

# Planning Scheme Policy

## Noise

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# Planning scheme policy – Noise

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## Adoption

Moreton Bay Regional Council adopted this planning scheme policy on 24 November 2015.

## Commencement

This planning scheme policy will take effect from 1 February 2016.

### 1. Introduction

This policy supports the Moreton Bay Regional Council Planning Scheme and has been made by Council in accordance with Chapter 3, Part 4, Division 2 and Part 5, Division 1 of the *Sustainable Planning Act 2009*.

#### 1.1 Purpose

The purpose of this planning scheme policy is to provide guidance for the assessment of noise, preparation of noise impact assessment reports and development of noise management programs where required to satisfy provisions of the Moreton Bay Regional Council Planning Scheme.

#### 1.2 Application

This planning scheme policy applies to proposed development that involves noise generating activities or noise sensitive uses. Provisions within the planning scheme identify where noise impact assessments will be required. Notes are provided throughout the zone, local plan and development codes to identify when a noise impact assessment report or noise management program may be required by Council.

Where the information required by this policy is not supplied when the development application is made, it will be the subject of an information request under the Integrated Development Assessment System (IDAS).

#### 1.3 Interpretation

Terms used in this planning scheme policy are defined in Schedule 1 – Definitions of the planning scheme. Where a term is not defined in Schedule 1, section 1.3 Interpretation of the planning scheme applies.

## 2. Principles for assessing and mitigating environmental noise impacts

When assessing the noise impacts associated with a development the following principles apply:

1. Where a development involves a new noise sensitive use near an existing noise generating use (such as industry or major transport corridor), the new noise sensitive use must include mitigation measures.
2. Where a development involves a new noise generating activity near an existing noise sensitive use or land identified for future noise sensitive uses, the new activity must include mitigation measures.

To the extent reasonable to do so, the hierarchy of managing noise is:

1. by avoidance;
2. by minimising the noise;
3. by managing the noise.

Where noise cannot be avoided or minimised and mitigation measures are required, the hierarchy of noise control is:

1. control at the source;
2. control the transmission path;
3. control at the receiver.

Unless specified to the contrary, environmental noise and vibration will generally be assessed and measured in accordance with the guidelines outlined in the following *Australian Standards* or as updated:

*AS 1055—1997 Parts 1 to 3—Acoustics—Description and Measurement of Environmental Noise*

*AS 2107—2000—Acoustics—Recommended Design Sound Levels and Reverberation Times for Building Interiors*

*AS 2377—2002—Acoustics—Methods for the Measurement of Railbound Vehicle Noise*

*AS 2436—2010 Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites*

*AS 2702—1984—Acoustics—Methods for the Measurement of Road Traffic Noise*

*AS 2021—2015—Acoustics—Aircraft Noise Intrusion—Building Siting and Construction*

*AS 3671—1989 Acoustics—Road Traffic Noise Intrusion—Building Siting and Construction*

*AS/NZS 3817—1998—Acoustics—Methods for the Description and Physical Measurement of Single Impulses or Series of Impulses*

The standards for measurement of noise are contained in *AS 1055* and the Queensland Department of Environment and Heritage publication *Noise Measurement Manual*, 2nd edition.

### **3. Environmental noise impact assessment**

The purpose of a noise impact assessment report is to describe, evaluate and analyse the impacts of noise emissions in order to provide measures for achieving acceptable acoustic amenity and demonstrating compliance with related provisions of the Planning Scheme.

#### **3.1 Report content**

A Noise impact assessment report must include the following:

1. outline of the proposed development including
  - a. clear plans and diagrams identifying areas of activity;
  - b. description of hours of operation.
2. identification and description of the site and existing acoustic environment – refer to section 4.3 of this policy;
3. where relevant a comprehensive and representative inventory of noise emissions associated with the development and from other sources including:
  - a. all the proposed and existing noise emission sources relevant to the development;
  - b. the sound power level or sound pressure level, how often it occurs/number of events, duration and operating times of each noise source;
  - c. the characteristics of each noise source, including low frequency, vibration, tonal or impulsive characteristics; and
  - d. whether each noise source produces steady sound or non-steady sound.
4. noise planning criteria being utilised including a justification of choice;
5. a list of all relevant noise limits;
6. details of the noise model and algorithms used in accordance with section 4.2;
7. methods and assumptions for calculating the effectiveness of noise impact control measures, including the predicted attenuation from shielding by buildings, barriers, fences, walls, mounds or enclosures, in accordance with the requirements of section 4;
8. outcomes of the assessment including:
  - a. predicted noise impacts without control measures;
  - b. recommended control measures; and
  - c. predicted noise impacts with control measures implemented. See also section 6.
9. the noise level to be achieved at the boundary or specific location at the site that is necessary for achieving the relevant noise limit at the noise sensitive use or zone;
10. conclusions;
11. recommendations;
12. references; and
13. calculations where feasible

## **4. Environmental noise impact assessment methods**

The assessment of noise impacts is to comply with the methods listed in this section, unless a justification is made to and accepted by the Council for an alternative method.

