POLICY NO: 7.5.21

SOUND ATTENUATION

OBJECTIVES

To:

1. Provide a clear framework to minimise the adverse impacts of noise for the sustainable co-existence of a mix of land uses within the City.

2. Establish appropriate criteria for measuring and identifying potential noise impacts at the pre-development approval phase through to the building classification stage;

3. Clarify the process and extent of reporting required in certifying noise attenuation measures;

4. Provide a process that assists Planning Consultants, Developers, Builders and Acoustic Consultants/Engineers establish a project's viability based on the potentially cost prohibitive acoustic attenuation needs of a development; and

5. Preserve the amenity of existing and future residential buildings through enhanced building design and construction.

POLICY STATEMENT

The City of Vincent ("the City") provides a range of vibrant, higher density living environments, with intertwined commercial and residential land uses, as well as opportunities for the more traditional, lower density lifestyle. The provision and growth of mixed land uses is important from a sustainability perspective, particularly as Australia's population continues to grow.

Whilst high density living is not for everyone, it does provide a number of benefits, such as easy access to services, reduced reliance on private transport and reducing our individual carbon footprint. However, with an increase of people, comes an increase of activity and noise which brings with it the unavoidable reality of increased ambient/environmental noise.

For some, a noisy living environment can be stressful and have a detrimental impact on personal health and wellbeing; but,with appropriate forethought and execution, noise impacts can be minimised through suitable design, and in turn provide a level of comfort and wellbeing to meet the needs of most.

This Policy aims to provide guidance on how Planning Consultants, Developers, Builders and Acoustic Consultants/Engineers can maximise the enjoyment and liveability of mixed land use living, by mitigating the effects of ambient/environmental noise, through appropriate forethought and design.

The Policy also provides acts as a project viability screening tool for Planning Consultants, Developers, Builders and Acoustic Consultants/Engineers by establishing the costs involved with containing sound levels from the development when in operation (particularly important for developments generating mechanical plant or amplified music noise).

Table of Contents

Sound Attenuation Guidelines for Planning Consultants, Developers, Builders, Architects and Acoustic Consultants/Engineers

1.0 DEFINITIONS

"Ambient Noise" is sound emitted from the full complement of activities and land uses within an area that is not easily discernable and includes a combination of sound from sources such as traffic, wind, rustling trees, wildlife, pets and mechanical equipment and people.

"Assigned Level" is that same meaning given to it under the *Environmental Protection (Noise) Regulations 1997.*

"Breakout Noise" is clearly distinguishable sound emitted from local land use activities such as outdoor eating areas, public gathering areas and pedestrian routes, pubs and nightclubs and alike.

"Development" is that same meaning given to it under the *Planning and Development Act 2005.*

"Environmental Noise" in this guideline refers to a combination of all noise that exists and fluctuates within a location at any given time and it includes both ambient and breakout noise.

"Noise" is defined as unwanted sound.

2.0 JURISDICTION

i) *Environmental Protection Act 1986* and the *Environmental Protection (Noise) Regulations 1997* ['Noise Regulations'] provide powers for officers of the Department of Environment, WA Police Service and authorised Environmental Health Officers from Local Governments.

ii) The Director Liquor Licensing Division has power to deal with noise issues and anti-social behaviour under section 117 of the *Liquor Act 1988.*

iii) The *Planning and Development Act 2005* provides the determining authority with the power to impose conditions on development approvals that protect the amenity of the area.

3.0 ACOUSTIC REPORTING

The purpose of an acoustic report is to assess the noise environment affecting a proposed development site and to demonstrate how the proposed development will be designed and constructed so as to has been acoustically assessed and designed for the purpose of minimise the effects of noise intrusion upon the site and noise emissions from the site.

3.1 Who can help me with preparing an Acoustic Report?

The report must be prepared by an Acoustic Consultant/Engineer with relevant qualifications and experience, and should be a member of one of the following professional bodies or to the satisfaction of the City;

- Australian Acoustical Society; or
- Engineers Australia; or
- Association of Australian Acoustical Consultants.

Proof of membership shall accompany the report submitted. A Building Permit will not be issued until proof of membership is provided.

