

**MAROOCHY SHIRE
COUNCIL PLANNING
SCHEME POLICY NO. 7**

**Acoustic Environment
Assessment**

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1 Introduction

1.1 Purpose

The purpose of this Planning Scheme Policy is to:

- Support the Planning Scheme codes that contain specific provisions relating to acoustic environment amenity;
- Assist applicants by providing defined environmental noise descriptors and limits to be used in determining the respective acoustic environment, relative to proposed development; and
- Identify Council’s preferred approach to noise mitigation measures to achieve an appropriate amenity within our environment.

1.2 Scope

This policy provides a framework for assessing acoustic amenity issues consistent with the Desired Environmental Outcomes (DEO’s), planning intent and codes of the Maroochy Plan 2000.

Volume 4 of the Planning Scheme contains a range of provisions that seek to protect acoustic environment qualities. These provisions exist as Performance Criteria and Acceptable Measures in a number of codes.

Volume 2 (Strategic Plan) and Volume 3 (Planning Areas and Precincts) also contain provisions relevant to impact assessable development in relation to acoustic amenity.

The codes containing provisions relating to acoustic environment assessment are identified in Table 1.2 below.

Table 1.2: Planning Scheme Codes Containing Provisions for Acoustic Environment Amenity

2. General Land Use and Development Codes	
2.1.7	Code for Development in the Vicinity of the Airport
2.1.8	Code for Protection of Extractive Resources
2.6	Operational Works
3. Codes for Rural Development and Use	
3.1	Agriculture and Animal Husbandry
3.2	Code for Development and Use of Intensive Animal Industries and Aquaculture
3.3	Code for Development and Use of Rural Service Industries

Table 1.2: continued

4. Codes for Residential Development and Use	
4.1	Detached Houses
4.2	Code for the Development and use of Dual Occupancy
4.3	Code for Low-rise Multi-Unit Residential Premises
4.4	Code for Multi-storey Residential Premises
4.5	Caravan and Relocatable Home Parks
4.6	Code for the Development and Use of Motels
4.7	Code for Home Based Business
4.8	Code for Bed and Breakfast Accommodation
4.9	Code for Caretakers Residences
4.10	Code for Retirement Villages
5. Codes for Commercial and Community Development and Use	
5.1	Code for Town and Village Centres
5.2	Local Centres and General Stores
5.3	Code for Child Care Centres
5.5	Code for Markets
5.6	Code for Mixed Use Premises
6. Codes for Industrial Development and Use	
6.1	Code for Industries in Urban Areas
6.2	Service Stations and Car Washing Stations
6.3	Code for Extractive Industry
8. Code for Reconfiguring Lots	
9. Other Codes	
9.2	Code for Telecommunications Facilities

1.3 Definitions

Definitions relevant to Acoustic Environment Assessment under this Planning Scheme are contained within Volume 1, section 3.2 Administrative Definitions. These definitions include:

- Acoustic environment;
- EPP (noise) Environmental values;
- Environmental harm;
- Environmental nuisance;
- Noise sensitive place; and
- Rail corridor land.

1.4 Expertise Required to Prepare Supporting Information

An application involving the need to undertake assessment of the acoustic environment relative to a proposed development will require a competent person to undertake that assessment.

A competent person requires a strong understanding of acoustic environment assessment and appropriate sound level measurement equipment.

A competent person shall:

- Have appropriate tertiary qualifications; or
- Be a member of, or eligible for membership of the Australian Acoustical Society.

2 Noise Assessment

2.1 General

The acoustic environment is a significant component of the amenity of urban and rural localities. New development may impact upon the existing acoustic environment or it may be impacted upon by existing or likely future noise. It is therefore appropriate that the assessment and protection of our acoustic amenity is more practical and effective at the planning phase rather than the implementation of noise mitigation measures post development.

Noise assessment is dependant upon:

1. The individual characteristics of noise;
2. The acoustic environment in which the suitability of the noise is being assessed; and
3. The time of day in which acceptability of the noise is being assessed.

This policy identifies the assessment of the acoustic environment that is reasonable and relevant for proposed development.

