Victoria Road Precinct, Marrickville

Aircraft Noise Strategy

July 2015

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Contents

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1.0

INTRODUCTION

1.0 Introduction

1.1 Name

This document is called the Victoria Road Precinct Noise Strategy. This Noise Strategy is to take the form of a Development Control Plan once adopted by Marrickville Council.

1.2 Land to which this strategy applies

The Victoria Road Precinct Noise Strategy applies to land covered by the Victoria Road Precinct Planning Proposal as shown in **Figure 1**.

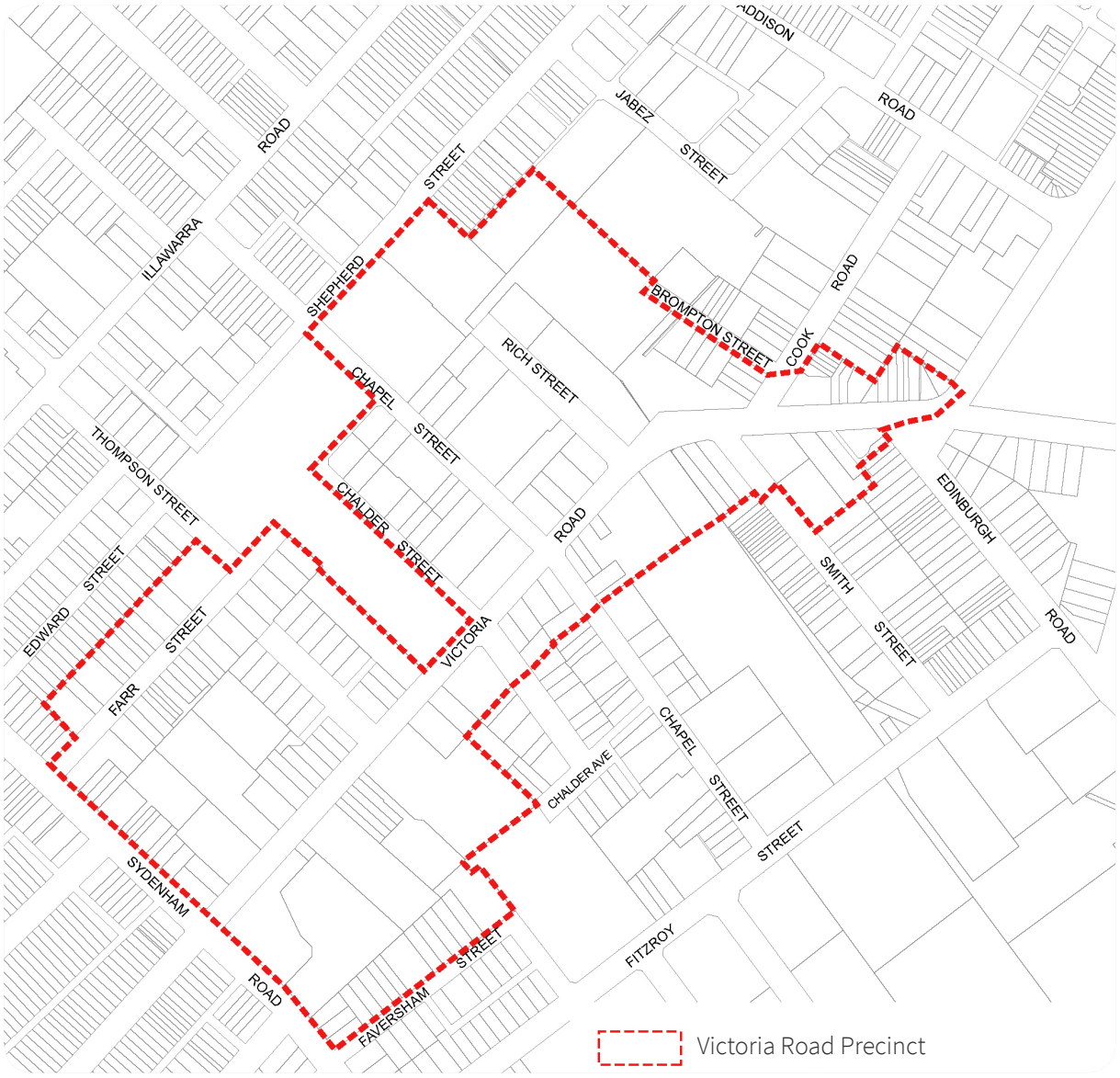

Figure 1 - Land to which this strategy applies

1.3 Relationship to other planning instruments and development control plans

This Noise Strategy has been made to provide more detailed guidance and design provisions for development proposals within the Victoria Road Precinct . Once adopted, the Strategy is intended to form part of Marrickville Council's planning framework, working with and supplementing other LEP and DCP planning and development controls. In the event of any inconsistency between the provisions of this Strategy and any other DCP, the provisions in this Strategy prevail to the extent of any inconsistency, but only where this inconsistency relates to land identified as being within the defined Victoria Road Precinct.

1.4 Information required in a Development Application

Any development application for a noise sensitive land use in the Victoria Road Precinct is to be accompanied by adequate supporting information that responds to the requirements of this strategy, and which specifically demonstrates:

a. the noise levels that the site and the proposal are exposed to;

b. how the proposal achieves the objectives and principles of this strategy;

c. how the design and materiality of the proposed development meet the requirements of this strategy;

d. what residential facilities have been incorporated into the design of the proposal and how these meet the requirements of this strategy; and

e. what management and implementation initiatives are proposed and how these will these meet the requirements of this strategy.

1.5 Variations to development controls

The consent authority may grant consent to a proposal to which this plan applies that does not comply with the controls in this strategy in some circumstances, provided that the intent of the controls is achieved. Any non-compliance will need to be considered on its merits, however it is essential that if the development is for a sensitive land use, adequate acoustic amenity is maintained at the site.

Where a variation is sought it must be demonstrated to the satisfaction of Council how the development meets the intention of the objectives of the relevant control, as well as the overall objectives at Section 2.0 of this strategy.

1.6 Consultation

In preparing this strategy consultation has been carried out with the NSW Department of Planning & Environment, Marrickville Council, Sydney Airport Corporation Limited and the Australian Government Department of Infrastructure and Regional Development.

The strategy has also considered the views of Marrickville Council and the Sub Regional Growth and Infrastructure Section of the Department of Planning and Environment as outlined at the Design Workshop held on the 2 March 2015.

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2.0

BACKGROUND

2.0 Background

2.1 Context

The Victoria Road Precinct comprises approximately 18 hectares of land located around Victoria Road, Marrickville to the north of Sydenham Road. It is located at the western edge of a larger 100 hectare industrial area known as the Sydenham-Marrickville Industrial Area, and also sits within a 36 hectare area designated as Precinct 47 under the Marrickville Development Control Plan 2011.

The economic profile of inner-city industrial lands has changed dramatically over the past fifty years as Sydney's inner city economy has transitioned from primarily a manufacturing and industrial economy to a service and knowledge-based economy. Infrastructure advances in Sydney, including the development of the orbital road network, has prompted the migration of 'traditional' industries to Western Sydney, where businesses have better access to appropriately sized and serviced land and appropriately skilled labour markets.

At the local level this decline is evident in the many dated and run-down industrial buildings within the Victoria Road Precinct and the emergence of non-industrial uses such as cafes, retail stores, shop-top housing, warehouse conversions and terraces. This is particularly the case with the pockets of the residential areas to the south, west and north of the precinct. Marrickville Public School and an adjoining childcare centre also sit in the centre of the precinct, and at present are surrounded by industrial activities that give rise to land-use conflict and raise safety concerns.

The Victoria Road Precinct is therefore an area in transition that is likely to continue to evolve in response to major metropolitan and regional forces including future infrastructure projects (e.g. Sydney Metro, West Connnex etc), demographic change and broader macro-economic forces, all of which directly impact on the Precinct's viability and attractiveness as a place to live, work and visit.

The decline of inner city manufacturing and the Victoria Road Precinct provides an opportunity to achieve a positive urban renewal outcome that facilitates the effective reuse of this well located brownfield land, and in doing so improve the areas contribution to the present day employment and housing needs of the Marrickville LGA.

Following an in depth analysis of the Precinct, it has been determined that land contained within the southern end of the Precinct is well placed to accommodate additional residential development by virtue of its inner city location and access to public transport, services and amenities. Residential uses would also facilitate the effective reuse of the site in a manner that maximises the area's urban renewal potential and delivers a significant amount of new housing to meet anticipated population growth.

While the Precinct has all the key underlying characteristics to support urban renewal the area is presently constrained by aircraft noise associated with Sydney Airport. This is reflected in the fact that the Precinct presently sits between the 25-35 ANEF contours.

Sydney Airport is one of Australia's most important pieces of infrastructure, generating or facilitating the equivalent of 6% of economic activity by New South Wales, and in 2013 being used by an average of more than 100,000 passengers per day. Given its importance, it is vital to ensure that Sydney Airport's ongoing operation is not compromised by new development within the Precinct.

This includes development that would limit or impact on the airport's ability to operate in accordance with current or future practices as outlined in the Sydney Airport Master Plan 2033.