3.2 When must I submit an Acoustic Report?

The City will require an acoustic report in the following circumstances:

a) **residential developments** of six (6) or more dwellings, mixed use residential/commercial buildings containing (1) residential dwelling or more, and any residential building located within or adjacent to the District Centre, Local Centre, Commercial and Commercial/Residential and Regional Town Centre zones; or

b) **non-residential development** in Residential zones or in the District Centre, Local Centre, Commercial and Commercial/Residential and Regional Town Centre zones that includes any additional structures with associated plant and equipment including air conditioners, compressors, PA systems or use of amplified music/ musical instruments or equipment rooms and areas where the groups of people may gather areas; or

c) **public buildings** such as hotels, sporting clubs, taverns and other licensed/non-licensed premises, accommodation premises such as lodging houses and backpacker establishments; or

d) **change of use applications** for land uses that involve entertainment, amplified music, public gatherings or other significant noise emitting activity; or

e) any other application deemed likely to contribute to or be exposed to heightened ambient at the discretion of the Manager Health Services, the Director Planning Services, the Chief Executive Officer or the Council.

Applicants are advised to contact the City's Health Services Section to establish if an acoustic report is required prior to submission of a development application; notwithstanding, an acoustic report may be requested after assessment of a proposal by the City's Officers.

3.3 What must the Acoustic Report contain?

When the City requires an acoustic report, the report will:

3.3.1 to the satisfaction of the City, address all matters required to demonstrate that the outcomes for reporting have been achieved, as detailed in Clauses 3.4; 4.0 and 5.0 of this guideline.

3.3.2 The following minimum standards shall be applied as the relevant reference criteria upon which the Acoustic Report is to be prepared

a) *Inbound Noise (Residential Development)*

i) Residential buildings are to be **designed** to achieve the following sound levels:

- Leq 35 dB(A) in sleeping areas (bedrooms); and
- Leq 40 dB(A) in living/work areas and other habitable rooms.

IMPORTANT NOTE:
The Leq level should not be unduly biased toward the lower frequencies of the octave band spectrum. If lower frequencies are dominant in sound levels taken during the sampling phase of reporting (between 31.50-125Hz), the Acoustic Consultant/Engineer shall discuss the findings with the City's Senior Environmental Health Officer or Manager Health Services in developing solutions.

ii) **Residential developments** are to be **constructed** to meet the requirements of the *National Construction Code Series 2012 Building Code of Australia* Part F5.

iii) For **all other developments**, noise intrusion is to be controlled to achieve the indoor design sound levels for buildings as set out in *Australian Standard AS/NZS2107: Acoustics - Recommended Design Sound Levels and Reverberation Times for Building Interiors*.

b) *Outbound Noise (All Developments)*

i) Noise emissions from all developments are to comply with the 'assigned levels' detailed in the *Environmental Protection (Noise) Regulations 1997.*

3.4 What will happen if the Acoustic Report submitted does not follow the guideline?

a) The report will not be accepted and the application process will be placed on hold until a compliant report is submitted.

b) Not all aspects of the guideline will be applicable to each development type. Where a section of the guideline in not applicable, the report shall specify that the respective clause was considered not applicable. Should the assessing officer require further information the applicant will be contacted and the required information will be requested, and/or clarification will be sought.

Outcome 1
The applicant is to submit an acoustic report that appropriately addresses all of the criteria specified within this guideline.

4.0 NOISE SOURCE IDENTIFICATION

Ambient environmental noise sources that are relevant to the City include:

4.1 Traffic Noise

Major roads and railways contribute to the ambient environmental noise of an area. In most cases, these roads and railways are characterised by a daily traffic noise pattern.

Outcome 2
Applicant to detail sound levels recorded at the property of contributories (motor cars, trains) on a Weekday, during the period 7.00am-9.00am; or at a period of the day that is representative of the normal peak traffic conditions for the area). Sound monitoring shall not be conducted on a public holiday or during school holidays;

4.2 Residual Breakout Noise from Lifestyle uses and Entertainment Venues

Developments that accommodate or reside in close proximity to lifestyle uses including cafes, restaurants, shops, hotels and entertainment venues such as nightclubs, are integral to the vitality and enjoyment of mixed-use localities and District Centres. Outdoor Eating Areas associated with hotels, cafés and restaurants can also be a major source of breakout noise.

Outcome 3
The Applicant is to:
a) Identify all breakout noise sources that have a noticeable impact on sound levels received at the subject property, and in particular, those noise sources within a 100m radius;
b) Specify sound levels recorded at the property during time periods that correspond to related breakout noise sources; for example:
   - Nightclubs to be monitored during hours of operation after 10.00pm at night on a Friday or Saturday;

- Cafes and Outdoor Eating Areas to be monitored during peak trade periods; and
- Locations near sports grounds and stadiums to be monitored during periods of normal use; particularly when used at capacity (where practicable).