2.2 Acoustic Environment

The qualities of the acoustic environment that are to be enhanced or protected under this policy are:

- (a) The wellbeing of the community or part of the community, including its social and economic amenity;
- (b) The wellbeing of an individual, including the individual's opportunity to have sleep, relaxation and conversation without unreasonable interference from intrusive noise;
- (c) The minimising of impacts on a persons ability to sleep within their home by limiting the intrusive interference of noise in their acoustic environment; and

- (d) The minimising of impacts on a persons ability to use outdoor recreational space or workplace outdoor space by limiting the intrusive interference of noise in their acoustic environment.

2.3 Noise Emission and Immission

The assessment of acoustic amenity issues relative to development must consider both the impact of noise from (emission) and upon (immission) particular uses.

2.3.1 Noise Emission

Noise emission is the noise generated and emitted from a development or use with potential to impact on other land uses external to that part of the development under consideration. Examples include noise from an industrial development that may impact upon uses such as residential development.

2.3.2 Noise Immission

Noise immission is the impact of noise upon a development, from a source or sources external to the development. Examples include, transportation noise, plant and equipment noise, or industrial noise impacting upon another development or use e.g. residential dwellings.

2.4 Noise Types

Noise is created by a number of different sources and has many different characteristics. A range of noise types are identified in this policy for the purpose of identifying the appropriate noise descriptors and limits for the assessment of sound.

These noise types include:

1. Continuous Steady-State Noise Emission;
2. Continuous Steady-State Noise Immission;
3. Intermittent Time-Varying Noise;
4. Road Traffic Noise;
5. Rail Traffic Noise;
6. Aircraft Noise; and
7. Entertainment Noise.

2.5 Noise Descriptors

The use of a number of noise descriptors is required to assess the qualities of the acoustic environment. These descriptors are outlined below.

Measurements with the following descriptors are determined in accordance with the application of AS 1055.1 utilising the A-weighted sound pressure level. Measurement periods must be over a time period of not less than 15 minutes, using fast response (excluding aircraft noise measurement which utilises the slow response).

L_1	Noise level equalled or exceeded for 1 percent of the measurement period.
L_{10}	Noise level equalled or exceeded for 10 percent of the measurement period.
L_{90}	Noise level equalled or exceeded for 90 percent of the measurement period. AS1055.1-1997 notes that the L_{90} is described as the background sound pressure level.
L_{eq}	An ‘average’ measurement, and as per AS1055.1-1997 defined as the value of the sound pressure level of a continuous steady sound state, that within a measurement period, has the same mean square sound pressure as a sound under consideration whose level varies with time.
$L_{oct 10}$	For a specified time interval, means the linear (flat) frequency rating for a stated octave band that is equalled or exceeded for 10% of the interval.
$L_{oct 90}$	For a specified time interval, means the linear (flat) frequency rating for a stated octave band that is equalled or exceeded for 90% of the interval.
L_{max}	Is the maximum noise level recorded during the monitoring period.
$L_{Amax adj,T}$	Is the maximum sound pressure level adjusted for impulsiveness and/or tonality for the time period nominated.

3 Noise Descriptors and Limits for Proposed Development

3.1 General

There are a range of differing means to noise assessment that can determine noise limits for the acoustic environment relative to a proposed development. These can include the use of various legislative codes and policies and the use of standards.

This section will identify the noise descriptors and limits that Council will require to be used in the assessment of each noise type (identified in section 2.4) relevant to a proposed development.

These descriptors and limits are specified in Table 3.1.

The table identifies:

- (a) Each Noise Type;
- (b) Examples of the Source of Noise;
- (c) The appropriate Noise Descriptors to be used; and
- (d) The specific Noise Limits to be achieved.

The noise limits identified in Table 3.1 are to be achieved to demonstrate compliance with the Planning Scheme codes that contain provisions relating to acoustic environment amenity.

The following sections (3.2 - 3.7) provide further information regarding the noise descriptors and limits, identified for each noise type in Table 3.1, and their use in the assessment of acoustic amenity.