This Noise Strategy has therefore been prepared to provide an appropriate framework to assist in achieving a balance between urban renewal of the Victoria Road Precinct and protection of Sydney Airport's ongoing operations. The Noise Strategy therefore puts in place measures, standards and requirements to ensure that future development is designed to respond to aircraft related noise impacts, and in doing so is intended to provide the necessary certainty that an appropriate development outcome can be achieve that responds to relevant State Government policies, including Section 117 Direction 3.5 relating to licenced aerodromes.

2.0 Background

2.2 Understanding Noise

To understand the importance and rationale behind this Noise Strategy it is essential to appreciate the nature of aircraft noise and how it affects an area and people's experience, perception and enjoyment of that area. To provide this necessary background we below:

- Discuss how aircraft noise is perceived, measured and analysed;
- Outline who is responsible for ensuring aircraft noise levels are in accordance with relevant Australian standard and regulations;
- Identify how technological and legislative advancements are assisting with reductions in aircraft noise levels.

2.3 Aircraft Noise

Sound is a normal part of everyday life that constantly engages the individual and influences the way that individuals experience daily life. Such is the constant nature of sound that it is often not appreciated or even recognised until it becomes a particular aspect that draws the individual's attention, be it through the enjoyment or alternatively the annoyance of the sound. Generally when sound becomes an annoyance or unwanted then it is commonly referred to as 'noise'.

Figure 2 - Varying sounds of Marrickville area

In highly urbanised areas such as Marrickville and inner Sydney, a cacophony of varying sounds can be heard at any one time, including but not limited to workers and machinery, motor vehicles, people's voices, sirens, music, trains and aircraft. The fact sound from an aircraft is associated with a particular and distinct event (i.e. aircraft passing over) and given it is at a generally higher level than other sounds translate it to a distinguishable and recognisable noise.

Nuisance caused by sound from an aircraft can take a number of forms. It can be annoying to the individual by virtue of its volume compared to the background sound level or because it affects a person's ability to carry out or enjoy a particular activity. For instance waking someone from sleep, interrupting a discussion, or preventing the person from clearly hearing music or the television. The annoyance level of aircraft noise can also depend on other factors such as the tone of the noise, the duration of the noise, the degree of frequency, or the time of day that it is experienced (e.g. aircraft noise at 3am is likely to cause more interruption than at 1pm during the daytime).

2.4 How is aircraft noise generated and how is technology reducing impacts?

Noise from aircraft flying overhead is generated in two main ways:

- Engine noise – Noise associated with engines is primarily generated from the air intake, exhaust mechanisms of the engine as well as other major engine components that are required to operate at high speed to propel the aircraft. Engine noise is the predominant noise heard when an airplane is taking off from the ground; and
- Aerodynamic noise – Aerodynamic noise arises from the airflow around the aircraft body and wings, with the level of noise increasing with aircraft speed and also at low altitude due to the density of the air. Noise associated with the planes aerodynamics is predominantly heard when an airplane is coming in to land at the airport.

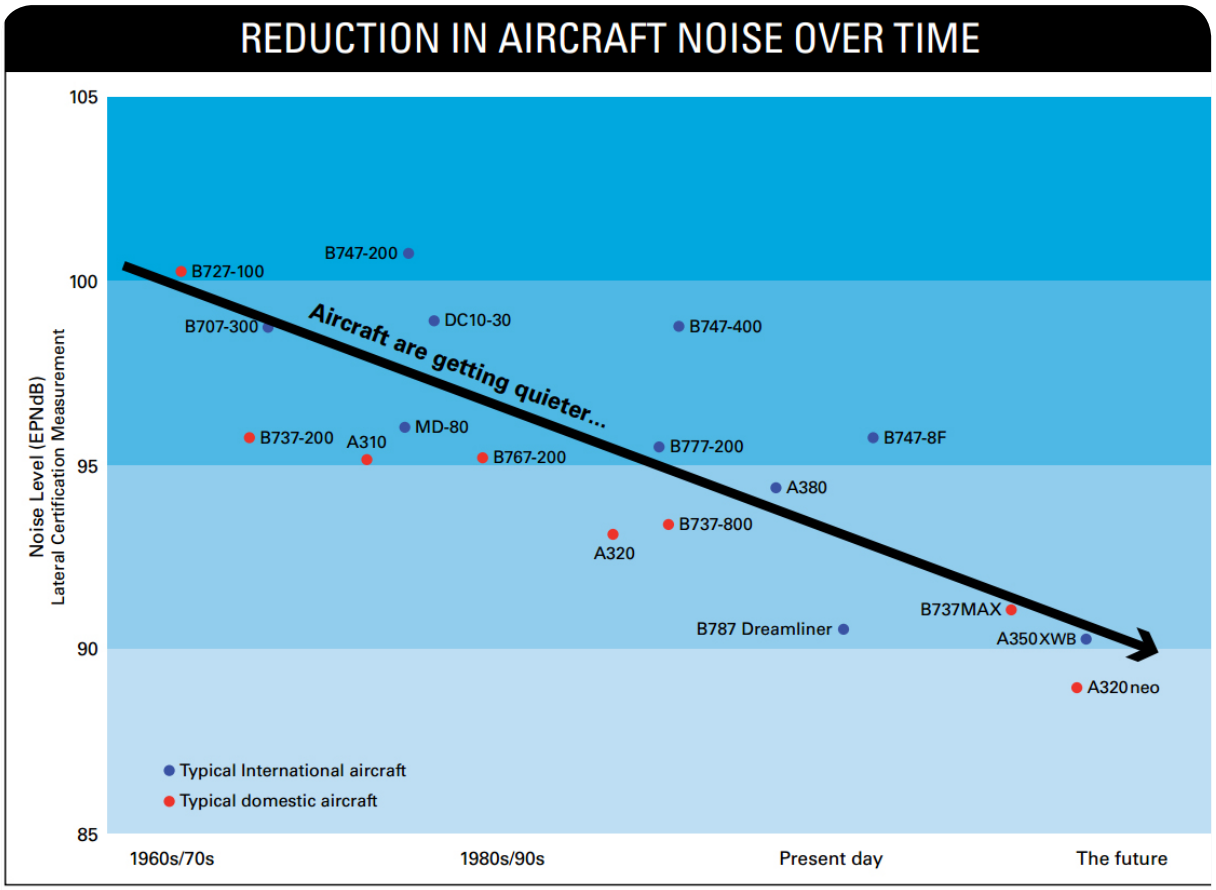
Technological innovation and improvements are constantly being made in the fields of engine design and development and airframe design, both of which are continually helping to advance aircraft safety and minimise their environmental impacts. This includes reducing noise levels and impacts on the public.

This is confirmed in the Sydney Airport Master Plan 2033, which highlights that the global fleet of commercial aircraft are presently undergoing substantial technological transformation, which is resulting in jet aircraft being significantly quieter, cleaner and more fuel efficient than ever before. In the competitive Australian aviation industry, Australian and international airlines are ordering newer aircraft such as Boeing 777s and 787s, as well as Airbus A330s, A350s and A380s, all of which continue to replace older, louder and less fuel efficient jets, such as the Boeing 747s and 767s to maintain competitiveness on Australian routes. New generation larger aircraft are also enabling more passengers to be transported per flight with less impact on the environment.

A clear sign of how technological improvements has reduced aircraft noise is the shrinking of the ANEF contours since 1976, this has occurred despite the number of aircraft using the airport being significantly

2.0 Background

more than in the 1970's and 80's. Through the ongoing technological advancements in aircraft design and construction it is anticipated that the area of affection from aircraft noise will continue to be further consolidated in the future.



Source: ICAO and FAA

Figure 3 - Comparison of noise levels for different aircraft

2.5 How loud are aircraft?

Noise is primarily referred to and measured in the sound measurement unit of the decibel (dB(A)). Human hearing ranges from 0 dB(A), which is the lowest level at which sound can be detected by the human ear, to over 140 dB(A), which is the threshold for the human ear to experience pain from sound. The decibel is a logarithmic unit used to express the ratio between two values of physical quantity, in this case being the overall power and intensity of sound. The smallest change in sound which can be perceived by the human ear is approximately 3 dB(A), while scientific research has identified that a 10 dB(A) increase to the sound level is required in order for the human ear to perceive a doubling of the sound level. **Figure 4** over the page illustrates and benchmarks the decibel levels associated with everyday sounds.