### **4.1 Methodology**

A comprehensive description of the impact assessment methodology is to be provided.

### **4.2 Models**

The following requirements apply to noise prediction models:

1. the assessment of proposed noise sources is to be undertaken using an appropriate noise prediction model; and
2. noise prediction models are to be calibrated by field measurement verification where practical.

A noise impact assessment report is to include detail in relation to the chosen model such as:

1. assumptions and uncertainties associated with the noise modelling;
2. details of noise model calibration method and results;
3. description of and justification for the noise model and algorithms used to predict the propagation of noise from the noise sources relevant to the development; and
4. model input data and the representativeness, accuracy and resolution of the input data, including noise source sound power levels, operating hours of each noise source, ground cover assumptions, topography assumptions, road gradient where relevant, reflections from buildings and barriers and noise source and receiver heights;

### **4.3 Assessment of the existing acoustic environment**

A noise impact assessment report is to include a qualitative and quantitative assessment of the existing acoustic environment, which:

1. identifies the sound pressure levels of the existing acoustic environment, including the rating background level (RBL) at the development; see Appendix 1 Determining the Rating Background Level.
2. identifies the noise sources that contribute to the existing acoustic environment; and
3. describes the existing acoustic environment.

The noise impact assessment of existing noise sources is to be undertaken using noise monitoring and where appropriate, noise prediction modelling.

The following information is to be included in the noise impact assessment and report in relation to the existing acoustic environment:

1. a qualitative description of the existing acoustic environment;
2. description of the noise monitoring equipment and procedures used to assess the existing acoustic environment;
3. a site plan and/or map to scale showing relevant features such as:
  - a. the location of any existing noise sources that may contribute to the existing acoustic environment including roads, railways, airports, industry and commercial premises;
  - b. the location of the sensitive uses and sensitive zones that may be impacted by noise from the development, or where the development is for a sensitive use, the location of existing noise sources that may impact the development;
  - c. the location of noise monitoring equipment used to assess the existing acoustic environment, including distance to any existing noise source that may contribute to the existing acoustic environment;
  - d. location of existing or proposed structures, including but not limited to buildings, barriers, walls and fences; and
  - e. the location of any earth mounding, cuttings or other significant topographical features.
4. site photographs indicating the position of the noise monitoring equipment;
5. details of noise monitoring equipment field calibration results;
6. noise monitoring results where relevant including:
  - a. sample times and measurement intervals;

- b. weather conditions during measurement including wind speed, wind direction and rainfall preferably sourced from a portable weather station installed at the subject site or alternatively the Bureau of Meteorology weather station.
  - c. adjustments for reflecting surfaces where relevant;
  - d. for attended noise monitoring a description of noise sources that make up the existing acoustic environment (e.g. aircraft, industry, mechanical plant, dog barking) and discussion of extraneous noise and any effect it may have on the results;
  - e. table summary of measured sound pressure levels and results;
  - f. graphical presentation of measured sound pressure levels using 15 minute intervals and including the  $L_{Amax}$ ,  $L_{Aeq}$ ,  $L_{A10}$  and  $L_{A90}$  noise descriptors. Where other parameters are referenced reasoning for their use is to be provided;
  - g. methodology used for predicting sound pressure levels at locations other than those monitored; and
7. rating background levels for day, evening and night for the most affected sensitive zones or noise sensitive uses, determined in accordance with Appendix 1; and
  8. existing ambient sound pressure levels, including  $L_{Amax}$  and  $L_{Aeq}$  for day, evening and night for the most affected sensitive zones or noise sensitive uses. Quantify the contribution of existing transport noise (road, rail, aircraft), industry/commerce in  $L_{Amax}$ ,  $L_{A10}$ ,  $L_{Aeq,11hr}$ ,  $L_{Aeq4hr}$ ,  $L_{Aeq9hr}$  for day evening and night respectively.

#### 4.4 Modifying factor adjustments

Noise impacts at sensitive uses or sensitive zones can be greater where the source noise has the following characteristics:

1. tonality;
2. impulsiveness;
3. modulation; and
4. low-frequency content.

Modifying factor adjustments as specified in *AS1055 – 1997, Acoustics – Description and measurement of environmental noise* are to be applied to the measured/predicted source noise level at the receiver before comparison with the noise planning criteria. A noise impact assessment report is to include a description of the modifying factor adjustments made as part of the noise impact assessment and justification for their use

#### 4.5 Determining $L_{Amax}$ level

As operational  $L_{Amax}$  levels can vary, the  $L_{Amax}$  is considered by assessing:

1. The arithmetic average of the maximum levels from up to 15 single events over a given night time period, 10pm to 7am; and
2. the absolute highest  $L_{Amax}$  level.