3.2 Continuous Steady-State Noise Emission and Immission

3.2.1 Internal Noise Limits

Table 1 of AS2107 provides noise limits for internal areas occupied by people. It is applicable to assessment of steady-state or quasi-steady state sound emission and immission such as noise from air conditioning, ventilation or refrigeration plant and noise from continuous road traffic, typically highways and arterial roadways.

The AS2107 ‘minor’ and ‘major’ road categories shall be based on the relevant ambient background (L_{90}) levels provided in AS1055.2 - Appendix A:

- (a) Category R1-R2 shall apply to residential sites in areas with negligible or low-density transportation (Local/Collector streets);
- (b) Categories R3-R4 shall apply to residential sites near minor roads (Arterial/Sub-arterial Roads) or some commerce or industry; and
- (c) Categories R5-R6 shall apply to residential sites near major roads (State Controlled Highways or Motorways) or in commercial districts bordering or within predominantly industrial districts.

Once the Noise Area Category has been determined from measured ambient noise data, the satisfactory and maximum design sound levels from AS2107 shall be determined.

Maximum design sound levels:

- (a) Must be applied for all time periods that an activity (excluding residential, see below) may occur in a given building type and area;
- (b) For road traffic assessment detail relative to noise immersion sources refer to Section 3.4 Road Traffic Noise; and
- (c) For residential buildings, the maximum recommended design sound levels stated in Table 1 of AS2107 apply to living areas and work areas during all time periods. It is acceptable to apply the maximum noise limits for living and work areas to sleeping areas during the day and evening periods. The maximum noise limits for sleeping areas must be achieved during the night period.

Table 3.1: Acoustic Environment Assessment of Proposed Development

Noise Type	Example / Source of Noise	Noise Descriptors	Noise Limits
Continuous Steady-State Noise <i>Emission*</i>	<ul style="list-style-type: none"> Airconditioners Refrigeration equipment Industrial plant and equipment Industrial process 	L_{eq}	<ul style="list-style-type: none"> Internal Area Limits - AS2107 (see section 3.2.1 below) External Living Area Limits - (see section 3.2.2 below)
Continuous Steady-State Noise <i>Immission*</i>	<ul style="list-style-type: none"> Airconditioners Refrigeration equipment Industrial plant and equipment Industrial process Continuous road traffic 	L_{eq}	<ul style="list-style-type: none"> Internal Area Limits - AS2107 (see section 3.2.1 below) External Living Area Limits - (see section 3.2.2 below)
Intermittent Time-Varying Noise*	<ul style="list-style-type: none"> Carparking noise Service vehicle operations Impulse industrial noise Road Traffic Noise 	L_{10}	<ul style="list-style-type: none"> Comparison of like descriptors to determine external and internal limits (see section 3.3.1 below)
		L_{max}	<ul style="list-style-type: none"> Sleep Disturbance Limits - night 2200hrs-0700hrs (see section 3.3.2 below)
Road Traffic Noise (includes Continuous Steady-State Noise <i>Immission*</i> & Intermittent Time-Varying Noise*)	<ul style="list-style-type: none"> Local / Collector Streets 	L_{eq} L_{max}	<ul style="list-style-type: none"> Internal Area Limits –AS2107 (see section 3.4.5 below) External Living Area Limits (short term) (see section 3.4.5 below) Sleep Disturbance Limits - night 2200hrs-0700hrs (see section 3.3.2 below)
	<ul style="list-style-type: none"> Arterial and Sub-Arterial Roads 	L_{eq} L_{max}	<ul style="list-style-type: none"> Internal Area Limits –AS2107 (see section 3.4.5 below) External Limits (long-term) (see section 3.4.5 below) Sleep Disturbance Limits - night 2200hrs-0700hrs (see section 3.3.2 below)
	<ul style="list-style-type: none"> State Controlled Highways and Motorways 	L_{eq} L_{max}	<ul style="list-style-type: none"> Internal Area Limits- AS2107 (see section 3.4.5 below) External Limits (long-term) (see section 3.4.5 below) Sleep Disturbance Limits - night 2200hrs-0700hrs (see section 3.3.2 below)
Road Traffic Noise (Planning Level)	<ul style="list-style-type: none"> Local / Collector Streets Arterial and Sub-Arterial Roads State Controlled Highways and Motorways 	L_{10} , L_{eq} and L_{max}	<ul style="list-style-type: none"> As per <i>the Environmental Protection (Noise) Policy 1997 Schedule 1 - Planning Levels, Section 2 – Public Roads</i> (see section 3.4.5 below)
Rail Traffic Noise	<ul style="list-style-type: none"> Queensland Rail Corridors 	L_1 , L_{10}	<ul style="list-style-type: none"> Comparison of like descriptors to determine external and internal limits (see section 3.3.1 below)
		L_{max}	<ul style="list-style-type: none"> Sleep Disturbance Limits - night 2200hrs-0700hrs (see section 3.3.2 below)
Rail Traffic Noise (Planning Level)	<ul style="list-style-type: none"> Queensland Rail Corridors 	L_{eq} and L_{max}	<ul style="list-style-type: none"> As per <i>the Environmental Protection (Noise) Policy 1997 Schedule 1 - Planning Levels, Section 3 – Railways</i> (see section 3.5.1 below)
Aircraft Noise	<ul style="list-style-type: none"> Maroochy Shire Council Airport and Take-off and Landing Approaches 	ANEF and ANEC	<ul style="list-style-type: none"> In accordance with planning scheme Code 2.1.7 Code for Development in the Vicinity of the Airport; and <i>State Planning Policy (SPP) 1/02 Development in the Vicinity of Certain Airports and Aviation Facilities</i> and its supporting guidelines
Entertainment Noise	<ul style="list-style-type: none"> Amplified or non-amplified music 	L_{10} with L_{90}	<ul style="list-style-type: none"> Comparison of unlike descriptors to determine limits (see section 3.7 below)
		L_{10} with L_{90}	<ul style="list-style-type: none"> Comparison of unlike descriptors, (octave band analysis) to determine limits - night 2200hrs-0700hrs (see section 3.7 below)