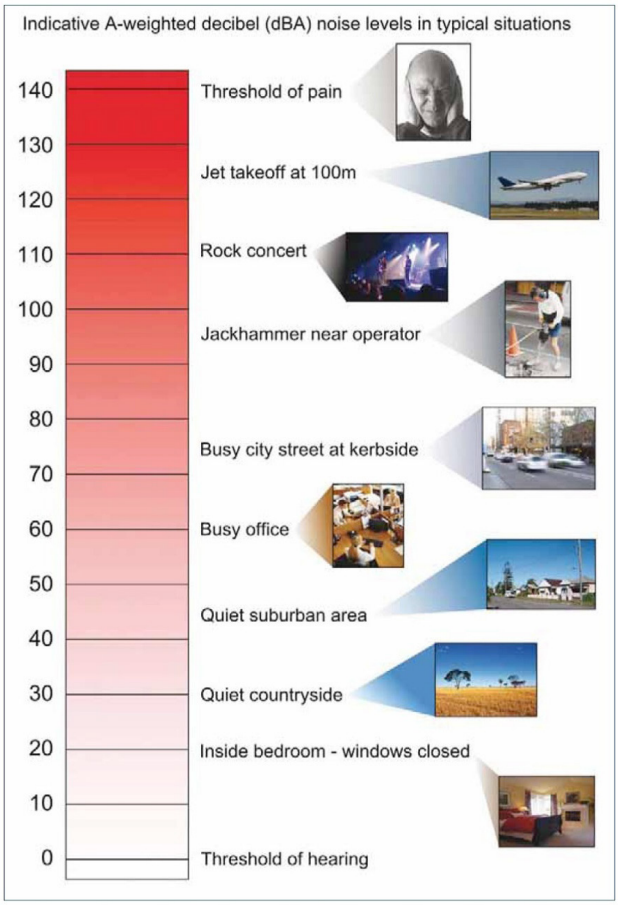


Figure 4 - Noise levels of different activities

2.6 Why has a noise strategy been prepared for the Victoria Road Precinct?

Under Australian Standards the benchmark or threshold used in measuring noise events associated with aircraft is 70 dB(A). This noise level is used commonly within the industry as extensive research has shown that when a noise event exceeds 70 dB(A), it is at this point when aircraft noise has the potential to impede on everyday household activities. The 70 dB(A) benchmark has been established on the basis that:

a. 60 dB(A) is the point at which a sound is likely to interfere with conversation in a home,

b. the exterior walls of a house with the windows open have been shown to reduce the external noise level by approximately 10 dB(A).

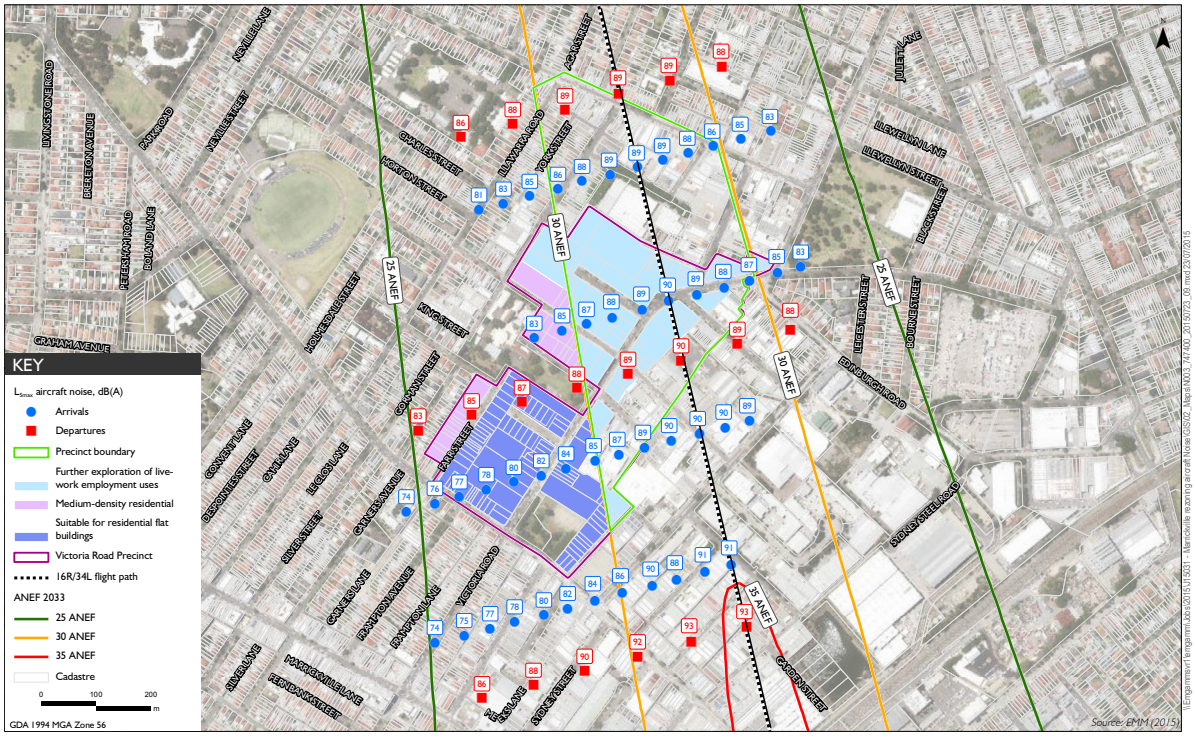
It is noted that an individual during any standard day is highly likely to be experience a multitude of sounds that are louder than 70 dB(A). For instance cars, domestic appliances, music, machinery, elevated voices and construction activities are all everyday sounds that are likely to exceed 70 dB(A). Whilst this is the case people as a collective are generally more socially accepting of some sounds over others as they are able to better associate with those sounds or because the tone, frequency, duration and intensity of those sounds is perceived to be less intrusive and impactful on their enjoyment of the area or a particular activity.

2.0 Background

The external sound levels from aircraft noise affecting the Victoria Road Precinct have been measured and are shown in Figure 3. As shown external noise levels from aircraft within the Victoria Road Precinct from aircraft range between 72 and 90 dB(A). These noise levels are clearly in excess of 70dB(A) which means that the area is subject to noise levels that exceed the traditional threshold for when people inside their home can be affected by aircraft noise if all of their windows are open.

In addition to this it is noted that Section 117 Direction rezoning of land for residential purposes may only be carried in areas above ANEF 25 when it is accompanied and justified by a Noise Strategy.

This Noise Strategy is therefore required to address both the environmental and statutory requirements for the precinct. To do this it sets out the mitigation and attenuation measures required for new development in the precinct to achieve appropriate internal noise amenity.



EMM

AS2021 L_{Smax} noise levels - B747-400 (arrivals and LR departures)
Victoria Road, Marrickville
Design initiatives for aircraft noise
Figure 3.2

Figure 5 - Representative daytime LSmax noise level across the site - B737-800

3.0

PURPOSE OF STRATEGY

3.0 Purpose of Strategy

3.1 Purpose

The Victoria Road Precinct Noise Strategy has been prepared taking into consideration Section 117 Direction 3.5 relating to 'Development near licenced aerodromes'. Specifically the Noise Strategy is intended to:

a. Inform development proponents and the broader community about the facts surrounding aircraft noise resulting from operations at Sydney Airport, and their potential impact on the Victoria Road precinct;

b. Inform development proponents on the level of noise attenuation required to be achieved in future development proposals within the Victoria Road Precinct;

c. Provide a policy framework to be used in the assessment and determination of future development proposals for land within the nominated Victoria Road Precinct; and

d. Ensure that future development is appropriately designed in a manner which achieves an adequate level of amenity for future residents, and does not impact on the operations of Sydney Airport.

This document is to be read in conjunction with other key relevant Strategic Plans and Policies as outlined in **Section 4.0** as well as the technical report titled 'Design Initiatives for Aircraft Noise' prepared by EMGA Mitchell McLennan dated 24.07.2015.

3.2 Objectives

Through the effective implementation of this Noise Strategy all new development within the Victoria Road Precinct will be designed to minimise exposure to noise and vibration occurring from industrial, road and aircraft sources. The key objectives of this strategy are:

- To ensure that all new development in the Victoria Road Precinct is designed to achieve an appropriate level of amenity for its occupants, whether residents or workers, taking into consideration its land use.
- To ensure that all residential development satisfies key necessary design criteria relating to building siting, design, materiality and facilities.
- To ensure that future residents within the Victoria Road Precinct are appropriately informed about aircraft noise within the Victoria Road Precinct;
- To protect the ongoing operation of Sydney Airport and minimise the potential for reverse impacts from new development within the Victoria Road Precinct.

4.0

POLICY CONTEXT

4.0 Policy Context

The following section outlines to policy framework and context relevant to proposed development within areas affected by aircraft noise.

4.1 Section 117 Direction – Development near licenced aerodromes

Section 117 Direction 3.5 relating to 'Development near licenced aerodromes' applies when a relevant planning authority prepares a planning proposal that will create, alter or remove a zone or a provision relating to land in the vicinity of a licensed aerodrome.

The objectives of this direction are:

a. to ensure the effective and safe operation of aerodromes, and

b. *to ensure that their operation is not compromised by development that constitutes an obstruction, hazard or potential hazard to aircraft flying in the vicinity, and*

c. *to ensure development for residential purposes or human occupation, if situated on land within the Australian Noise Exposure Forecast (ANEF) contours of between 20 and 25, incorporates appropriate mitigation measures so that the development is not adversely affected by aircraft noise.*

As a standard approach the Section 117 Direction seeks to restrict residential from occurring on land where the ANEF exceeds 25. Whilst this is the case, an exception to this limitation is possible where the Secretary of the Department of Planning (or an officer of the Department nominated by the Secretary) is satisfied that the provisions of the planning proposal that are inconsistent are:

a. justified by a strategy which:

   i. *gives consideration to the objectives of this direction, and*

   ii. *identifies the land which is the subject of the planning proposal (if the planning proposal relates to a particular site or sites), and*

   iii. *is approved by the Director-General of the Department of Planning, or*

This Noise Strategy has been prepared with the specific intention of providing a robust precinct specific strategy to address aircraft noise related issues associated with the redevelopment of the Victoria Road Precinct, and has been formulated taking into consideration the key objectives of the Section 117 direction. Specifically, the following is noted in regards to the key objectives:

The Noise Strategy will not result in future development which could compromise the effectiveness or safety of Sydney Airport. The measures outlined at Section 5.0 have been designed to minimise potential impacts on residents from aircraft, as well as outline measures to minimise potential for 'reverse impacts' on Sydney Airport from future residents within the Precinct.

