'Unacceptable' in the building site acceptability table in *Appendix 1*, with the exception of residential development, which accords with the density coding applicable under a local planning scheme.
- Development involving penetration of the prescribed airspace or other controlled activities as prescribed in the *Airports (Protection of Airspace) Regulations, 1996*.  
Prescribed airspace is defined under the *Airports (Protection of Airspace) Regulations, 1996* as the airspace above any part of either an Obstacle Limitation Service (OLS) or Procedures for Air Navigation Systems Operations (PAN-OPS) surface.
- Height above ground contours have been prepared by Perth Airport Pty Ltd, to assist local government in relation to the referral process with respect to prescribed airspace.

### Land use

- Non-structural activities (artificial light, sunlight, emissions of smoke, dust and other particulate matter, and emissions of steam or other gas) subject to approval under the *Airports (Protection of Airspace) Regulations, 1996*.  
Further information concerning referral and approval requirements under the Commonwealth legislation may be obtained from the Federal Department of Infrastructure and Regional Development website.
- Use or development of land in the vicinity of the airport that are likely to attract significant gathering of birds. Information on this issue may be obtained from Perth Airport Pty Ltd.

## 6.5 Notification and advice

(1) Advice concerning the potential for noise nuisance can most effectively be administered by the relevant local government via property inquiries, zoning certificates and conditions of planning approval requiring notices on title. A standard notification has been included in *Appendix 3*.

(2) In the case of proposals involving land subdivision, the Western Australian Planning Commission has the principal role in the provision of advice to applicants and/or the registration of notices on title, where required.

(3) Perth Airport Pty Ltd can provide information about aircraft noise and the operations of the airport and should be contacted for specific information concerning these matters.

(4) Local governments may require proponents to ensure that adequate information about the potential for noise nuisance is provided to prospective property purchases to enable them to make a fully informed decision.

**APPENDIX 1: BUILDING SITE ACCEPTABILITY***(Adapted from AS2021, Table 2.1: Building Site Acceptability Based on ANEF Zones)*

BUILDING TYPE	FORECAST NOISE EXPOSURE LEVEL (ANEF)			
	less than 20 ANEF (Note 1)	20 to 25 ANEF (Note 2)	25 to 30 ANEF	30 to 35 ANEF
House, home unit, flat, caravan park	Acceptable	Conditionally Acceptable	Unacceptable (Note 4) (Note 5)	Unacceptable (Note 4) (Note 5)
School, university	Acceptable	Conditionally Acceptable	Unacceptable (Note 4) (Note 5)	Unacceptable (Note 4) (Note 5)
Hospital, nursing home	Acceptable	Conditionally Acceptable	Unacceptable (Note 4) (Note 5)	Unacceptable (Note 4) (Note 5)
Hotel, motel, hostel	Acceptable	Acceptable	Conditionally Acceptable	Unacceptable (Note 4) (Note 5)
Public building	Acceptable	Conditionally Acceptable	Conditionally Acceptable	Unacceptable (Note 4) (Note 5)
Commercial building	Acceptable	Acceptable	Conditionally Acceptable	Conditionally Acceptable
Light Industrial	Acceptable	Acceptable	Acceptable	Conditionally Acceptable
Other industrial	Acceptable	Acceptable	Acceptable	Acceptable

**Relevant Notes from Table 2.1 of AS2021—**

1. The actual location of the 20 ANEF contour is difficult to define accurately, mainly because of variation in aircraft flight paths. Therefore, the procedure of Clause 2.3.2 of AS2021 may be followed for building sites outside but near to the 20 ANEF contour.
2. Within 20 ANEF to 25 ANEF, some people may find that the land is not compatible with residential or educational uses. Land use authorities may consider that the incorporation of noise control features in the construction of residences or schools is appropriate.
3. There will be cases where a building of a particular type will contain spaces used for activities which would generally be found in a different type of building (e.g. an office in an industrial building). In these cases, Table 2.1 should be used to determine site acceptability, but internal design noise levels within the specific spaces should be determined by Table 3.3 (Appendix 2).
4. This Standard does not recommend development in unacceptable areas. However, where the relevant planning authority determines that any development may be necessary within existing built-up areas designated as unacceptable, it is recommended that such development should achieve the required ANR determined according to Clause 3.2 of AS2021. For residences, schools, etc., the effect of aircraft noise on outdoor areas associated with the buildings should be considered.
5. In no case should new development take place in greenfield sites deemed unacceptable because such development may impact airport operations.

**APPENDIX 2: INDOOR DESIGN SOUND LEVELS***(Excerpt from AS2021: Table 3.3)***Table 3.3 Indoor Design Sound Levels\* for Determination of Aircraft Noise Reduction**

Building type and activity	Indoor design sound level*, dB(A)
<b>Houses, home units, flats, caravan parks</b>	
Sleeping areas, dedicated lounges	50
Other habitable spaces	55
Bathrooms, toilets, laundries	60
<b>Hotels, motels, hostels</b>	
Relaxing, sleeping	55
Social activities	70
Service activities	75
<b>Schools, universities</b>	
Libraries, study areas	50
Teaching areas, assembly areas (see Note 5)	55
Workshops, gymnasias	75
<b>Hospitals, nursing homes</b>	
Wards, theatres, treatment and consulting rooms	50
Laboratories	65
Service areas	75

Building type and activity	Indoor design sound level*, dB(A)
<b>Public buildings</b>	
Churches, religious activities	50
Theatres, cinemas, recording studios (see Note 4)	40
Court houses, libraries, galleries	50
<b>Commercial buildings, offices and shops</b>	
Private offices, conference rooms	55
Drafting, open offices	65
Typing, data processing	70
Shops, supermarkets, showrooms	75
<b>Industrial</b>	
Inspection, analysis, precision work	75
Light machinery, assembly, bench work	80

**Notes from Table 3.3 of AS2021—**

\* These indoor design sound levels are not intended to be used for measurement of adequacy of construction. For measurement of the adequacy of construction against aircraft noise intrusion see Appendix D of AS2021.