$L_{Amax}$  assessment only applies to 'specified noise sources' which are defined as:

1. impact noises;
2. hammering;
3. loading/unloading;
4. dropping items;
5. beepers, Alarms, Bells, Phones, Sirens;
6. power tools;
7. valve releases;
8. air brakes; and
9. door slamming.

Note — People noise and vehicle noise (engine, exhaust, induction, tires) are specifically excluded.

#### 4.6 Vibration

1. *The descriptors* used to define vibration are not the same as those used to describe sound. Vibration can generally be described in terms of acceleration, velocity or displacement. The most commonly used descriptor for vibration for structural damage and human comfort is velocity.

2. *AS2187.2—Explosives—Storage Transport and Use, Part 2 Use of Explosives* describes the commonly used damage criteria for buildings in terms of peak particle velocity (PPV) in mm/s. The peak particle velocity is the maximum vector sum of three time synchronised velocity components and it is measured at the ground surface.
3. Detailed analysis is outlined in *BS7385.2 B 1993 Measurement and Evaluation of Vibration in Buildings, Part 2, Guide to Damage Levels From Groundborne Vibration* which provides frequency range vibration levels. Building damage is more closely related to stress, which is related to displacement. Constant peak to peak displacement levels at differing frequencies translate to vibration velocity, which increases with frequency. Because of this, the criterion allows greater vibration velocity levels at higher frequency.
4. Cosmetic building damage from sources such as piling, construction activities, machinery or road/rail traffic is also covered in *BS7385.2*. The criteria for cosmetic damage are component levels, not PPV. Values referred to are at the base of the building.
5. For certain buildings, such as those of historical value or those containing equipment that is sensitive to vibration, vibration levels lower than those shown in the criteria may be required.
6. For human vibration comfort level assessment in buildings, *BS-6472:1992—Evaluation of Human Exposure to Vibration in Buildings (1 to 80 Hz)* describes suggested vibration levels in buildings for human comfort.
7. Continuous vibration continues uninterrupted for a defined period (usually throughout daytime and/or night-time). Continuous vibration includes: machinery, steady road traffic and continuous construction activity (such as tunnel boring).
8. Impulsive vibration is a rapid build up to a peak followed by a damped decay that may involve several cycles of vibration (depending on frequency and damping). It can also consist of a sudden application of several cycles at approximately the same amplitude, providing that the duration is short, typically less than 2 seconds. Impulsive vibration includes: infrequent activities that create up to 3 distinct vibration events per day or night period, e.g. dropping of heavy equipment, occasional loading and unloading.
9. Intermittent vibration is interrupted periods of continuous vibration or repeated periods of impulsive vibration, or continuous vibration that varies significantly in magnitude. Intermittent vibration includes: trains, intermittent construction activity, passing heavy vehicles, forging machines, impact pile driving, jack hammers. Where the number of events is 3 or fewer per day or night period, these can be assessed against impulsive criteria.
10. There is a low probability of adverse comment or disturbance to building occupants at vibration values below the preferred criteria. Activities should be designed to meet the preferred values where an area is not already exposed to vibration. Where all reasonable and practical measures have been applied, values up to the maximum value may be used if they can be justified, e.g. temporary disturbances and infrequent events of short term duration.

## 5. Environmental noise impact assessments – Criteria

### General noise emission criteria for noise generating uses unless otherwise stipulated

Both column 1 and 2 are applicable	Column 1 – Intrusive noise criteria	Column 2 – Acoustic amenity criteria								
<b>Criteria location</b>	<p><math>L_{Aeq,adj,T}</math> is not greater than the Rating Background Level (RBL) for Day Evening and Night plus the value in column 1 for the relevant criteria location.</p> <p>These limits are component levels</p> <p>“T” is either a relevant representative 15 minutes or if the duration of the noise occurs for less than 15 minutes the duration of the noise source.</p>	<p>Day, evening and night <math>L_{Aeq,adj,T}</math> are not greater than the values in column 2 for the relevant criteria location, where T equals:</p> <ul style="list-style-type: none"> <li>• Day: 11hr</li> <li>• Evening: 4hr</li> <li>• Night: 9hr</li> </ul> <table border="1" data-bbox="1007 667 1458 864"> <thead> <tr> <th data-bbox="1007 667 1161 696">Day</th> <th data-bbox="1161 667 1316 696">Evening</th> <th data-bbox="1316 667 1458 696">Night</th> </tr> </thead> <tbody> <tr> <td data-bbox="1007 696 1161 864"></td> <td data-bbox="1161 696 1316 864"></td> <td data-bbox="1316 696 1458 864"></td> </tr> </tbody> </table>			Day	Evening	Night			
Day	Evening	Night								
<p>At the boundary of a:</p> <ul style="list-style-type: none"> <li>• General residential zone,</li> <li>• Rural residential zone,</li> <li>• Rural zone,</li> <li>• Emerging community zone</li> <li>• Interim residential precinct (Redcliffe Kippa-Ring Local Plan)</li> <li>• Rural living precinct (Caboolture West Local Plan)</li> <li>• Urban living precinct (Caboolture West Local Plan)</li> <li>• Township zone (Residential precinct)</li> </ul>	3dB(A)	55dB(A)	45dB(A)	40dB(A)						
<p>External to a noise sensitive use in the following zones where the proposed use is located within the same zone:</p> <ul style="list-style-type: none"> <li>• General residential zone,</li> <li>• Rural residential zone,</li> <li>• Rural zone,</li> <li>• Emerging community zone</li> <li>• Interim residential precinct (Redcliffe Kippa-Ring Local Plan)</li> <li>• Rural living precinct (Caboolture West Local Plan)</li> <li>• Urban living precinct (Caboolture West Local Plan)</li> <li>• Township zone (Residential precinct)</li> </ul>	3dB(A)	55dB(A)	45dB(A)	40dB(A)						
<p>External to a noise sensitive use located in a:</p> <ul style="list-style-type: none"> <li>• Centre zone</li> <li>• Community facilities zone</li> <li>• Extractive industry zone</li> <li>• Industry zone</li> <li>• Recreation and open space zone</li> <li>• Township zone (Centre, Convenience or Industry Precinct)</li> </ul>	5dB(A)	60dB(A)	55dB(A)	50dB(A)						