- The operation of the airport will not be affected by the Noise Strategy in any manner which will constitute a hazard / potential hazard to aircraft flying in the vicinity of development. All proposed LEP height limits will meet the relevant OLS and PAN OPS requirements.

- Although the Noise Strategy envisages the potential for residential development to occur in areas which have ANEF contours of between 25 and 30, the controls measures and initiatives outlined in this Noise Strategy will ensure that development in the Victoria Road Precinct is not adversely affected by aircraft noise, and that it will achieve an appropriate level of residential amenity for human occupation.

4.2 National Airports Safeguarding Framework

The National Airports Safeguarding Framework is a national land use planning framework applying to all states and territories in Australia, which aims to:

- *"improve community amenity by minimising aircraft noise-sensitive developments near airports; and*
- *Improve safety outcomes by ensuring aviation safety requirements are recognised on land use planning decisions through guidelines being adopted by jurisdictions on various safety related issues" (Department of Infrastructure and Regional Development)."*

The Framework is underpinned by seven (7) key principles that have been prepared by planning and transport officials at all levels of government, with the objective of developing a consistent and effective national framework to safeguard both airports and communities from inappropriate on and off-airport developments. These principles have been designed on the basis that a national approach can improve consistency across the country and can assist in improving planning outcomes near airports and under flight paths. These principles along with commentary on how the strategy responds are outlined below:

- *Principle 1: The safety, efficiency and operational integrity of airports should be protected by all governments, recognising their economic, defence and social significance.*

  Response: Sydney Airport is of national significance, and is one of the main economic gateways to Sydney and Australia. The provision of residential development in the Victoria Road Precinct will be required to be implemented in accordance with the objectives and controls of this Noise Strategy along with other key local, State and National Government controls. As a result all future development within the precinct will not affect the safety, efficiency and operational integrity of Sydney Airport.

- *Principle 2: Airports, governments and local communities should share responsibility to ensure that airport planning is integrated with local and regional planning.*

  Response: This Noise Strategy has been developed through consultation with various government and private agencies including Sydney Airport Corporation Limited, the NSW Department of Planning and Environment, the Commonwealth Department of Infrastructure and Regional Development, and Marrickville Council. The Noise Strategy has been prepared in response to Section 117 Direction 3.5 and has been drafted taking into consideration the National Aviation Framework, AS 2021 Aircraft Noise Intrusion, A Plan for Growing Sydney and the Sydney Airport Masterplan 2033.

4.0 Policy Context

- *Principle 3: Governments at all levels should align land use planning and building requirements in the vicinity of airports.*

  Response: This Noise Strategy has been prepared to specifically support land use planning for the Victoria Road Precinct. It provides a robust planning framework, including setting out clear building requirements, to ensure that all new development within the precinct is designed to achieve an appropriate level of amenity for its occupants taking into consideration its land use.

  All development proposals for land within the Victoria Road Precinct will be required to comply with the requirements of this Noise Strategy and will be the subject of assessment by Marrickville Council and any other applicable levels of government. The measures outlined at Section 5.0 in many cases exceed those usually required to be demonstrated at the Development Application Stage. However, in the context of the Victoria Road Precinct, such considerations are necessary to achieve adequate amenity and not impact on the operations of Sydney Airport.

- *Principle 4: Land use planning processes should balance and protect both airport / aviation operations and community safety and amenity expectations.*

  Response: As outlined in Section 2.0 this Noise Strategy has been drafted to provide a robust planning framework that ensures that all new development in the Precinct achieves an appropriate level of amenity for its occupants, that future residents are appropriately informed about aircraft noise, and that new development will not result in any impact on airport / aviation operations, and that it is safeguarded against the potential for any 'reverse impacts' of future development on the airport operations. For the purposes of this Noise Strategy, a 'reverse impact' is understood to mean an impact on the operations of Sydney Airport directly arising from the population of residential development within the vicinity of air corridors, with an example being objections from future residents further expanding the curfew hours of Sydney Airport.

- *Principle 5: Governments will protect operational airspace around airports in the interests of both aviation and community safety.*

  Response: The underlying purpose of this strategy is to guide and regulate new development within the Precinct to ensure it achieves adequate amenity for future occupants, and does not impact on the operations of Sydney Airport.

- *Principle 6: Strategic and statutory planning frameworks should address aircraft noise by applying a comprehensive suite of noise measures.*

  Response: This Noise Strategy has been specifically drafted to outline a comprehensive suite of noise measures, initiatives and requirements, that future developments within the Precinct are required to meet in order to ensure an acceptable level of amenity for future occupants. Once adopted the Noise Strategy will take the form of a Development Control Plan and form part of the Council's planning framework.

- *Principle 7: Airports should work with governments to provide comprehensive and understandable information to local communities on their operations concerning noise impacts and airspace requirements.*

Response: Section 5.0 of this Noise Strategy sets out controls and requirements for the implementation and management of new development within the Precinct. Central to this is the need to provide an information pack to new residents and business operators upon occupation of premises, to ensure that they are appropriately informed about aircraft noise within the Victoria Road Precinct.

4.3 Australian Standard 2021:2015 – Acoustics, Aircraft Noise Intrusion, Building Siting and Construction

Australian Standard (AS) 2021:2015 works in conjunction with the ANEF relevant charts for Sydney Airport to provide standards for developments which are subject to noise generated by the movement of aircraft. Specifically, the Standard 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;*

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 types of building construction necessary to provide a given noise reduction, provided that external windows and doors are closed."*

The Standard has the overall objective of working as a guidance document for the relevant stakeholders in the planning process in regards to the siting and construction of new buildings against aircraft noise intrusion. This Noise Strategy is based on the methodology and findings of the study of aircraft noise impact undertaken by EMM as part of the overall Planning Proposal package. The design initiatives for aircraft noise which are the subject of EMM's report have been incorporated at **Section 5.0** of this Noise Strategy.

As the study undertaken by EMM was fundamentally set out in accordance with AS2021:2015, this Noise Strategy is consistent with the subject Australian Standard. The measures proposed to ameliorate potential acoustic impacts from aircraft at **Section 5.0** reflect the recommendations of the 'Design Initiatives for Aircraft Noise' report prepared by EMM, and will result in the ultimate delivery of dwellings which are of an satisfactory acoustic amenity level.

4.4 A Plan for Growing Sydney

A Plan for Growing Sydney is the NSW Government's overarching strategy which aims to guide land use planning decisions within 43 Local Government Areas in and around Sydney over the course of the next 20 years. Faced with an anticipated population growth of 1.6 million people over the coming years to 2031, *A Plan for Growing Sydney* intends to outline the measures in which the government intends to deliver the required infrastructure, housing and employment to support this growth.

A Plan for Growing Sydney acknowledges the significant housing pressures that are currently facing Sydney, and outlines in the form of a series of 'goals' and 'directions', the methods in which the Government plans to achieve the housing targets within each sub-region.

4.0 Policy Context

The Government states upfront its commitment to *"work with councils and the development sector to put in place flexible planning controls which enable housing development in locations that are feasible for development"*. This is furthered where growth is located in close proximity to transport, utilities and social infrastructure.

Under Action 2.1.1 of *A Plan for Growing Sydney*, the most suitable areas for significant urban renewal are identified as those which are *"in and around centres that are close to jobs and are serviced by public transport services that are frequent and capable of moving large numbers of people"*. Inner city locations, such as the Victoria Road Precinct, which are close to jobs and within close proximity to train stations and/or high frequency bus corridors are considered to meet these criteria.

As the central and inner urban areas of Sydney are highly constrained by existing development there is a finite amount of land that meets the requirements of A Plan for Growing Sydney, thus creating additional pressure to find sites that are capable of delivering housing to meet future targets and satisfy demand. This includes the use of sites with underlying challenges, such as the Victoria Road Precinct, due to its location in close proximity to Sydney Airport. Advances in aviation technology and innovation in building design mean that sustainable and high quality development outcomes that were not possible in the past are now able to be achieved. The benefit of this is that areas such as the Victoria Road Precinct are now capable of accommodating significant housing growth subject to the appropriate mitigation measures and design initiatives being put in place.

Notwithstanding the Plan's drive for delivering addition housing, it is vital that the demand for additional infill housing in Sydney doesn't compromise the capacity or efficiency of Sydney's gateway and freight networks, which include Sydney Airport and Port Botany. *A Plan for Growing Sydney* clearly acknowledges that the gateways are located *"close to areas experiencing significant urban renewal"* (Direction 1.5). Due to the location and orientation of the Airport's runways, there is already a high level of residential development that aligns with the existing flight corridors, and it is reasonable to expect that this will continue into the future. *A Plan for Growing Sydney* responds to this through two Actions, these being.

- Action 1.5.1: *'Develop and implement a strategy for the Sydney Airport and Port Botany precincts to support their operation, taking into account land uses and the proposed road transport investments.'*

  Action 1.5.1 makes reference to *"identify and reduce land use conflicts between growing residential areas and the freight transport network"*. The measures at Section 5.0 will ensure that land use conflicts don't arise from any residential development within close proximity to Sydney Airport, such as the Victoria Road Precinct.