- 1 The indoor design sound levels in Column 2 are hypothesized values based on Australian experience. A design sound level is the maximum level (dB(A)) from an aircraft flyover which, when heard inside a building by the average listener, will be judged as not intrusive or annoying by that listener while carrying out the specified activity. Owing to the variability of subjective responses to aircraft noise, these figures will not provide sufficiently low interior noise levels for occupants who have a particular sensitivity to aircraft noise.
- 2 Some of these levels, because of the short duration of individual aircraft flyovers, exceed some other criteria published by Standards Australia for indoor background noise levels (see AS2107).
- 3 The indoor design sound levels are intended for the sole purpose of designing adequate construction against aircraft noise intrusion and are not intended to be used for assessing the effects of noise. Land use planning authorities may have their own internal noise level requirements which may be used in place of the levels above.
- 4 For opera and concert halls and theatres, and for recording, broadcast and television studios and similar buildings where noise intrusion is unacceptable, specialist acoustic advice should always be obtained.
- 5 Certain activities in schools may be considered particularly noise sensitive and 50 dB(A) may be a more desirable indoor sound level to select for any teaching areas used for such activities. However, the effect of other noise sources should be considered.
- 6 The provisions of this standard relating to different internal design sound levels for different indoor spaces could result in the use of different construction and materials in contiguous spaces, and require the construction of substantial barriers between habitable spaces, e.g. heavy self-closing internal doors, detracting from the amenity of the building. Therefore consideration should be given to a uniform perimeter insulation approach.

**APPENDIX 3: NOTIFICATION ABOUT AIRCRAFT NOISE TO BE PLACED ON PROPERTY TITLE**

**NOTIFICATION:** *This property is situated in the vicinity of Perth Airport and is currently affected, or may be affected in the future by aircraft noise. Noise exposure levels are likely to increase in the future as a result of an increase in aircraft using the airport, changes in aircraft type or other operational changes. Further information about aircraft noise is available from the Perth Airport website. Information regarding development restrictions and noise insulation requirements for noise-affected property is available on request from the relevant local government offices.*

**GLOSSARY OF TERMS**

**ANEF**

Australian Noise Exposure Forecast—as endorsed by Airservices Australia and as amended from time to time. The ANEF is a cumulative measure of aircraft noise exposure that takes into account the following features of aircraft noise—

- the intensity, duration, tonal content and spectrum of audible frequencies of the noise from aircraft take offs, approaches to landing, and reverse thrust after landing;
- the forecast frequency of aircraft types and movements on the various flight paths; and
- the average daily distribution of aircraft arrivals and departures in both daytime and night time. (Daytime is defined as being between the hours of 7.00am and 7.00pm).

**ANEI**

Australian Noise Exposure Index—based on data for a previous year where the exact numbers and types of aircraft that used the airport are known.

**AS2021**

*Australian Standard 2021 Acoustics—Aircraft noise intrusion—Building siting and construction*

**Building site acceptability**

Refers to the acceptability of sites for particular building types within various ANEF zones. *Appendix 1* includes a classification of building site acceptability, which has been adapted from AS2021. Building types are classified as 'Acceptable', 'Conditionally Acceptable' or 'Unacceptable' depending on the sensitivity of associated use or occupation of the building and the level of noise exposure forecast for the site.

**Noise exposure zone**

Refers to the areas within a specified range of noise exposure.

**Noise sensitive premises**

Premises occupied or designed for occupation or use for residential purposes (including dwellings, residential buildings or short-stay accommodation), caravan park, camping ground, educational establishment, child care premises, hospital, nursing home or place of worship.

**OLS**

Obstacle Limitation Surface.

**PANS OPS**

Procedures for Air Navigation Systems Operations.

**REFERENCES**

- Australian Capital Territory Planning Authority, 1996, *Draft Noise Management Guidelines*.
- Australian Standards, 2000, *AS 2021-2000, Acoustics—Aircraft Noise Intrusion—Building Siting and Construction*.
- Commonwealth Department of Transport and Regional Services, 2000, *Expanding Ways to Describe and Assess Aircraft Noise*.
- Department of the Environment, Transport and the Regions, United Kingdom, 1999, *Public Safety Zones: A Consultation Document*.
- Report on the Senate Select Committee on Aircraft Noise in Sydney, 1995, *Falling on Deaf Ears*.
- Riskcorp Australia Pty Ltd, 1992, *Perth Airport Hazards of Airport Operations*, September.
- Sinclair Knight Merz, 1999, *Perth International Airport Master Plan and Environmental Strategy*.
- Sinclair Knight Merz, 1999, *Aircraft Noise—Supplementary Technical Report to the Perth International Airport Draft Master Plan and Environmental Strategy*.
- State Planning Commission Western Australia, 1990, *Land Use Planning in the Vicinity of Airports: Report of the Working Group*.
- Westralia Airports Corporation, 1999, *Perth International Airport Masterplan and Environment Strategy*.
- Westralia Airports Corporation, 2000, *Perth International Airport: Aircraft Noise Management Strategy*.
- Western Australian Planning Commission, 2004, *Aircraft Noise Insulation for Residential Development in the Vicinity of Perth Airport*.
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