Both column 1 and 2 are applicable	Column 1 – Intrusive noise criteria	Column 2 – Acoustic amenity criteria		
<ul style="list-style-type: none"> <li>Redcliffe seaside village precinct (Redcliffe Kippa-Ring Local Plan)</li> <li>Kippa-Ring village precinct (Redcliffe Kippa-Ring Local Plan)</li> <li>Kippa-Ring station precinct (Redcliffe Kippa-Ring Local Plan)</li> <li>Local services precinct (Redcliffe Kippa-Ring Local Plan)</li> <li>Health precinct (Redcliffe Kippa-Ring Local Plan)</li> <li>Sport and recreation precinct (Redcliffe Kippa-Ring Local Plan)</li> <li>Town centre precinct (Caboolture West Local Plan)</li> <li>Enterprise and employment precinct (Caboolture West Local Plan)</li> </ul>				

### Night-time noise criteria

Criteria location	Where the existing $L_{Aeq,9hr}$ night at the criteria location is:	Average of the highest 15 single $L_{Amax}$ events over a given night (10pm-7am) period is not greater than the following values at the relevant criteria location	The absolute highest single $L_{Amax}$ event over a given night period is not greater than the following values at the relevant criteria location
At the boundary of: <ul style="list-style-type: none"> <li>General residential zone,</li> <li>Rural residential zone,</li> <li>Rural zone,</li> <li>Emerging community zone</li> </ul>	Up to 60dB(A)	50dB(A)	55dB(A)
<ul style="list-style-type: none"> <li>Interim residential precinct (Redcliffe Kippa-Ring Local Plan)</li> <li>Rural living precinct (Caboolture West Local Plan)</li> <li>Urban living precinct (Caboolture West Local Plan)</li> <li>Township zone (Residential precinct)</li> </ul>	> 60dB(A)	65dB(A)	70dB(A)
External to a noise sensitive use in the following zones where the proposed use is located within the same zone: <ul style="list-style-type: none"> <li>General residential zone,</li> <li>Rural residential zone,</li> <li>Rural zone,</li> <li>Emerging community zone</li> </ul>	Up to 60dB(A)	50dB(A)	55dB(A)
<ul style="list-style-type: none"> <li>Interim residential precinct (Redcliffe Kippa-Ring Local Plan)</li> <li>Rural living precinct (Caboolture West Local Plan)</li> <li>Urban living precinct (Caboolture</li> </ul>	> 60dB(A)	65dB(A)	70dB(A)

West Local Plan) • Township zone (Residential precinct)			
External to a noise sensitive use located in a: • Centre zone • Community facilities zone • Extractive industry zone • Industry zone • Recreation and open space zone • Township zone • Redcliffe seaside village precinct (Redcliffe Kippa-Ring Local Plan) • Kippa-Ring village precinct (Redcliffe Kippa-Ring Local Plan) • Kippa-Ring station precinct (Redcliffe Kippa-Ring Local Plan) • Local services precinct (Redcliffe Kippa-Ring Local Plan) • Health precinct (Redcliffe Kippa-Ring Local Plan) • Sport and recreation precinct (Redcliffe Kippa-Ring Local Plan) • Town centre precinct (Caboolture West Local Plan) • Enterprise and employment precinct (Caboolture West Local Plan)	Not applicable	65dB(A)	70dB(A)

**Where the use involves a kennel or a home based business the following applies:**

The emission of animal noise beyond the development site does not exceed:

1.  $L_{Amax}$ , 38dB(A) measured at a nearby noise sensitive use.