IMPORTANT NOTE:
Standardised theoretical sound level limits should not be used for calculation purposes, unless such use is absolutely necessary due to noise sources (to be modelled), occurring so infrequently, that performing measurements on-site are impractical.

4.3 Street Noise

Urban locations containing a mix of lifestyle uses that contribute to the vitality and enjoyment of such areas are also characterised by increased levels of pedestrian activity. The noise associated with this pedestrian activity, including movement to and from different establishments, persons getting into and out of parked cars, and occasional anti-social behaviour, can contribute significantly to general ambient environmental noise (particularly when this occurs late at night), impacting on the amenity of noise sensitive premises, particularly residential.

Outcome 4
The Applicant is to:

a) provide comment on the likely impact of all localised street noise sources (factors such as proximity to local business districts, late night venues, schools and setbacks from footpaths shall be considered); and

b) thereafter, comment on practical building design solutions to minimise the impact of such noise sources (i.e. acoustic barriers, separation of noise sensitive parts of the development from the noise transmission path).

4.4 Mechanical Plant and Equipment

a) Air-conditioning and related service hardware such as pool pumps, traffic gates and compressors can impact on the amenity of noise sensitive premises, particularly due to the annoying characteristics contained within the noise emitted (modulation and tonality). In a residential setting, the noise emission from a single air conditioner condenser or pool pump can affect a neighbouring property. In mixed use locations, exhaust fans associated with commercial kitchens, smoke exhaust systems, refrigeration compressors and chillers associated with the air conditioning of larger premises are significant noise sources that impact on the localised environmental noise;

b) Goods delivery and waste collection vehicles; and

c) On-site power generators.

Outcome 5
The Applicant is to:

a) provide comment on the likely impact of all existing mechanical plant and equipment noise sources surrounding the proposed development site (air conditioners, traffic gates etc);

b) comment on practical building design solutions that could be implemented to minimise the impact of existing mechanical plant and equipment noise sources; and
c) comment on the proposed location of all mechanical plant and equipment at the development site; and provide details of how noise emissions from these sources will be contained, so as not to create unwanted sound at nearby properties.

The above does not apply to smoke exhaust fans that are only operated in an emergency.

4.5 Co-existing Land Uses

Whilst it is important to ensure that the proposed development is designed to reasonably negate external/existing noise sources from impacting on noise sensitive areas of the building, it is equally important that the development is designed to ensure that internal noise sources do not impact on existing and planned surrounding land uses also.

Outcome 6
The Applicant is to:
a) Detail all existing, surrounding noise sensitive land uses within 100m of the applicant's property boundary;
b) Plot all surrounding noise sensitive land uses on a site plan detailing the land use type, building construction type of walls and rooves, directional location, height from ground level, and location of windows, ducts or other obvious sound transmission pathways, and distance from the applicant's property boundary;
c) Provide comment on how the building should be designed to ensure that sound levels emitted from the building do not exceed the 'assigned levels' detailed within the Noise Regulations;
d) Identify the most suitable location/s for the placement of noise generating equipment at ground level and above ground level (i.e. airconditioners, traffic gates; sirens; plant rooms; late night/early morning service entry points); and
e) Specify associated sound attenuation measures to be implemented to prevent the emission of unreasonable noise.

5.0 NOISE TREATMENT SOLUTIONS

The aim of applying noise treatments is to achieve appropriate opportunities for rest and respite within noise sensitive premises (where people rest and sleep) and to allow a multitude of diverse land uses to co-exist.

After having identified all of the relevant noise sources outlined in Clause 4.0, it will now be possible for the design team to informatively consider the use of design techniques to combat the noise sources identified.

5.1 Development Planning and Design (to be provided as part of a Development Application)

The consideration of sound attenuation at the planning stage of a development can contributes significantly to minimising or reducing construction costs associated with the application of expensive noise amelioration/attenuation methods. Factors to be considered include:

a) the identification of existing/potential environmental noise sources, as outlined in Outcome 6;
b) development orientation and layout, taking into account the location of existing/potential environmental noise sources;
c) the location of bedrooms, balconies and windows and if practicable loungerooms away from external noise sources;
d) the location and size of windows;
e) the use of development built form (blade walls and the like) to screen noise sources; and
f) the use of building design elements (balcony balustrades, decorative screens and the like) to reduce the noise impact on windows.

Outcome 7
The Acoustic Consultant/Engineer to provide recommendations to the Developer for referral to the design team/architect, based on the above principles.
Outcome 8
The Developer is to confirm in writing to the City that the Acoustic Consultant's/Engineer's recommendation have been included in the architectural design brief.