* Noise level to be adjusted for Tonality or Impulsiveness in accordance with AS1055.1

Notes to Table 3.1:

- For vacant land with future potential for development, the noise limit applies at a nominal building envelope and likely outdoor recreation areas. Where these locations cannot be defined the noise limit should be met at the most affected boundary of the receptor site.

3.2.2 External Noise Limits

AS2107 does not include limits for external areas such as formal outdoor recreation areas eg. School or childcare playground, balconies or courtyards, or pool and BBQ areas.

The following formal outdoor recreation area noise limits apply to continuous steady state noise emission sources such as mechanical plant noise, industrial process noise and road traffic noise from Local and Collector Streets, and Arterial and Sub-arterial Roads and State Controlled Highways and Motorways. Refer to Section 3.4 Road Traffic Noise for achieving external and internal limits in the presence of traffic noise. The external limits stated are based upon the following discussion.

The Environmental Protection (Noise) Policy 1997 Section 11 'Acoustic Quality Objective' is to progressively achieve an ambient level of 55 dB(A) (measured over 24 hours as the longterm L_{eq} outside a dwelling in the area) or less for most of the Queensland population living in residential areas. However, it is important to note, it is not intended that, in achieving the acoustic quality objective, any part of the existing acoustic environment be allowed to significantly deteriorate. (Qld EPA State Interest Planning Policy for Noise Management in Planning Schemes Ver1 2000 and EPP (noise).

The World Health Organisation (WHO) guideline values for outdoor living areas are 50-55 L_{eq} (16hr) for moderate to serious annoyance from noise. (Bergland, B, Lindvall, T, and Schwela, D, 1999. *Guidelines for Community Noise, World Health Organisation, Geneva.*)

Subsequently, it is expected that the existing or predicated acoustic environment of any affected development relative to development emission or immersion noise sources be taken into account as part of any assessment. A noticeable deterioration is considered to be a increase of 3 dB(A) above the existing acoustic environment of a 'noise sensitive place' (Hassall, JR & Zavard, K, *Acoustic Noise Measurements, Bruel & Kjaer, Denmark, January 1979*)

In the case of noise emission i.e. industrial premise locating near to a residential area and meeting the 'Acoustic Quality Objective', then assessment must be made of the acoustic environment in the absence of the development operating and in the predicated presence of the development operating. The outcome of residential acoustic environment whilst the emission source operates must aim to not noticeably exceed the L_{eq} level of the residential acoustic environment prior to the introduction of the emission source.