**Where the use involves air services the following applies:**

The emission of noise from air services should not exceed the Indoor Design Sound Levels identified in AS 2021:2015 Acoustics - Aircraft noise intrusion - Building siting and construction

**Licensed venues**

Noise emanating from licensed premises is regulated by the Office of Liquor Gaming and Racing (OLGR). The noise criteria applied for amplified entertainment is contained in the Liquor Act 1992 (Section 187), with the subordinate Regulation (Section 28) provides a technical guideline for acoustic assessment.

A proposed development that includes a venue licensed by OLGR will be required to demonstrate compliance with the legislated criteria by way of an environmental noise impact assessment at the development application stage.

**Other criteria**

Notwithstanding the above listed criteria it may be relevant to reference other guidelines or legislation for example the Environmental Protection Act 1994.

## 5.1 Design mitigation requirements

Criteria for Material Change of Use involving a noise sensitive use:

Location where the criteria applies inside a noise sensitive use	Adjusted equivalent continuous sound pressure level ( $L_{Aeq,adj,T}$ ) to be achieved during day, evening and night time periods			Maximum sound pressure level ( $L_{Amax}$ ) to be achieved during the night time period
	Day 7am–6pm $L_{Aeq,adj,11hr}$	Evening 6pm–10pm $L_{Aeq,adj,4hr}$	Night 10pm–7am $L_{Aeq,adj,9hr}$	Night 10pm–7am
Sleeping areas	35dB(A)	35dB(A)	30dB(A)	45dB(A)
Other habitable rooms	35dB(A)	35dB(A)	35dB(A)	N/A
Within the designated private open space	55dB(A)	45dB(A)	N/A	N/A
<b>Low-frequency noise criteria - Adjusted equivalent continuous sound pressure level (<math>L_{Ceq,adj,T}</math>) to be achieved during day, evening and night time periods.</b>				
Noise intrusion into habitable rooms	60dB(C)	60dB(C)	Sleeping areas: 55dB(C)  Other habitable rooms: 60dB(C)	N/A

Note: when calculating attenuation from external to internal environments a maximum 7.5dB reduction is to be applied.

**For development impacted by an air services use:**

Buildings are to be designed to meet the Indoor Design Sound Levels identified in AS 2021:2015 Acoustics - Aircraft noise intrusion - Building siting and construction

Notes —

- $L_{Aeq,adj,T}$ : The adjusted A-weighted equivalent continuous sound pressure level of the development during the time period T, where T is an 11- hours for day (7am-6pm), 4- hours for evening (6pm-10pm) and 9- hours for night (10pm-7am), determined in accordance with the methodology described in the Noise impact assessment planning scheme policy.
- RBL: Rating background level determined in accordance with the methodology described in the Noise impact assessment planning scheme policy.
- dB(A): A-weighted decibels.
- $L_{Amax}$ : The A-weighted maximum sound pressure level determined in accordance with the methodology described in the Noise impact assessment planning scheme policy.
- $L_{Aeq,9hr}$ : The A-weighted equivalent continuous sound pressure level of the development during the night time period 10pm to 7am, determined in accordance with the methodology described in the Noise impact assessment planning scheme policy.
- Night: 10pm to 7am
- $L_{Ceq,adj,T}$ : The adjusted C-weighted equivalent continuous sound pressure level of the development during the time period T, where T is 11-hours for day (7am-6pm), 4-hours for evening (6pm-10pm) and 9-hours for night (10pm-7am), determined in accordance with the methodology described in the Noise impact assessment planning scheme policy.
- dB(C): C-weighted decibels

## Vibration criteria

### Recommended intermittent vibration levels for cosmetic damage

Type of building	Peak particle velocity (mm/s)		
Reinforced or framed structures; industrial and heavy commercial buildings	50 mm/s at 4Hz and above		
Unreinforced or light framed structures; residential or light commercial building type buildings	<b>Below 4Hz</b>	<b>4Hz to 15Hz</b>	<b>15Hz and above</b>
	0.6 mm/s	15 mm/s at 4Hz increasing to 20 mm/s at 15Hz	20 mm/s at 15Hz increasing to 50 mm/s at 40Hz and above.

### Recommended blasting vibration levels for human comfort

Type of building	Type of blasting operations	Peak component particle velocity (mm/s)
Residences, schools, educational institutions and places of worship	Operation blasting lasting for more than 12 months or 20 blasts or more	5 mm/s for 95% blasts per year 10 mm/s maximum unless agreement is reached with the occupier that a higher limit may apply
Residences, schools, educational institutions and places of worship	Operation blasting lasting for less than 12 months or less than 20 blasts	10 mm/s maximum unless agreement is reached with the occupier that a higher limit may apply
Industry or commercial premises	All blasting	25 mm/s maximum unless agreement is reached with the occupier that a higher limit may apply. For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that do not adversely affect the equipment operation.