  Additionally, a measure is listed to *"protect strategically located sites that support the freight network, commencing with those most affected by aircraft noise"*. Although the airport is located in close proximity to various industrial precincts, these should not be immediately assumed to support the role of Sydney Airport and Port Botany as gateways in Sydney. Measures such as the vacancy rates of properties within industrial zones, and whether the properties 'support' the freight network with uses which support Sydney Airport or Port Botany are to be used to

determine whether a site is 'strategically located'. For example, Marrickville employment lands contain few, if any uses which directly support the role of either Sydney Airport or Port Botany, while surveys have confirmed that the Victoria Road Precinct currently does not have any uses that support Sydney Airport. These lands would be available to review the permissible uses, and introduce other compatible uses with adequate buffer measures.

An example of a precinct which does support the role of Sydney Airport is the 'Qantas Lands' precinct in Mascot. This precinct includes uses which directly relate to the function of the airport, including flight operations offices, the airport service vehicle depot and the aircraft food catering centre. Removal of these services would impact on the functionality of Sydney Airport, and the services are considered vital to the continued success of the airport.

- Action 1.5.2: *'Support the productivity of the freight network by identifying buffers around key locations on the freight network.'*

  Although primarily related to the operation of the road freight network, Action 1.5.2 also has a degree of application to the airspace freight network, which comprises both the movement of freight aircraft at all times of the day, as well as the movement of passenger aircraft (which carry additional freight). For example a fully loaded passenger Boeing 777-300 can carry 23,000kg of additional freight, and a full loaded passenger Airbus A330-200 can carry 14,100kg of additional freight.

  Under Action 1.5.2, the Government notes that it will *"work with local councils to identify where buffer measures in local planning controls could help to minimise the impact of development on the efficient functioning of the freight industry"*. This Noise Strategy outlines a range of buffer measures, which will collectively contribute to the minimisation of impacts arising from aircraft noise, and will enable future development to occur within the vicinity of the aircraft corridors of Sydney Airport without impacting the efficiency of the freight industry.

Key industrial and employment lands are also acknowledged under *A Plan for Growing Sydney* as being a necessary element in planning for the future, where they are of a high level of importance. For this, the Government has created an *Industrial Lands Strategic Assessment Checklist* which needs to be consulted as part of any proposal to rezone industrial lands to a non-industrial use.

Where industrial and employment lands are not of key strategic importance at a regional level, and exhibit traits such as high vacancy levels or low employment generation, preservation of these lands for industrial uses should be a lesser priority. Where such lands are located in small isolated pockets, and are not connected to nearby freight infrastructure, or are in areas which are adjacent to existing residential areas, these should all be contributing factors in determining the regional significance of these areas. *A Plan for Growing Sydney* recognises that the manufacturing sector, as well as transport and logistics, are largely oriented towards Western Sydney, where the land and infrastructure available is such that which supports large scale industrial development of this sort.

In regards to industrial areas located in close proximity to Sydney Airport and Port Botany there should also

4.0 Policy Context

be an assessment of the proportion of businesses which relate to and support the Airport and Ports in any assessment of significance.

It is noted that the Victoria Road Precinct falls wholly outside of the area identified as strategic lands for the Port Botany and Sydney Airport Operations as outlined in *A Plan for Growing Sydney*. It is also considered that the Precinct would be able to make a better contribution to the Sydney Airport/Port Botany economic centre as a mixed business precinct rather than an industrial precinct.

4.5 Victoria Road Precinct Employment Strategy

The Victoria Road Precinct Employment Strategy has been prepared for the area taking into consideration key statistical data, macro-economic trends and the latest strategic planning policy and government initiatives.

The Employment Strategy is aimed at boosting employment and the Precinct's economic productivity, improving the urban environment and achieving key overarching strategic planning objectives. It is grounded in the objectives and vision contained in A Plan for Growing Sydney, the NSW Government's recently released metropolitan strategy. Key objectives of the Employment Strategy are:

- Support NSW 2021 and A Plan for Growing Sydney by increasing the number of jobs suitable for the local residential workforce of Marrickville to reduce commute times and support non-car travel.
- Ensure that there is no net loss in the number or persons employed in the precinct, and support future employment growth.
- Facilitate a transition from industrial business uses to modern economy employment that aligns with the skills base of Marrickville residents.
- Build on existing business character and strengths of the precinct by supporting home-improvement showrooms, creative uses and food wholesalers
- Avoid employment and business uses that would detract from the retail streets and centres at Marrickville Road, Marrickville Metro and Newtown.
- Ensure that new business premises are flexible and allow for a range of business types and uses to be accommodated as the precinct evolves.
- Improve the interface between the precinct and surrounding residential land uses by reducing land-use conflict.
- Support business uses that can improve and activate streetscapes, increase connectivity and support walking and cycling.
- Where appropriate, consider the ability to incorporate compatible residential uses as part of mixed-use development.

In working to achieve the above objectives the Employment Strategy identifies a range of employment typologies that will support the evolution of the employment precinct in tandem with the needs of the local

community. Specifically it recommends that:

- land predominately to the west of Victoria Road be considered for a broader mix of business uses that meet the employment, lifestyle and service needs of Marrickville's local community. Such uses have the potential to create a vibrant and active precinct that will boost employment and economic productivity and ensure that appropriate interfaces are put in place to resolve land use conflicts between exiting residential, industrial and community uses to improve local amenity and safety.
- land within the north east corner of the Precinct be retained for industrial related uses and activities
- a range of new uses be permitted in specific parts of the Victoria Road Precinct, including:
  - *i.* creative industries;
  - *ii.* art studios and galleries;
  - *iii.* recreation and leisure uses;
  - *iv.* home improvement showrooms;
  - *v.* wholesale food retail with some limited ancillary direct-to-public sales; and
  - *vi.* professional offices and local services.
- There is an opportunity to create an active corridor along Victoria Road through a combination of showrooms, commercial and wholesale retail uses.
- Given the precinct's high level of accessibility by public transport and its proximity to local retail services, town centres, recreation and leisure facilities and open space, the southern end of the precinct between the 25-30 ANEDF contour may be appropriate for residential and mixed use development subject to addressing aircraft noise constraints.

4.6 Sydney Airport Master Plan 2033

The Sydney Airport Master Plan 2033 (Master Plan) represents the vision for the operation of Sydney Airport and is to be used as a tool to forecast growth in air travel for tourism and trade to and beyond 2033. The master plan is stated to be based on the premise that there will be no changes to the curfew, aircraft movement cap, noise sharing arrangements, flight paths, runways and regional airline access arrangements. The location of the precinct in close proximity to the airport makes this document a relevant consideration as part of the Noise Strategy.

Chapter 14 of the Master Plan titled 'Noise Management' details methods in which aircraft noise can be measured, and the various noise benchmarks which are currently applied to aircraft operations and surrounding land uses. It details aircraft flight paths, how noise is measured, mapped and communicated and has information on ground-based noise. The key points in this chapter also include Sydney Airport's acknowledgement of the noise impacts it produces on the community and its commitment to working

4.0 Policy Context

with the community, governments and the aviation industry to manage and mitigate these impacts. The master plan states that aircraft in Australian skies are amongst the world's most modern and with quieter aircraft replacing older ones, the impacts form aircraft will continue to reduce. Accordingly, Sydney Airport Corporation Limited demonstrates that the ANEF contours when measured in 2033 will cover a significantly less than those measured in 1976 (see **Figure 6**).

This is also reflected in community announcements advertised by Sydney Airport Corporation in the local paper The Leader (Thursday 27 September 2012), which stated "The fleet of aircraft flying into Sydney is one of the most modern in the world. Aircraft coming off the production line today are about 75% quieter than they were 40 years ago. The aviation industry is working to reduce this even more. With new generation quieter aircraft continuing to replace older noisier aircraft, noise impacts around Sydney Airport will continue to improve, helping to offset increased movements."

This is supported by the movement of airlines to deploying newer and quieter jets on various routes to Sydney, and the large fleet renewal programs currently planned and underway by major Australian airlines. The Master Plan, demonstrates a clear movement over time towards quieter aircraft in both the domestic and international markets from noisier aircraft which previously were flown to Sydney Airport.

Sydney Airport Corporation also recognises within its Master Plan that the responsibility of managing aircraft noise in a land use perspective rests with the NSW Government and local councils. The Master Plan makes reference to the Section 117 Direction previously discussed as a primary measure for controlling development in areas subject to aircraft noise, and also references land use planning controls and acoustic standards as being the most effective measure to control aircraft noise from the land use planning perspective.

