SC6.9 Noise Impact Assessment Planning Scheme Policy

6.9.1 Purpose

(1) The purpose of this policy is to:
a. outline Council's expectations for noise impact assessment reporting;
b. provide guidance on the assessment methodologies to be utilised when undertaking noise monitoring and noise prediction assessments;
c. provide defined environmental noise descriptors, and limits to be applied in noise impact assessments; and
d. identify Council's preferred approaches for noise mitigation and management.

6.9.2 Relationship to the Planning Scheme

(1) If an application proposes a development for either:
a. a non-residential use near a sensitive receptor, sensitive land use or noise sensitive place;
b. a sensitive receptor, sensitive land use or noise sensitive place near a non-residential use or non-residential zone,
c. a Noise Impact Assessment Report addressing the criteria outlined in Section 6.9.4 is required as part of the application; or
d. is required to address a relevant Assessment Benchmark of a use or development code.

6.9.3 Expertise Required for Preparing Noise Impact Assessment Reports

(1) A development application involving the need to assess the acoustic environment will require a suitably qualified person to undertake that assessment. A suitably qualified person must have a strong understanding of acoustic environment assessment and appropriate sound level measurement equipment.

(2) A suitably qualified person must have a minimum of two (2) of the following criteria:
a. appropriate tertiary qualifications;
b. a minimum of five (5) years acoustic consultancy experience; and
c. be a member of, or eligible for membership of, the *Australian Acoustical Society*.

6.9.4 Noise Impact Assessment Report

(1) A Noise Impact Assessment Report must be submitted with a development application for any development meeting the criteria of Section 6.9.2 which:
a. identifies the proposed use, its scale and intensity and the anticipated impacts from the use;
b. quantifies the receiving environment, and the likely background noise;
c. identifies that the use will or will not have a significant detrimental impact on the receiving environment or that the use will or will not have a significant detrimental impact resulting from the source;
d. considers how the use can mitigate the significant detrimental impact upon the amenity of the sensitive receptor, sensitive land use or noise sensitive place through separation, physical mitigation or operational adjustments; and
e. recommends appropriate noise amelioration measures that can be incorporated in the operation and design of the use or the site which will eliminate any detrimental impact on the sensitive receptor, sensitive land use or noise sensitive place.

6.9.5 Report Content

(1) A Noise Impact Assessment Report must include the following information:
a. an overview of the proposed development including description of all associated activities and hours of operation;
b. a layout plan identifying location of all sensitive receptors and distance to the noise sources;
c. a description of the existing acoustic environment, including information about prevailing weather and atmospheric conditions (e.g. prevailing wind speed, wind direction, occurrence of temperature inversions);
d. relevant noise goals / criteria;
e. a description of all potential noise emission sources associated with the development, or impacting upon the development, including number of persons, number of cars, anticipated vehicle movements and any other potential sources of noise;
f. details of noise monitoring undertaken in accordance with relevant Australian Standards and State guidelines;
g. modelling calculations, assumptions and results;
h. a discussion of assessment outcomes (against noise goals) and mitigation/management measures;

i. conclusions and recommendations;
j. references; and
k. appendices documenting detailed noise monitoring data (graphical and or tabular form) and noise calculation/modelling.

6.9.6 Description of Existing Acoustic Environment

(1) A Noise Impact Assessment Report must include detail of the development site including:
a. the location, type and character (eg continuous at a steady state or fluctuating, whether tonal or impulsive in nature etc) of noise sources contributing to the existing noise environment (eg industry, commercial, traffic, insect etc);
b. the location and distance of sensitive receptors from the proposed development (or distance of proposed new sensitive receptors to existing noise sources);
c. weather and atmospheric conditions prevailing at the site, including an analysis of the potential for adverse wind and temperature inversion effects to influence noise propagation; and
d. any topographical influences on noise propagation and shielding etc.

(2) To assist with characterising the existing noise environment ambient monitoring, as described in section 6.9.7, must be undertaken.

6.9.7 Noise Monitoring

(1) Noise monitoring of the existing acoustic environment must be undertaken in accordance with Australian Standard AS1055:2018 Acoustics - Description and measurement of environmental noise (or current version thereof) and Noise Measurement Manual (Reference ESR/2016/2195 by Department of Environment and Science) to determine existing ambient and background noise levels.