### Recommended levels for continuous and impulsive vibration acceleration (m/s<sup>2</sup>) 1-80 Hz for human comfort

Location	Assessment Period <sup>1</sup>	Preferred values <sup>3</sup>		Maximum values <sup>3</sup>	
		z-axis	x and y-axes	z-axis	x and y-axes
Critical areas <sup>2</sup>	Day or night	0.005 m/s <sup>2</sup>	0.0036 m/s <sup>2</sup>	0.01 m/s <sup>2</sup>	0.0072 m/s <sup>2</sup>
Residences	Day	0.01 m/s <sup>2</sup>	0.0071 m/s <sup>2</sup>	0.02 m/s <sup>2</sup>	0.014 m/s <sup>2</sup>

	Night	0.007 m/s <sup>2</sup>	0.005 m/s <sup>2</sup>	0.014 m/s <sup>2</sup>	0.01 m/s <sup>2</sup>
Offices, schools, educational institutions and places of worship	Day or night	0.02 m/s <sup>2</sup>	0.014 m/s <sup>2</sup>	0.04 m/s <sup>2</sup>	0.028 m/s <sup>2</sup>
Workshops	Day or night	0.04 m/s <sup>2</sup>	0.029 m/s <sup>2</sup>	0.08 m/s <sup>2</sup>	0.058 m/s <sup>2</sup>
<b>Impulsive vibration</b>					
Critical areas	Day or night	0.005 m/s <sup>2</sup>	0.0036 m/s <sup>2</sup>	0.01 m/s <sup>2</sup>	0.0072 m/s <sup>2</sup>
Residences	Day	0.3 m/s <sup>2</sup>	0.21 m/s <sup>2</sup>	0.6 m/s <sup>2</sup>	0.42 m/s <sup>2</sup>
	Night	0.1 m/s <sup>2</sup>	0.071 m/s <sup>2</sup>	0.2 m/s <sup>2</sup>	0.14 m/s <sup>2</sup>
Offices, schools, educational institutions and places of worship	Day or night	0.64 m/s <sup>2</sup>	0.46 m/s <sup>2</sup>	1.28 m/s <sup>2</sup>	0.92 m/s <sup>2</sup>
Workshops	Day or night	0.64 m/s <sup>2</sup>	0.46 m/s <sup>2</sup>	1.28 m/s <sup>2</sup>	0.92 m/s <sup>2</sup>

**Recommended vibration dose values for intermittent vibration (m/s<sup>1.75</sup>) for human comfort**

Location	Daytime <sup>1</sup>		Night time <sup>1</sup>	
	Preferred value	Maximum value	Preferred value <sup>3</sup>	Maximum value <sup>3</sup>
Critical areas <sup>2</sup>	0.1 m/s <sup>1.75</sup>	0.2 m/s <sup>1.75</sup>	0.1 m/s <sup>1.75</sup>	0.2 m/s <sup>1.75</sup>
Residences	0.2 m/s <sup>1.75</sup>	0.4 m/s <sup>1.75</sup>	0.13 m/s <sup>1.75</sup>	0.26 m/s <sup>1.75</sup>
Offices, schools, educational institutions and places of worship	0.4 m/s <sup>1.75</sup>	0.8 m/s <sup>1.75</sup>	0.4 m/s <sup>1.75</sup>	0.8 m/s <sup>1.75</sup>
Workshops	0.8 m/s <sup>1.75</sup>	1.6 m/s <sup>1.75</sup>	0.8 m/s <sup>1.75</sup>	1.6 m/s <sup>1.75</sup>

Notes –

1. Day is 7am to 10pm and night is 10pm to 7am.

2. Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring.

## 6. Presenting outcomes

Results of the assessment are to be clearly displayed and provided in tabular form as shown below or as a set of noise level contour plots :

Receiver	Description	Source @1 metre	Correction dB (A)*	Corrected dB(A)*	Distance (m)	Barrier Height	Barrier Screening	Building TL or shield dB	Topo screening dB	Dist Att.	Noise level L <sub>Aeq</sub> adj, t external dB(A)	Noise level L <sub>Amax</sub> adj, t internal dB(A)	Complies Day	Complies Evening	Complies Night	Complies Night LA <sub>max</sub>
Criteria													60	56	45	50
1	Car start	77	2	79	15	2.4	-10			-14	55	55	Yes	Yes	No	No
	rattle gun															
2	Car start															
	rattle gun															

## 7. Noise mitigation control measures

Councils Planning Scheme identifies the use of barriers should be in accordance with the following:

Noise attenuation structures (e.g. walls, barriers or fences):

- a. are not visible from an adjoining road or public area unless;
  - i. adjoining a motorway or rail line; or
  - ii. adjoining part of an arterial road that does not serve an existing or future active transport purpose (e.g. pedestrian paths or cycle lanes) or where attenuation through building location and materials is not possible.
- b. do not remove existing or prevent future active transport routes or connections to the street network;
- c. are located, constructed and landscaped in accordance with Planning scheme policy - Integrated design.