5.2 Construction Methods and Materials (to be provided as part of a building permit application)

Where it is not possible/practicable to nullify noise received at, or noise created by the proposed development, through the application of design principles detailed under Clause 5.1, consideration and application of suitable construction/material selection shall be detailed:

IMPORTANT NOTE:
All buildings and structures are to comply with the relevant fire rating and *National Construction Codes Series 2012 Building Code of Australia* requirements. Acoustic attenuation methods shall not compromise the safety or structural integrity of the development.

5.2.1 Noise Insulation (Protection against noise intrusion)

a) **Overriding Principle**
   i) A Class 1, 2, 3 or Class 4 building or portion of a building must be constructed so that sound attenuation of 25 dB in the 63 Hertz octave band between the exterior of the building and any habitable room via all sound pathways. Consideration of windows, ventilation ducts and ceilings shall be undertaken to achieve the required decibel rating; and

ii) *The external walls and roofs of a Class 1, 2, 3,* or *4* building or portion of a building are constructed such that:
- The overall density of the construction is greater than 66 kg/sq.m.

iii) A sleeping room shall be designed to achieve Leq30db(A) consistent with *WHO Night Noise Guidelines for Europe* where the Leq night outside levels for an area exceed 40db(A).

b) **Windows:**
i) size and location
ii) selection of fixed panels or operable windows
iii) heavyweight / thicker glass;
iv) double glazing and laminated glazing;
v) special acoustic requirements for window frames (such as, frame type and window seal construction; and
vi) specific acoustic performance requirements – laboratory tests data (i.e. to control high frequency noise intrusion).

c) **Walls:**
i) construction/product detail for walls requiring higher acoustic performance – brick, stud, concrete tilt panel, rammed earth;
ii) for brick walls detail:
- recommended brick selection (concrete, solid brick, clay etc); and
- construction method (fast-walls, complete mortar joins, brick weight/density)

iii) for stud frame walls detail:
- the construction method (timber or steel frame);
- applicable cavity treatment (nil, packed with high density fire resistant wool etc); and
- acoustic performance rating.

IMPORTANT NOTE:
Stud wall construction is not considered appropriate for walls providing a barrier against low frequency sound.

i) acoustic attenuation for exhaust vents, conduits and piping through walls; and
ii) specific acoustic requirements for external doors, including the door construction (solid timber or double glazed), frame construction and application of door seals.

d) **Roof and Ceiling:**
i) selection of roof construction (timber or steel frame; iron or tiled roof; concrete or clay tiles
ii) specific acoustic requirements for sealing of roof (such as use of sark or anticon insulation);
iii) upgraded acoustic performance for ceilings;
iv) closing, sealing or elimination of eaves; and
v) insulation of ceiling voids (insulation batts).

e) **Ventilation**
   i) baffling of ducts to walls and ceilings;
   ii) attenuation of service ducts, particularly for commercial exhaust systems which pass through residential dwellings; and
   iii) All air paths, such as through ducts to the exterior, achieve a sound reduction of 25 dB in the 63 Hertz octave band.

5.2.2 Noise Emission Mitigation Measures

The 'assigned levels' detailed in the *Environmental Protection (Noise) Regulations 1997* must be complied with in relation to noise generated/emitted from the premises. Applicants are encouraged to consider design and construction measures that are tailored specific to the problematic noise characteristics identified with the development:

a) Noise Breakout from the Development:
   i) refer to Clause 4.2 for general construction principles which can be applied for the dual effect of keeping noise in or keeping noise out;
b) Other considerations include:
   i) provision of suitable acoustic barriers to contain equipment noise
   ii) location and acoustic treatment of:
      - common areas where people gather
      - mechanical equipment such as pool pumps, traffic gates, air conditioners, refrigeration systems
      - visitor and resident parking areas
      - exit and entry points to the property (design building lobbies that contain noise)
      - bin compounds and rubbish truck collection, particularly if early morning collections are going to be required.
   iii) future proof the development against the potential use of the building. For example, if a commercial tenancy is proposed for the ground floor of a mixed use commercial/residential building, design the space so that it can accommodate mechanical plant or have solid wall divisions installed to cater for a multitude of commercial uses; and
   iv) management strategies to control breakout noise (this type of strategy is not preferable). Where practicable/feasible engineering/design methods exist, management strategies to control noise (such as from the disposal and collection of rubbish, location of traffic gates etc) is discouraged.

Outcome 9
The Developer shall submit an Acoustic Report that addresses all of the criteria outlined in Clause 5.2, in addition to a statement detailing what recommendations from the report will be implemented in the final design specification.