The noise impact assessment report must document:
a. the type of instrumentation and settings (i.e. frequency weighting, time period, microphone orientation, height of microphone above ground and distance to reflective surfaces) of the noise logger/sound level meter used in the assessment;
b. that the noise logger/sound level meter has been calibrated in a National Australian Testing Authority (NATA) certified calibration laboratory at least annually;
c. that the noise logger/sound level meter was calibrated in the field before and after monitoring, consistent with AS1055:2018 Acoustics - Description and measurement of environmental noise (or current version thereof) and AS/NZS IEC 61672.1-2019 Electroacoustics - Sound level meters Specifications (or current version thereof);
d. that the noise logger/sound level meter utilised A – weighted, fast response, continuously sampling and was set to record 15min intervals;
e. that the noise logger/sound level meter was located to be representative of existing noise levels experienced at the *nearest sensitive receptors* to the proposed development, and ensuring that it was not influenced by:
    i. extraneous noise which is not a permanent feature of the ambient noise environment (such as existing noise sources which will not exist if the development is approved, localised noise from wind rustling trees leaves, bird noise, animal noise such as cicadas, frogs, birds, machine noise from nearby pool pumps, localised short-term sources like construction, noise from high voltage transmission lines etc.); and/or
    ii. the noise source under investigation;
f. that monitoring was representative of the time of day of most interest (i.e. if the development application is for night-time hours and/or weekend hours the pre-development monitoring must include those periods);
g. that monitoring covered a period of at least 1 week to provide an indication/record of any weekday/weekend variations;
h. the meterological conditions during the monitoring, including rainfall and wind speed data for the duration of monitoring; and
i. the location and influence of topography and natural features (e.g. rivers) or building reflections / shielding on monitoring.

6.9.8 Monitoring Data

(1) A noise impact assessment must use the noise descriptors L_{A90}, L_{Aeq}, L_{Amax} **as a minimum**.

(3) The lowest tenth percentile method, rather than arithmetic averages, is consistent with the intent of the Noise Measurement Manual of the background being “the average of the noise levels during the quiet times”.

(4) Determination of the Rating Background Levels (RBL) from the ABLs determined at 6.9.8(2) is as described in Fact Sheet A: Determining existing noise levels and Fact Sheet B: Measurement Procedures for determining background noise contained in Noise Policy for Industry prepared by New South Wales (NSW) Environment

Protection Authority (Reference 2016/0524 dated 2017 or current version thereof).

(5) The use of Rating Background Levels (determined using lowest tenth percentiles) can then be used in "background plus" noise goals (as outlined in section 6.9.13).

6.9.9 Noise Emission Inventory

(1) A Noise Impact Assessment Report must include a list of all noise emissions —
a. associated with the proposed use and all other external sources which may impact the proposed use; or
b. associated with existing approved uses (or potential future uses which could be associated with the orderly development of adjacent areas), where the development proposes new sensitive land uses.

(2) A description and the characteristics of each noise source must be detailed, including:
a. sound power level;
b. the frequency of occurrence and duration of the noise source, including hours of operation;
c. whether the noise is continuous, fluctuating or intermittent;
d. whether the noise is emitted from a stationary source or mobile plant; and
e. whether the noise has tonal components, is impulsive and whether it has vibration components.

6.9.10 Noise Calculation and Modelling

(1) A noise impact assessment report must describe and justify the appropriateness of the model and calculation algorithms utilised to predict the propagation of noise from the development and on the development.

(2) Assessments must demonstrate compliance with sleep disturbance goals outline at section 6.9.13.3.

(3) The assessment must include noise calculation scenarios applicable to all stages of the proposed development and for all operating times of the development.

(4) Assessments must be conducted at the most affected point within the property boundary of the affected premises.

(5) For multi-storey residential buildings the assessment must be undertaken at locations representative of the most exposed habitable window on all levels.

(6) Meteorological conditions applicable at the site, including the effect of noise enhancing meteorological conditions, must be investigated (as described in Section 6.9.12)

(7) The presentation of noise calculation and modelling results must be in tabular and, where appropriate, graphical form (e.g. noise contour plots overlaid upon site plans) to identify predicted noise levels at nearest sensitive receptors. The tabulated data must highlight what modifying factors have been applied (refer to section 6.9.11) and must detail the effect of any noise mitigation measures or barriers included in the calculations.

6.9.11 Modifying Factor Adjustments

(1) A Noise Impact Assessment Report must include a comprehensive description of the modifying factor adjustments applied as part of the assessment.

(2) The modifying factor corrections must consider:
a. noise from all sources, individually and in combination, that contribute to the total noise emitted; and
b. the nature of the noise source and its characteristics (i.e. tonality, impulsiveness, modulation, low-frequency content).