Note – Refer to Planning Scheme Policy – Integrated design for details and examples of noise attenuation structures.

Note – Refer to Overlay map – Active transport for future active transport routes.

## 8. Assessment of road traffic and railway noise

The following outlines the process for establishing acceptable acoustic amenity at sites impacted by noise from roads and railways.

### 8.1 Reconfiguring a lot

A transport noise impact assessment report is to be provided where development involves reconfiguring a lot in the General Residential zone where:

1. proposed lots are located within:
  - a. 50 metres of a current or future designated sub arterial; or
  - b. 100 metres of a current or future designated arterial road; or
  - c. 150 metres of a highway or railway; or
  - d. extractive resource transport buffer
2. where otherwise requested by Council.

Note - Does not apply if the proposed development site is within a designated transport noise corridor and the Department of Transport and Main Roads is a referral agency.

The assessment is to be in accordance with MP 4.4 of the QDC. The assessment is to identify the noise category applicable to each lot in the proposed development for both lower and upper levels. Noise categories are defined in Schedule 3 of MP4.4.

In addition the assessment is to address the requirement for residential development to have private open space that meets the Environmental Criteria identified in Department of Transport and Main Roads *Policy for Development on land affected by Environmental Emissions from Transport and Transport Infrastructure Version 2 or as amended*.

Note – Noise Categories are derived from the identified noise levels at 1 metre from the façade of the proposed or existing building. For the purposes of this policy the façade is to be determined at the deemed to be building setback or proposed building envelope or the lot boundary.

#### 8.1.1 Property notes

A property note will be applied to all new lots identified as Noise Category 1 or higher. The development approval will advise of the intended property note generally in accordance with the following example.

*The following notation will be recorded on Council's property system for proposed Lots xxxxxx*

*This lot is impacted by road traffic noise. A Traffic Noise Impact Report by xxxx, xxxxxx, has been prepared in relation to this lot. The report identifies this lot as being at Noise Level Category X. Mandatory Part 4.4 of the Queensland Development Code specifies the noise reduction requirements and treatments for buildings within each Noise Category.*

*Further assessment by a suitably qualified acoustic expert should be sought in order to determine the appropriate building design and treatment required to effectively mitigate noise impacts for the provision of acceptable acoustic amenity in private open spaces and habitable rooms.*

Note – where lots are impacted by noise sources other than transport alternative property notes will be applied as deemed appropriate.

## 8.2 Material change of use

### 8.2.1 Dwellings

A transport noise impact assessment report is to be provided for development proposing dwellings where:

1. a lot is located within:
  - a. 50 metres of a current or future designated sub arterial; or
  - b. 100 metres of a current or future designated arterial road; or
  - c. 150 metres of highway, haulage route or railway; or
  - d. extractive resource transport buffer
2. otherwise requested by Council.

Note - Does not apply if the proposed development site is within a designated transport noise corridor and the Department of Transport and Main Roads is a referral agency.

The assessment is to be in accordance with MP 4.4 of the QDC. The assessment is to identify the noise category applicable to each lot in the proposed development. Noise categories are defined in Schedule 3 of MP4.4.

### 8.2.2 Private open space

In addition the assessment is to address the requirement for residential development to have a private open space that meets the Environmental Criteria identified in *Department of Transport and Main Roads Policy for Development on Land Affected by Environmental Emissions from Transport and Transport Infrastructure Version 2* or as amended.

### 8.2.3 Other noise sensitive uses

A transport noise impact assessment report is to be provided for other development identified as a noise sensitive use where:

1. a lot is located within:
  - a. 50 metres of a current or future designated sub arterial; or
  - b. 100 metres of a current or future designated arterial road; or
  - c. 150 metres of highway, haulage route or railway; or
  - d. extractive resource transport buffer
2. otherwise requested by Council.

The assessment is to address the requirement for residential development to have a private open space that meets the Environmental Criteria identified in *Department of Transport and Main Roads Policy for Development on Land Affected by Environmental Emissions from Transport and Transport Infrastructure Version 2* or as amended.

## 9. Noise management program

A noise management program outlines specific operational aspects of a development required to ensure acceptable acoustic amenity is provided and maintained.

A noise management program should not be used as a means for justifying how a proposed use can be compliant where an environmental impact assessment has otherwise determined that a use would not meet planning criteria.

Where required, a noise management program should be formally submitted to Council as a stand-alone document in support of a development application. Council may choose to include the program as an approved document forming part of a development permit.