In the case of noise immission i.e. residential premise locating near to an industrial area and meeting the 'Acoustic Quality Objective', assessment must be made of the acoustic environment in the absence of the development operating and the current and possible future immission sources. The outcome of residential acoustic environment whilst the immission source operates must aim to avoid moderate (50 dB(A) L_{eq}) annoyance from noise over the operational time of industry.

3.3 Intermittent Time Varying Noise

3.3.1 Comparison of Like Descriptors

The measurement procedure and determination of potential annoyance from such sources must utilise the following procedures:

- The measurement descriptor that must be recorded with the noise source operating is $L_{A10,adj,T}$ for short time duration intermittent noise. Noise level to be adjusted for Tonality or Impulsiveness in accordance with AS1055.1
- The measurement descriptor that must be recorded with the noise source inoperative is $L_{A10,adj,T}$ for short time duration intermittent noise.
- The determination of the relevant noise emission and extent of limit exceedance for the sources from the two measured conditions require the difference between the noise source operating and the source inoperative.

A noticeable deterioration is considered to be an increase of 3 dB(A) above the acoustic environment (noise source inoperative) of a 'noise sensitive place' (Hassall, JR & Zavard, K, *Acoustic Noise Measurements, Bruel & Kjaer, Denmark, January 1979*)

3.3.2 Sleep Disturbance

The sleep disturbance limits apply to noise sources during the night period (10.00pm to 7.00am) that are neither steady state nor quasi-steady state. Generally, such noise is described as impulsive or time-varying noise.

The World Health Organisation (WHO) has conducted research which suggests that for short duration variable noise sources sleep disturbance may commence within an internal sleeping area when a number of noise events exceed a L_{max} noise level of 45 dB(A) inside the bedroom window. In the case of a hospital ward room the level is 40 dB(A). (Bergland, B, Lindvall, T, and Schwela, D, 1999. *Guidelines for Community Noise, World Health Organisation, Geneva.*)

The Users Guide to the *Environmental Protection (Noise) Policy 1997* cites a frequency of 10 to 15 traffic noise events per night between L_{max} 45-50 dB(A) for sleep disturbance to occur. For industrial noise one or two single events per night can trigger sleep disturbance.

An applicable limit is dependant upon the ambient acoustic environment with a higher level being more appropriate in areas of higher ambient noise levels. The Noise Area Categories as applied in AS1055.2-1997 are applicable for this assessment. Where the ambient noise levels during the night period are:

- (a) Within the range of the R1, R2 or R3 rating areas it is appropriate to use 45 dB(A) as the sleep disturbance limit that should not be regularly exceeded; and
- (b) Where the ambient noise levels during the night period are within the range of the R4, R5 or R6 rating areas it is appropriate to use 50 dB(A) as the sleep disturbance limit that should not be regularly exceeded.

Subsequently, allowing for a 5 dB(A) average noise reduction by the building facade with an opened window then the exterior noise event (measured or predicated at the building façade) minus 5 dB(A) must equate to an internal limit of 45 or 50 dB(A) depending upon the noise area category and noise source i.e. adjustments for tonality or impulsiveness may be necessary. In the case of a hospital the internal limit must equate to 40 or 45 dB(A) depending upon the noise area category and noise source.