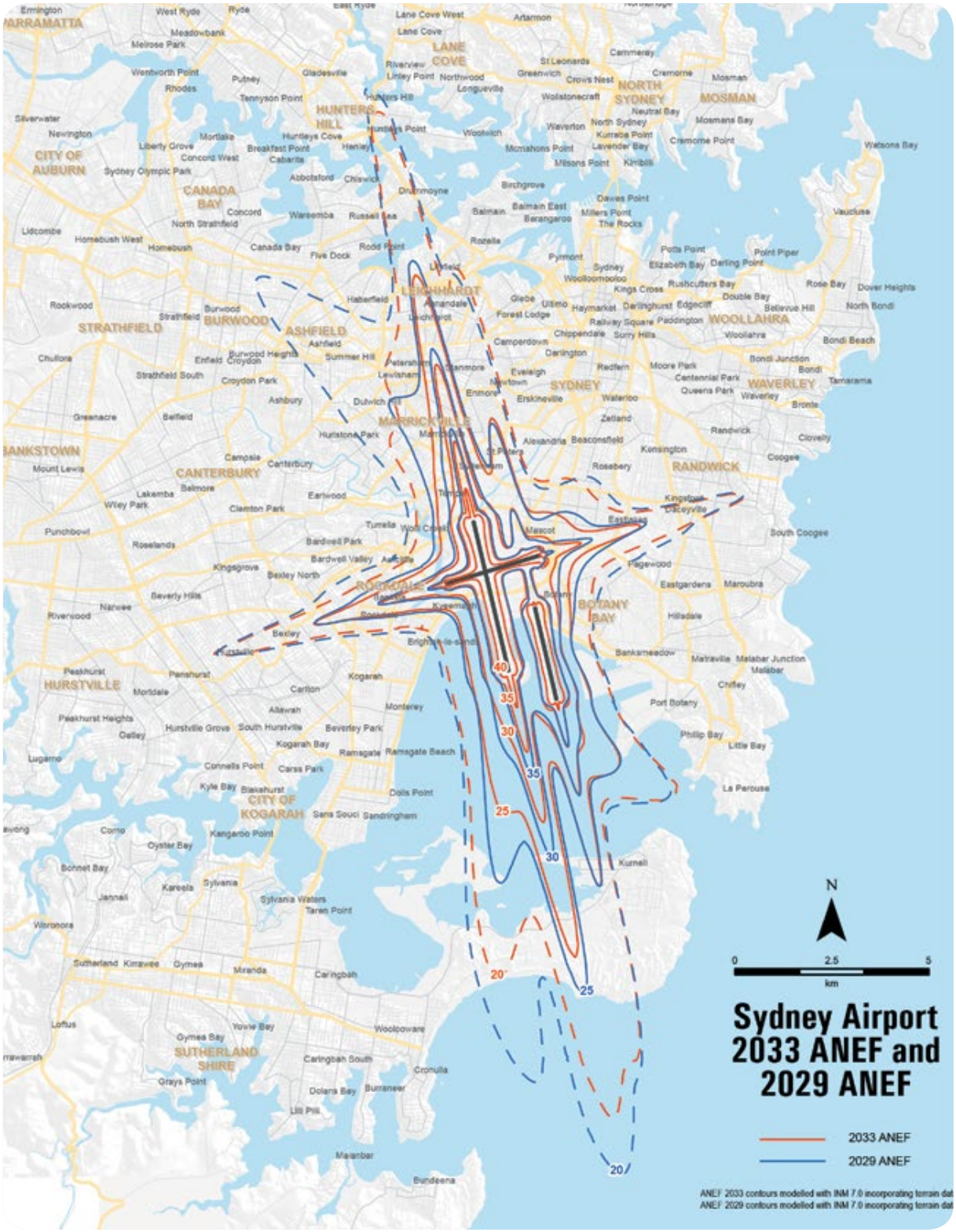


Figure 6 - Comparison of ANEF Contour maps for 1976, 2011 and 2033

Source: Sydney Airport Masterplan

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5.0

TECHNICAL ANALYSIS

5.0 Technical Analysis

EMGA Mitchell McLennan Pty Ltd (EMM) has undertaken a technical study of aircraft noise and its impacts on land located in the vicinity of Victoria Road, Marrickville (Refer to **Appendix D**). This study has been prepared with the specific intention of determining the areas suitability to accommodate residential land uses, and forms Part 2 of the Noise Strategy. Specifically the EMM Noise Study:

- Documents noise levels across the area using noise data contained in AS 2021. Noise levels affecting the area have been documented using published AS 2021 data relevant to the site (at a 50m or 100m sideline distances for landings and departures respectively) that is laid over the area to clearly illustrate the levels of aircraft noise across the precinct.
- Identifies current Government internal noise goals and criteria for residential development affected by aircraft operations.
- Identifies the worst case level of noise attenuation required for the site to achieve compliance with AS 2021 internal design goals.
- Identifies design measures, initiatives and construction options to satisfy minimum building element sound ratings (Rw), with a particular focus on performance requirements for facade, roof/ceiling and glazing treatments.
- Quantifies and documents the effectiveness of such design measures and initiatives.
- Sets out recommended design guidelines and objectives with regards to building orientation, room layout, building design and construction materials to achieve internal noise goals and objectives.

Overall, following detailed technical analysis the EMM Noise Study concludes that current building materials can be reasonably applied to new development and will be sufficient to achieve internal noise goals set by AS 2021. Subject to the implementation of these measures and achievement of the internal noise levels, EMM conclude that an appropriate level of internal residential amenity is able to be achieved.

Using the outcomes and recommendations of the EMM Noise Study, an area specific noise strategy has been developed which is set out in Section 6.0 below.

6.0

STRATEGY

6.0 Strategy

This section outlines the objectives, design principles and design solutions relating to noise impacts on new development proposals within the Victoria Road Precinct. Proponents for all new development proposals within the Victoria Road Precinct are to be designed in accordance with the principles and design solutions set out below. Development applications are to be accompanied by adequate supporting technical information that demonstrates how the proposed development has been designed to meet the requirements of this strategy.

6.1 Objectives

- To ensure that all new development in the Victoria Road Precinct is designed to achieve an appropriate level of amenity for its occupants taking into consideration its land use.
- To ensure that all residential development satisfies key necessary design criteria relating to building siting, design, building materials and facilities.
- To ensure that new development within the Precinct complies with Australian Standard AS 2021:2015.
- To ensure that future residents within the Victoria Road Precinct are appropriately informed about aircraft noise within the Victoria Road Precinct;
- To protect the ongoing operation of Sydney Airport and minimise the potential for reverse impacts from new development within the Victoria Road Precinct.

6.2 Building Design

Effective mitigation against aircraft noise begins with the fundamentals of design. Effective and thoughtful use of site layout, orientation, internal building configuration and apartment design can significantly assist with laying the foundations to ensuring high quality amenity is achieved for future occupants of buildings. Table 1 sets out the design principles and solutions for achieving effective design for new development within the Victoria Road Precinct.

Design Principles		Design Solution	
DP1	To minimise the level of noise exposure to future development.	Where possible the following design solutions should be achieved for new development:	
DP2	To ensure buildings are designed to respond to site specific aircraft noise constraints taking into consideration site layout, building orientation, building configuration and apartment design.	DS1	The site layout and orientation of new buildings should be designed to minimise potential noise exposure from aircraft.
		DS2	The internal configuration of new residential buildings should be designed to minimise the number of apartments facing toward the flight path.

DP3	To ensure that occupants of new buildings, particularly residents of new residential building, are afforded an appropriate level of internal amenity in accordance with AS 2021	DS3	Apartment layouts should be configured so that less sensitive non-habitable rooms and spaces (e.g. bathrooms, kitchens, laundries, hallways) are positioned along facades that have a higher level of noise exposure.
DP4	To ensure that all new dwellings are provided with adequate and useable private amenity space.	DS4	Building facades should be designed to minimise potential acoustic impacts (e.g. double brick cavity design will be more appropriate in the Victoria Road Precinct than extensive glazed facades), whilst still achieving a high quality design outcome.
DP5	To allow flexibility in the balance between ventilation and sound insulation taking into consideration the precinct specific constraints.	DS5	Building rooftops should be designed to mitigate sound exposure to the internal components of the building (e.g. pitched tiled roof with insulation would be more appropriate than a flat sheet metal roof without insulation).
		DS6	Wintergardens are permitted in place of balconies as a means of providing private open space for residential dwellings. In such circumstances, wintergardens may be excluded from Gross Floor Area.
		DS7	Where wintergardens are provided in place of balconies, they must be designed with an operable glazing system (.e.g. louvres or sliding screens) that allows for natural ventilation if desired by the occupier.
		DS8	A combination of natural and/or mechanical ventilation may be used as an alternative design solution to satisfy ventilation requirements where developments are unable to be naturally ventilated due to aircraft noise constraints.
		DS9	DS9 Where mechanical ventilation is proposed it still must be demonstrated that a minimum of 60% of apartments within the development are capable of being naturally ventilated.

Table 1 - Building Design Requirements

6.0 Strategy

6.3 Building Materials and Treatments

Use of the correct building materials is essential to ensure the internal acoustic environment for new development within the Victoria Road Precinct is conducive with its intended land use and achieves the necessary internal noise goals in accordance with AS2021. The following section sets out the relevant internal noise goals, outlines the acoustic performance requirement of key building elements and provides illustrative examples on how a new apartment/building might be designed to satisfy these requirements.