A noise management program may include the following:

1. objectives;
2. noise sources;
3. noise limits;



4. responsible persons;
5. responsibilities;
6. operational aspects to be incorporated to ensure noise nuisance to surrounding uses does not occur;
7. measures for communicating the plan to relevant persons;
8. hours and days of operation (may require limitations for specific activities);
9. complaint procedures;
10. measures for administering non-compliance with the plan;
11. reporting and documentation; and
12. other aspects as directed by Council.

Historic Version  
MBRC Planning Scheme Version 2

# Appendix 1

## How to determine the rating background level (RBL)

1. The rating background level (RBL) is the overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period.
2. The assessment of the RBL is to comply with the method listed in this section, unless a detailed justification is made to and accepted by Council, for any departure from the approved method.
3. Measure the  $L_{A90}$ , 1 hour background sound pressure levels for each hour during the day (0700-1800), evening (1800-2200) and night (2200-0700) assessment period relevant to the operating times and days of the development. That is, only those days and assessment periods that are applicable to the times of operation of the proposed development are required to be assessed.
4. Provided that the assessment period represents the typical background noise characteristics of the site; generally a minimum of 48 hours continuous background measurement is to be undertaken. Some situations may require further logging where the site experiences a variable background noise level.
5. Determine an Assessment Background Level (ABL) for each day (0700-1800), evening (1800-2200) and night (2200-0700) assessment period, using the tenth percentile method. The ABL is a measure of background noise ( $L_{A90}$ , 1 hour) in the absence of noise from the source. The tenth percentile method may be determined automatically using a spreadsheet package, or manually by applying the method in Table A.

**Table A – Method for determining the tenth percentile**

<b>Step 1</b>	Sort the $L_{A90}$ , 1 hour data in each assessment period in ascending order.
<b>Step 2</b>	Work out the tenth percent position of the number of samples in the assessment period. This can be calculated by multiplying the number of samples by 0.1.
<b>Step 3</b>	<p>Determine the tenth percentile:</p> <p>If the tenth percent position (from step 2) is an integer, then the tenth percentile is determined by taking the arithmetic average of the value at the tenth percent position and the value at the next highest position. If the tenth percent position (from step 2) is not an integer then the tenth percentile is the value at the next highest position</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• For a data set of size 40, the tenth percent position is 4 (i.e. <math>0.1 \times 40</math>). As this is an integer the tenth percentile is the average of the values at the 4th position and the 5th position from the top of the sorted data (from step 1).</li> <li>• For a data set of size 44, the tenth percent position is 4.4 (i.e. <math>0.1 \times 44</math>). As the value is not an integer, the tenth percentile is the value at the 5th position from the top (from step 1).</li> </ul>

6. Determine the Rating Background Level (RBL) to be used for assessment purposes. This is taken to be the median value of the corresponding day/evening/night ABLs. For example, for a week's worth of monitoring, the evening RBL is the median of the seven evening ABLs – i.e. the fourth highest (or lowest) value. Where this level is found to be less than 25dBA, the RBL is to be set to 25dBA. A practical example is illustrated in Table B.

**Table B – Example of determining the RBL for 1-hour samples over 5 days.**

	Day 1		Day 2		Day 3		Day 4		Day 5	
	Measured	Ascending Order	Measured	Ascending Order	Measured	Ascending Order	Measured	Ascending Order	Measured	Ascending Order
<b>7:00</b>	46.5	46.5	45	45	46.5	46	47	47	48	48
<b>8:00</b>	49.5	47.5 <sup>1</sup>	47.5	46 <sup>1</sup>	48	46.5 <sup>1</sup>	49	47 <sup>1</sup>	50	48.5 <sup>1</sup>
<b>9:00</b>	48.5	47.5	46.5	46	47	46.5	48.5	47	49.5	48.5
<b>10:00</b>	47.5	47.5	46	46	46.5	46.5	47.5	47.5	49	49
<b>11:00</b>	47.5	47.5	46.5	46.5	46	47	47	48	48.5	49
<b>12:00</b>	49	48	48	46.5	48.5	48	49.5	48.5	50	49.5
<b>13:00</b>	49.5	48.5	48.5	46.5	49	48	50.5	48.5	49.5	49.5
<b>14:00</b>	50.5	49.5	49.5	46.5	51	48	51	49	52	49.5
<b>15:00</b>	47.5	46	46	47.5	48	48.5	48.5	49	51	50
<b>16:00</b>	48	46.5	46.5	48	48.5	48.5	49	49.5	49.5	50
<b>17:00</b>	48	46.5	46.5	48.5	48	49	48	50.5	49	51
<b>18:00</b>	47.5	46	46	49.5	46.5	51	47	51	48.5	52
<b>ABL</b>		47.5		46		46.5		47 <sup>2</sup>		48.5
<b>RBL</b>	47 <sup>2</sup>									

Notes -

1. Number of ascending order samples is 12. (12 x 0.1=1.2)
2. Median value of the 5 days of measurements

Note - As 1.2 is not an integer, adopt the next position: 2