3.4 Road Traffic Noise

3.4.1 External limit-Local and Collector Streets

For existing roadways, defined as local and collector streets, which generally do not have continuous traffic flow throughout the day, it is appropriate to apply noise limits that consider impacts during the peak hour periods of the day and evening. Thus, the noise limit (considering 3.2.2 above) applied for external noise levels at formal outdoor recreation areas adjacent to local and collector streets is:

6am to 10pm: Maximum LAeq (1 hour) 55 dB(A)

3.4.2 External Limit-Arterial and Sub-arterial Roads

For existing roadways, defined as arterial and sub-arterial which are characterised by relatively continuous traffic flow throughout the day, it is appropriate to apply noise limits that consider impacts over extended periods of the day, evening

and night. Thus, the noise limit (considering 3.2.2 above) applied for external noise levels at formal outdoor recreation areas adjacent to arterial and sub arterial roads is:

6am to 10pm: Maximum LAeq (16 hour) 50 dB(A)

3.4.3 External Limit State Controlled Roads

For existing State Controlled Highways and Motorways which are characterised by relatively continuous traffic flow throughout the day, it is appropriate to apply noise limits that consider impacts over extended periods of the day, evening and night. Thus, the noise criteria applied for the assessment of external noise levels at proposed development adjacent to State Controlled Highways Roads is:

6am to 10pm: Maximum LAeq (16 hour) 50 dB(A)

Note, where a traffic noise assessment is required in regard to the proposed development adjacent to a public road under the jurisdiction of the Queensland Department of Main Roads then the applicant will need to address the Queensland Department of Main Roads Road Traffic Noise Management: Code of Practice to achieve the "Aim of the Code" as stated in the code document. In all cases the applicant must contact the department for the specific traffic noise limits to be addressed.

3.4.4 Internal Limits-Streets and Roads

For the purpose of the proposed development against the Maroochy Planning Scheme the internal road traffic noise limits are stated by:

- (a) AS 2107 Table 1;
- (b) The Sleep Disturbance Noise Limits (refer 3.3.2 above)

The internal limits must be achieved as specified within road traffic noise sections 3.4.4 for internal living, sleeping and work areas. "Living, Sleeping and Work Areas" means a room that is designed, constructed or adapted for the activities normally associated with domestic living and for this purpose: includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, sunroom and the like; and excludes bathrooms, laundries, water closets, food storage pantries, walk-in wardrobes, corridors, enclosed verandas, hallways, lobbies, photographic darkrooms, clothes drying rooms and office spaces of a specialized nature occupied neither frequently nor for extended periods.

3.4.5 Achieving External and Internal Road Traffic Noise Limits

The external limits must be achieved as specified within road traffic noise sections 3.4.1, 3.4.2 and 3.4.3 for formal outdoor recreation areas. For the purpose of proposed development under the Maroochy Planning Scheme a formal outdoor recreation area refers to balconies/courtyards and/or the common community area that incorporate swimming pool/tennis courts/BBQ areas/Lawn Bowls and the like. Essentially, those areas where it can reasonably be expected to practically provide, as a result of site planning and/or building acoustic treatments, an acceptable acoustic environment, (refer 2.2 Acoustic Environment).

Traffic noise impacts must be determined by estimating the traffic volume and noise from the roadway(s) to a 10 year planning horizon i.e. 10 years beyond the expected completion of the development. For the purpose of the proposed development against the Maroochy Planning Scheme the assessment of the external and internal road traffic noise limits must be in accordance with –

AS 1055 Parts 1 to 3; & AS 2702;

Where external limits cannot be satisfied by setbacks then acoustically rated external facades or barriers (includes buildings associated with the proposed development) must be used.

Where interior and sleep disturbance noise limits of development affected by road traffic noise cannot be satisfied by setbacks then the development must be treated with acoustically rated barriers and/or building treatments in accordance with AS 3671 to achieve the appropriate design sound level limits as per Table 1 of AS2107.

Any stand alone acoustic barrier construction must be in accordance with Queensland Main Roads Standard Specification for Noise Barriers MRS11.15 (03/05) and as amended. Note barrier and/or building treatments must be compatible with the local streetscape, encourage the creation of active street frontages and consider relevant urban design outcomes.

Maroochy Shire Council reserves the right to not accept the on-going management and maintenance of any approved acoustic barriers at the boundary of private or public land and roads. Subsequently, the on-going management and maintenance is a matter that will be resolved as part of the IDAS process. Council's preference is that the obligation is undertaken wholly by the body corporate or land owner. Where management arrangements cannot be resolved then alternatives to acoustic barrier construction must be achieved.