6.0 ACOUSTIC COMPLIANCE

6.1 Planning and Demonstration of Compliance

The applicant shall consider, and where specified, comply with the provision of Acoustic Compliance as outlined below:

6.1.1 Development Application Stage

Prior to submitting a Development Application the applicant shall:

a) Consider whether application of the City's Policy 3.5.21 is applicable to the development concept - highly recommended particularly for mixed use developments, developments in close proximity to noise sources or developments with use or ancillary use elements that may create heightened noise emissions; and

b) When requested by the City's Health Services (once the development application has been submitted to the City), provide a 'Written Declaration' that a Notification will be placed on all residential sales contracts, informing prospective purchasers that the location forms part of a mixed use area, with potentially heightened ambient noise levels (people's response to noise intrusion into their property can be influenced by their expectations for the environment they are entering).

IMPORTANT NOTE:
The earlier in the process that sound attenuation/treatment solutions are considered, the better the outcomes will likely be, from a cost and effectiveness perspective.

Outcome 10
The Applicant shall take **suitable measures to demonstrate** a commitment to applying the principles of the Sound Attenuation Policy 3.5.21 during the planning phase.

6.1.2 Building Permit Application Stage

Prior to a Building Permit being issued, the Developer/Builder/Applicant must do the following:

a) Ensure that all requirements arising from the Acoustic Report are specifically detailed/represented in the relevant design drawings and specification documents to be submitted for approval; and

b) Provide a 'Statutory Declaration' confirming that full compliance with all requirements imposed by the City, arising from the Acoustic Report **will be** implemented;

6.1.3 During Construction Stage

If specified by the City on the Building Permit, the Developer/Builder/Applicant shall:

- In circumstances where the integrity of specific acoustic related construction methods is critical in ensuring that the built structure mitigates noise ingress or egress, the Builder/Developer/Applicant shall engage an Acoustic Consultant/Engineer to verify that each construction method specified within the Acoustic Report, and imposed by the City has been complied with.

IMPORTANT NOTE:
In this instance the Builder will need to arrange for the Acoustic Consultant/Engineer to perform periodic inspections of the building process, to ensure that each relevant recommendation has been complied with (such as stud wall construction methods, party walls, ceilings, ductworks, window frames etc). Application of this condition is at the City's discretion.

6.1.4 Post Construction Stage

Prior to the building being first inhabited and/or a Certification of Classification being issued, the Developer/Builder shall:

- provide the City with a Report confirming that full compliance with all requirements imposed by the City, arising from the Acoustic Report **has been** implemented. The Report shall be at the developer's cost, with any significant design changes resulting from the test or inspection report being the subject of a separate application for approval.

Outcome 11
The Applicant shall provide **adequate proof** that the necessary outcomes of the Sound Attenuation Policy 3.5.21 have been applied and incorporated into the construction design specifications and technical drawings; and that assurances are in place during the construction process to confirm that critical acoustic attenuation construction methods are appropriately executed by building contractors.

NOTE:

All buildings and structures are to comply with the relevant fire rating and Building Code of Australia requirements. Acoustic attenuation methods shall and are not to compromise the safety or structural integrity of the development.

7.0 ADMINISTRATION AND ENFORCEMENT OF THE SOUND ATTENUATION POLICY 3.5.21

7.1 The City's Health Services Section are responsible for:

a) Providing internal and external advice and guidance in relation to application of the Policy and interpretation of the Guideline;

b) Creating and applying suitable conditions for application to Development Approvals, in support of the objectives of the Policy; and

c) The assessment and approval of all Acoustic Reports submitted and associated Certification and 'Written Declarations', submitted in relation to the Policy.

7.2 The City's Planning and Building Services Section are responsible for:

a) Planning:

i) Facilitating the review of all Development Applications by the relevant disciplines/service areas at regular Development Application Team meetings (DAT);

ii) Applying all conditions imposed by the City's disciplines/service areas to Council Reports and on Planning/Development Approvals, where such conditions are enforceable at the Development Application stage, under the Planning and Development Act 2005; and

iii) Enforcing compliance with any Development Approval Conditions issued on the Development Approval relating to sound attenuation, in consultation with the City's Health Services.

b) Building:

i) Ensuring that Building Permits and Certificates of Classification are not issued until all of the required Sound Attenuation Reporting requirements have been complied with to the satisfaction of the City's Health Services; and

ii) Issuing a Certificate of Classification prior to use of the building.

Date Adopted:	23 May 2006
Date Amended:	24 July 2012