Design Principles		Design Solution	
DP1	To ensure that all new buildings are designed with materials and treatments that appropriately insulate against aircraft noise to achieve internal noise levels in accordance with AS 2021.	DS1	Building materials are to be selected to achieve appropriate construction acoustic performance ratings taking into consideration the intended land use and site specific noise exposure level.
		DS2	Internal noise levels of new development within the Victoria Road Precinct are to have internal noise levels no greater than the identified maximum noise values when an aircraft passes overhead:

Building Type and Activity	Indoor LSmax Design Sound Level, dB(A)
Houses, home units, flats, caravan parks	
Sleeping areas, dedicated lounges	50
Other habitable spaces	55
Bathrooms, toilets, laundries	60
Hotels, motels, hostels	
Relaxing, sleeping	55
Social activities	70
Service activities	75
Schools/Universities	
Libraries, study areas	50
Teaching areas, assembly areas	55
Workshop, gymnasia	75
Hospitals, nursing homes	
Wards, theatres, treatment and consulting rooms	50
Laboratories	65
Service areas	75
Public Buildings	
Churches, religious activities	50
Theatres, cinemas, recording studios	40
Court houses, libraries, galleries	50

	Commercial buildings, offices, shops	
	Private offices and conference rooms	55
	Drafting, open offices	65
	Typing, data processing	70
	Shops, supermarkets, showrooms	75
	Industrial	
	Inspection, analysis, precision work	75
	Light machinery, assembly, bench work	80
	Heavy machinery, warehouse, maintenance	85

Table 2 - Building Material Requirements

Below is guidance on how the required internal noise levels might be achieved for a proposed development within the Victoria Road Precinct. **Table 3** lists construction acoustic performance ratings (or weighted sound reduction index, Rw) for individual building elements. These performance ratings are minimum requirements and should be used as the base starting point for new development proposals within the Victoria Road Precinct. There are five categories of acoustic performance, with Category 1 being the least onerous and Category 5 the most onerous.

Category	Windows/ Sliding Doors	Facade	Roof	External Door	Floor
1	24	38	40	28	29
2	27	45	43	30	29
3	32	52	48	33	50
4	35	55	52	33	50
5	43 to 47	55	55	40	50

Note: 1. Floor Rw only apply to ground floor.

Table 3 - Building Material Requirements

Source: Sydney Airport Masterplan

The five categories can be characterised in general terms with respect to an everyday familiar situation (eg house 10m from a 60/70km/h street) as follows:

- Category 1 - road with a daily average traffic volume of 800-2,500 vehicles, typically a minor collector road serving less than 100 houses with no through traffic (this is a relatively standard light weight clad dwelling construction with standard glazing),
- Category 2 - road with a daily average traffic volume of 2,500-7,500 vehicles, typically a collector/ distributor road serving 200 to 250 dwellings with some through traffic, eg Victoria Road Bellevue Hill;

6.0 Strategy

- Category 3 - road with a daily average traffic volume of 7,500-18,000 vehicles, eg King Street Newtown (this dwelling is 'middle' of the categories having brick veneer facades, laminated glazing and roof insulation);
- Category 4 - road with a daily average traffic volume of 18,000-30,000 vehicles, eg Beecroft Road Cheltenham; and
- Category 5 - road with a daily average traffic volume of 30,000-60,000 vehicles, eg Princess Highway Tempe (this is a well-constructed double masonry dwelling with double glazing, acoustic seals, double ceiling lining and insulation).

Source: Volume ranges adopted from "Development near rail corridors and busy roads - Interim guideline", NSW Department of Planning, December 2008.

Tables 4 to 6 below illustrates possible construction methods/treatments for achieving the required sound reduction levels set out in Table 3. The construction methods/treatments set out in these tables do not represent the only design solution capable to provide the necessary sound reduction. They are therefore to be used as a guide only.

Category	Min Rw	Construction
1	24	Openable with minimum 4mm monolithic glass and standard weather seals
2	27	Openable with minimum 6mm monolithic glass and full perimeter acoustic seals
3	32	Openable with minimum 6.38mm laminated glass and full perimeter acoustic seals
4	35	Openable with minimum 10.38mm laminated glass and full perimeter acoustic seals
5	43	Openable Double Glazing with separate panes: 5mm monolithic glass, 100mm air gap, 5mm monolithic glass with full perimeter acoustic seals.
	47	Openable Double Glazing with separate panes: 6mm monolithic glass, 150mm air gap, 4mm monolithic glass with full perimeter acoustic seals.

Table 4 - Windows and sliding doors construction methods/ treatments

Source: "Development near rail corridors and busy roads - Interim guideline", NSW Department of Planning, December 2008. 2. EMM database.

Category	Min Rw	Construction
1	38	**Timber Frame or Cladding:** 6mm fibre cement sheeting or weatherboards or plank cladding externally, 90mm deep timberstud or 92mm metal stud, 13mm standard plasterboard internally.
		Brick Veneer: 110mm brick, 90mm timber stud or 92mm metal stud, minimum 50mm clearance between masonry and stud frame, 10mm standard plasterboard internally.
		Double Brick Cavity: 2 leaves of 110mm brickwork separated by 50mm gap.
2	43	**Timber Frame or Cladding:** 6mm fibre cement sheeting or weatherboards or plank cladding externally, 90mm deep timber stud or 92mm metal stud, 13mm standard plasterboard internally with R2 insulation in wall cavity.
		Brick Veneer: 110mm brick, 90mm timber stud frame or 92mm metal stud, minimum 50mm clearance between masonry and stud frame, 10mm standard plasterboard internally.
		Double Brick Cavity: 2 leaves of 110mm brickwork separated by 50mm gap.
3	52	**Brick Veneer:** 110mm brick, 90mm timber stud or 92mm metal stud, minimum 50mm clearance between masonry and stud frame, 10mm standard plasterboard internally.
		Double Brick Cavity: 2 leaves of 110mm brickwork separated by 50mm gap.
4	55	**Brick Veneer:** 110mm brick, 90mm timber stud or 92mm metal stud, minimum 50mm clearance between masonry and stud frame, R2 insulation batts in wall cavity, 10mm standard plasterboard internally.
5	55	**Double Brick Cavity:** 2 leaves of 110mm brickwork separated by 50mm gap with cement render to the external face of the wall and cement render or 13mm plasterboard direct fixed to internal faces of the wall.

Table 5 - Facade/ elevation construction methods/ treatments

Source: "Development near rail corridors and busy roads - Interim guideline", NSW Department of Planning, December 2008.

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Category	Min Rw	Construction
1	40	Pitched concrete or terracotta tile or metal sheet roof with sarking, 10mm plasterboard ceiling fixed to ceiling joists, R1.5 insulation batts in roof cavity.
2	43	Pitched concrete or terracotta tile or metal sheet roof with sarking, 10mm plasterboard ceiling fixed to ceiling joists, R2 insulation batts in roof cavity.
		Low slope metal roof, timber or steel purlins, furring channels, 2 x 16mm Gyprock Fyrchek plasterboard, R2.5 insulation batts in roof cavity.
3	48	Pitched concrete or terracotta tile or sheet metal roof with sarking, 1 layer of 13mm sound-rated plasterboard fixed to ceiling joists, R2 insulation batts in roof cavity.
4	52	Pitched concrete or terracotta tile or sheet metal roof with sarking, 2 layers of 10mm sound-rated plasterboard fixed to ceiling joists, R2 insulation batts in roof cavity.
5	55	Pitched concrete or terracotta tile or sheet metal roof with sarking, 2 layers of 10mm sound-rated plasterboard fixed to ceiling joist using resilient mounts, R2 insulation batts in roof cavity

Table 6 - Roof/ Ceiling construction methods/ treatments

6.4 Illustrative Examples

Using the above principles, guidelines and treatments, the following indicative floor layouts (**Figures 7 and 8**) illustrate how a future residential development within the Victoria Road Precinct could be designed to respond to this Noise Strategy and other key relevant acoustic requirements.

It is important to note that the acoustic requirements do not result in the need to design an apartment in a particular way. As demonstrated by the illustrative examples, numerous designs and layouts can still be achieved whilst adhering to the principles and requirements set out in this Noise Strategy.

The examples below illustrate different ways in which an apartment can be designed, for instance, the inclusion of a wintergarden vs the use of a balcony to provide open space, and the positioning of living areas, kitchens and bathrooms.