3.4.6 Road Traffic Noise (Planning Level)

This section outlines the planning limits for new roads and road redevelopment. For proposed new roadways i.e. proposed reconfiguration of a lot and road redevelopment the noise limits are those stated within 'Public Roads' of Schedule 1 of the *Environmental Protection (Noise) Policy 1997*.

New road design and development setback must achieve the limits stated. Where the noise limits are already exceeded at development uses adjacent to the proposed roadway redevelopment then the redevelopment should be designed to not increase existing noise levels by a maximum of 3 dB (A).

The Department of Main Roads Road Traffic Noise: Code of Practice cites the relevant limits with respect to new State-controlled roads and redevelopment of State-controlled roads in proximity to existing or proposed development uses. Applicants should refer to that document for traffic noise assessment relative to Schedule 1 of the *Environmental Protection (Noise) Policy 1997*.

3.5 Rail Traffic Noise

For proposed development adjacent to a railway i.e. proposed reconfiguration of a lot, the noise limits are those determined in accordance with section 3.3.1 and 3.3.2, Comparison of like Descriptors and Sleep Disturbance respectively.

For acoustic assessment of a development adjacent to a railway the applicant should consult with the management authority eg. Qld Rail to ensure they are aware of all existing or proposed noise sources.

3.5.1 Rail Traffic Noise (Planning Level)

This section outlines the planning limits for new rail corridors and rail corridor redevelopment. For proposed new rail corridors i.e. proposed master planned community the noise limits are those stated within 'Railways' of Schedule 1 of the *Environmental Protection (Noise) Policy 1997*.

New rail corridor design and development setback must achieve the limits stated.

Where the noise limits are already exceeded at development uses adjacent to the proposed new rail corridor then the corridor should be designed to not increase existing noise levels by a maximum of 3 dB (A).

3.6 Aircraft Noise

Applicants should have regard to Maroochy Planning Scheme Code 2.1.7 Code for Development in the

Vicinity of the Airport and SPP 1/02 Development in the Vicinity of Certain Airports and Aviation Facilities and its supporting guidelines.

3.7 Entertainment Noise

A different method of assessment is applicable to amplified or non-amplified entertainment noise whereby a comparison of unlike descriptors is more appropriate.

The applicable limits for all indoor and outdoor amplified and non-amplified entertainment noise (as applied by Department of Tourism Racing and Fair Trading – Liquor Licensing Division) are:

- (a) For noise during the daytime or evening – the L_{10} measured outside the most exposed part of an affected dwelling does not exceed the background level (L_{90}) by more than 10 dB(A); and
- (b) For noise at any other time: the sound pressure level L_{OCT10} , in a full octave band with centre frequencies from 63 Hz to 2 kHz, measured outside the most exposed part of an affected dwelling, does not exceed the background level, L_{OCT90} , by more than 8 dB in 1 or more octave bands.

Amplified entertainment from licensed premises also requires approval from the Department of Tourism, Fair Trading and Wine Industry Development – Liquor Licensing Division. The Division will consider approval for amplified entertainment following Development Approval for the use by a Local Authority.

The Liquor Licensing Division require a noise impact assessment to be conducted including on-site noise testing and certification to demonstrate the appropriate level of entertainment noise for a licensed venue. This testing is generally conducted post development approval and prior to commencement of use of a new premises or following a change to the use of an existing premises.

4 Assessment Methodology and Data Presentation

4.1 Assessment Methodology

In undertaking acoustic studies for development assessment, applicants will be required to adopt a methodology that accords with AS 1055.3 Part 3: Acquisition of data pertinent to land use with respect to general assessment and/or AS2702 specifically with respect to road traffic noise.

As a general guide, a 4 step assessment methodology is provided below to assist applicants in using this policy.

Stage 1 Identify all the noise source/s under consideration (for both immission and emission) and determine whether existing sound pressure levels, predicated sound

pressure levels or both are necessary for assessment.

Stage 2 Using the information gathered at Stage 1, identify the appropriate noise descriptors and limits from Table 3.1 and references of this policy for each of the identified noise sources under consideration.

Stage 3 Undertake assessment of all sources at the typical reference time of source activity to account for variations in the use of differing noise sources eg. time of highest traffic density, time of use of intermittent time-varying noise generating plant and equipment (air blast, loading process) or entertainment noise.

State whether noise immission and/or emission will comply with the noise limits identified in Table 3.1. If non-compliant, identify whether noise mitigation measures can be implemented to achieve the limits.

Stage 4 Prepare a detailed assessment report for submission to Council as part of the Development Assessment process. Such a report must specify the proposed attenuation measures in a manner that can form the basis of draft development approval conditions. Mitigation measures must be determined having regard to Section 5 of this policy.

4.2 Data Presentation

As a minimum, the assessment report must include the following sections:

- (a) Existing Noise Climate or Traffic Conditions, refer Stage 1 above;
- (b) Verification of Noise Calculation/Predication model i.e. accords with the relevant Australian Standard or recognised traffic noise assessment model;
- (c) Climate Conditions (wind speed/direction, rain);
- (d) Calibration of Instruments;
- (e) Site Diagrams & Measurement Locations
- (f) Influence of Facades & Partial Noise Barriers;
- (g) Noise Model Input Variables and Results or similar; and
- (h) Ambient Noise Survey Graphs (noting the relevant descriptors and sound pressure logger results over the measurement time period).

5 Preferred Approach to Noise Attenuation Measures

Council's primary interest is to ensure that potential noise impacts are identified and addressed up front in the planning and design of new development. The design and layout of new development should reflect these considerations. Where development is a Reconfiguration a Lot, or involves the design of a neighborhood, regard must be given to *Planning Scheme Policy No. 9 – Reconfiguring Lots*.

Any noise attenuation measures proposed are required to comply with the performance criteria in the relevant codes which require integration with the local streetscape and building form, creation of active street frontages and discouragement of crime and anti social behaviour.

In general:

- (a) Council will prefer solutions that address potential noise impacts through lot layout, design and location¹;
- (b) Solutions should be appropriately designed and landscaped to integrate with the local environment;
- (c) Council will not prefer measures relying on building property notations for prospective purchasers.

Where used, such notations should reference the specific requirements for the use of building construction for the development as the means of noise attenuation;

- (d) The use of stand-alone noise barriers is Council's least preferred noise attenuation treatment. Subsequently, building acoustic treatments, lot design, layout and location should be investigated prior to electing acoustic barriers as a means of noise attenuation.

6 References

- AS1055 – 1997 Parts 1 to 3 – *Acoustics – Description and Measurement of Environmental Noise*
- AS2021 – *Acoustics – Aircraft Noise Intrusion – Building Siting and Construction*
- AS2107 – 1987 – *Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors*
- AS2702 – 1984 – *Acoustics – Methods for the Measurement of Road Traffic Noise*
- AS3671 – *Acoustics – Road Traffic Noise Intrusion – Building Siting and Construction*
- AS/NZS3817 – 1998 – *Acoustics – Methods for the Description and Physical Measurement of Single Impulses and Series of Impulses*
- Berglund B, Lindvall T, Schwela DH (1999) *Guidelines for Community Noise*, World Health Organization, Geneva
- *Brisbane City Plan: Noise Impact Assessment Planning Scheme Policy* (NIAPS Policy)
- State of Queensland, *Environmental Protection (Noise) Policy 1997*
- State of Queensland Department of Environment, (1998) *User's Guide to Queensland's Environmental Protection (Noise) Policy 1997*
- *Qld EPA State Interest Planning Policy for Noise Management in Planning Schemes Ver1 2000 and EPP (noise)*
- Hassall, JR & Zavad, K, *Acoustic Noise Measurements*, Bruel and Kjaer, Denmark. January 1979

¹ *AMCORD Element 5.13, Housing on Traffic Routes, provides some guidance on site planning options having regard to minimising the impacts of road traffic noise*