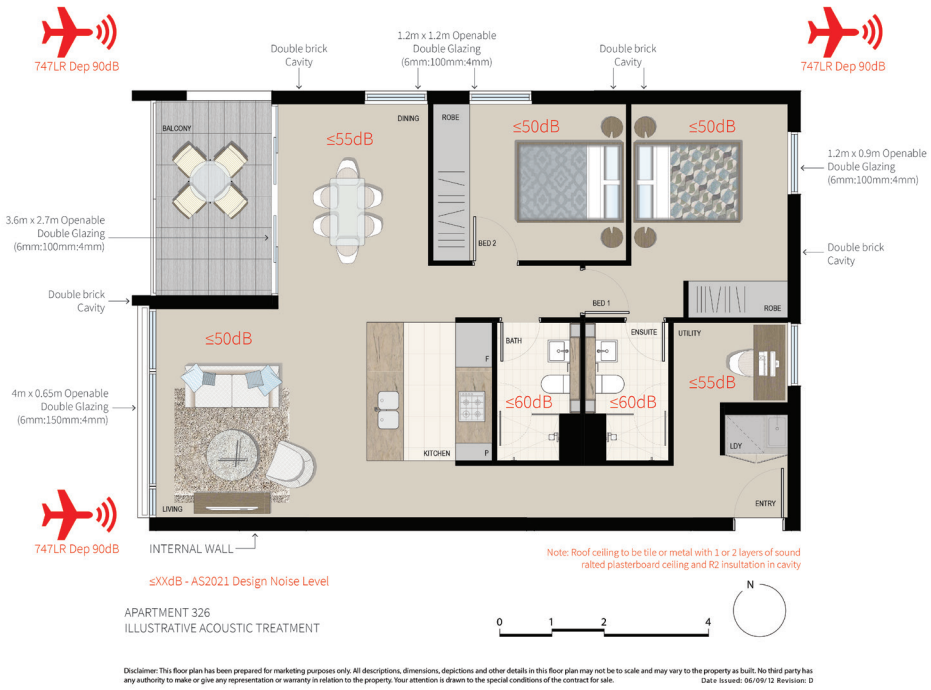

Figure 7 - Indicative floor layout

Source: Turner Associates

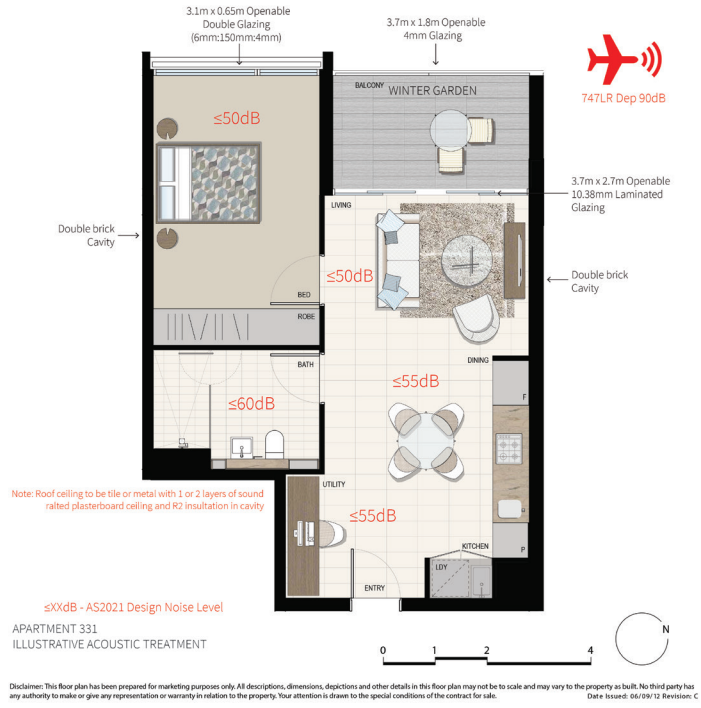

Figure 8 - Indicative Floor Layout

Source: Turner Associates

6.0 Strategy

6.5 Residential Facilities

Noise impacts from aircraft within the Victoria Road Precinct are likely to affect the attractiveness and useability of external communal space within new residential developments. Use of the external communal space may not be appropriate in cases where this involves quieter activities such as reading, quiet contemplation or relaxing.

In recognition of the fact that the amenity of external communal space is diminished due to aircraft noise, it is considered appropriate that new development within the Victoria Road Precinct be required to provide other indoor facilities that will help to offset these impacts, and ensure that all new development afford its residents with a variety of communal spaces and facilities to support their recreational and leisure needs. Table 7 below outlines these requirements.

Design Principles		Design Solution	
DP1	To ensure that new residential flat buildings incorporate communal facilities to support a high level of amenity for residents.	DS1	Indoor communal open space is to have a combined minimum gross floor area of 40m^2 ratio or 1m^2 per apartment, whichever is larger. The maximum requirement for indoor communal space is 250m^2, however this may be exceeded at the discretion of the applicant.
DP2	To ensure that a proportion of communal open space occupants of residential flat buildings is appropriately insulated against noise impacts.	DS2	Indoor communal open space can comprise one or more rooms, areas or facilities. Key examples may include: • Music/sound rooms; • Gymnasium; • Indoor pool; • Greenhouse/conservatory; • Games room; • Cinema / media room; • Function room / meeting room; • Multi-purpose room; and • Shed / workshop.
DP3	To ensure that residents have access to useable indoor and outdoor communal open space.		
DP4	To encourage flexibility in the way that communal space and facilities are provided within new development.	DS3	Indoor communal space that is designed in accordance with the requirements of this Noise Strategy may be excluded from Gross Floor Area.

	DS4	Indoor communal open space provided in accordance with this Noise Strategy does not negate or substitute the need to provide landscaping and communal open space in accordance with SEPP 65 and the Apartment Design Guide.
	DS5	The internal noise level of indoor communal open space is to be no greater than those recommended in AS2021 based on closely matched categories and intended use (e.g. 70dB(A) LSmax for areas commensurate with social activities in a hotel facility).
	DS6	Indoor communal space is to be designed with a particular purpose/function in mind and this purpose should be indicated on the plan. Where a multi-purpose room is proposed this room should be provided with appropriate facilities including seating, tables, toilets and a kitchenette.
	DS7	Communal toilets may be required to service the indoor communal open space depending on the communal use proposed.
	DS8	Indoor communal open space is to be designed and fitted out with equipment ready for use prior to an occupation certificate being granted.

Table 7 - Roof/ Ceiling construction methods/ treatments

6.0 Strategy

6.6 Implementation and Management

The following outlines the implementation and management measures that are to be put in place to ensure that new development is designed in accordance with the Noise Strategy and any approved plans and conditions. In addition it also sets out the requirements relating to the ongoing implementation, management, information sharing and the raising of awareness for all matters associated with aircraft related noise impacts on the Victoria Road Precinct.

Design Principles		Design Solution	
DP1	To ensure that new development, once constructed, incorporates all the necessary approved acoustic insulation treatments and measures.	DS1	At Construction Certificate stage, there is to be written verification from an appropriately qualified acoustic expert that the noise mitigation measures approved as part of the development application have been incorporated into the detailed construction plans.
DP2	To ensure that occupants of new buildings are informed about aircraft noise and how this affects the Victoria Road Precinct prior to purchasing a property.	DS2	Prior to Occupation Certificate being issued final sign-off is to be obtained from an appropriately qualified acoustic consultant confirming that the building materials and acoustic treatments have been constructed in accordance with the detailed construction plans.
DP3	To ensure that information about aircraft noise is readily available for residents, property and business owners within the Victoria Road Precinct.	DS3	Aircraft Noise Information Packs are to be provided to any potential purchaser as part of the Contract of Sale. All Contracts of Sale are to include a clause that specifies that the prospective of purchaser has read and acknowledges the contents within the Aircraft Noise Information Pack.
DP4	To encourage flexibility in the way that communal space and facilities are provided within new development.	DS4	A community notice board is to be provided in the common lobby area for all residential flat buildings. An information notice about Aircraft Noise is to be provided on the community notice board at all times..
		DS5	The Aircraft Noise Information Packs are to contain the following information: • The airports hours of operation and likely times that aircraft noise will affect the Victoria Road Precinct; • Likely average number of aircraft movements per day;

	• Aircraft noise affecting the Victoria Road Precinct; • A list of the material treatments used in the construction of the building; • A map of the current/latest ANEF Contours in relation to the site; • A plan of the apartment/building confirming the building materials and acoustic mitigation measures in accordance with the approved plans and documents. • A signed declaration from an appropriately qualified acoustic expert that the building has been constructed in accordance with the approved noise mitigation measures as set out in the associated Development Approval.
DS6	A copy of the Draft Aircraft Noise Information Pack is to be submitted with any development application for a new building.

Table 8 - Implementation and Management

Dictionary

The terms used in this strategy are defined in the Standard Instrument – Principal Local Environmental Plan. Additional definitions that apply to this Noise Strategy include:

Aircraft Noise Exposure Forecast (ANEF) - contour maps that show a forecast of aircraft noise levels that are expected to exist in the future. They are prepared for all of the major and regional airports (in this case Sydney Airport) that have a large number of annual movements.

Aircraft Noise Exposure Index (ANEI) - contour maps that show actual historical aircraft noise levels over a given period of time.

Aircraft Noise Information Pack (ANIP) – A package of information that is collated and used as the basis for informing all new residents, property and business owners about how aircraft noise affects land within the Victoria Road Precinct, including their property. At a minimum the ANIP must include:

- The airports hours of operation and likely times that aircraft noise will affect the Victoria Road Precinct;
- Likely average number of aircraft movements per day;
- Aircraft noise affecting the Victoria Road Precinct;
- A list of the material treatments used in the construction of the building;
- A map of the current/latest ANEF Contours in relation to the site;
- A plan of the apartment/building confirming the building materials and acoustic mitigation measures in accordance with the approved plans and documents.
- A signed declaration from an appropriately qualified acoustic expert that the building has been constructed in accordance with the approved noise mitigation measures as set out in the associated Development Approval.

Indoor Communal Facility – a communal facility that is provided for the benefit of all inhabitants within a residential flat building. The communal facility is accessible by all members of the residential development and is a facility able to be used for communal recreational and leisure purposes. Key examples may include:

- Music/sound rooms;
- Gymnasium;
- Indoor pool;
- Greenhouse/conservatory;
- Games room
- Cinema / media room;
- Function room / meeting room;
- Multi-purpose room; and
- Men's shed / workshop.

Victoria Road Precinct – The area of land to which this strategy applies as shown in Section 1.2.

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