(3) For guidance refer to Fact Sheet C: Corrections for annoying noise characteristics contained in Noise Policy for Industry prepared by New South Wales (NSW) Environment Protection Authority (Reference 2016/0524 dated 2017 or current version thereof).

6.9.12 Accounting for Noise Enhancing Weather Conditions in the assessment

(1) A noise assessment must investigate whether noise enhancing meteorological conditions (light winds from a particular wind direction, temperature inversion effects, etc) are likely to be a feature of an area and if they are, the noise calculation must incorporate a scenario investigating the extent of effects.

Noise mitigation measures must be designed to account for these worst-case conditions.

(2) The methods for determining whether noise enhancing meteorological influences are likely to be a feature of the area, refer to Fact Sheet D: Accounting for noise-enhancing weather conditions contained in Noise Policy for Industry prepared by New South Wales (NSW) Environment Protection Authority (Reference 2016/0524 dated 2017 or current version thereof).

6.9.13 Acoustic Objectives

6.9.13.1 Assessing Intrusiveness

(1) For assessing intrusiveness, the rating background noise needs to be measured and determined in accordance with section 6.9.8. The intrusiveness criterion essentially means that the equivalent continuous (energy-average) noise level of the source must not be more than the amount identified in Table 1 in decibels (dB) above the measured background level.

Table 1 — Background Plus' Criteria

Receptor	Background Descriptor (time period)	Intrusive Descriptor	Maximum permissible excursion of LAeq, 15min above RBL (dB(A))		
			Daytime	Evening	Night
Residential	$L_{A90,RBL}$	$L_{Aeq\ adj\ 15\ Minutes}$	5	5	3
Commercial	$L_{A90,RBL}$	$L_{Aeq\ adj\ 15\ Minutes}$	10	10	8

LAeq,adj,T (T equals 15 minutes) must be measured at the nearest boundary of the noise sensitive receptor.

Adjustment factors must be incorporated to account for impulsiveness, tonality and low frequency noise, where appropriate, in accordance with Section 6.9.11.

(2) Night-time use of reverse alarms can present significant nuisance noise impacts (including sleep disturbance) for the surrounding community. Where 24 hour operations involve the use of mobile plant or vehicles fitted with reverse alarms, in order to assist with the Council may require the use of broadband or low noise 'smart' alarms, despite the achievement of demonstrable compliance with the numerical values listed in Table 1.

6.9.13.2 Assessing Amenity

(1) The amenity assessment is based on noise criteria specific to the land use and associated activities. (Refer Table 2 — Acoustic Quality Objectives). Where the sensitive receptor type affected by the proposed development is not listed in Table 2 refer to AS2107 Acoustics for Building Interiors (or current version thereof) can be made to determine appropriate internal noise level goals.

Table 2 — Acoustic Quality Objectives

Sensitive Receptor	Time of Day	Acoustic Quality Objectives dB(A)		
		LAeq,adj, 1hr	LA10,adj, 1hr	LA1,adj, 1hr
Dwelling (outdoors)	Daytime and evening	50	55	65
Dwelling (indoors)	Daytime and evening	35	40	45
Dwelling (indoors)	Night-time	30	35	40
Church Educational establishment Child care centre Hospital (indoors)	Daytime, evening and night	35	–	–
Church Educational establishment Child care centre (outdoors)	Daytime, Evening and Night Operational hours	55	–	–
Commercial and Retail activity (indoors)	Daytime, Evening and Night Operational hours	45	–	–

6.9.13.3 Assessing Sleep Disturbance

(1) Determination of the potential for sleep disturbance must be considered in the Noise Impact Assessment as per section 6.9.9 Maximum noise level event assessment contained in Noise Policy for Industry prepared by New South Wales (NSW) Environment Protection Authority (Reference 2016/0524 dated 2017 or current version thereof).

6.9.13.4 Criteria for Assessing Impacts of Road Traffic Noise – other than for State Transport Infrastructure

(1) The assessment of road traffic noise is triggered based on the classification of the road or the volume of traffic which it carries. A Noise Impact Assessment Report will be required for sensitive receptors in adjoining a road identified as a major collector and above in the Road Hierarchy.

(2) Road traffic noise must be assessed using the following:

a. external formal open space goals criteria contained within the Department of Transport and Main Roads latest policy '*Development Affected by Environmental Emissions from Transport Policy Version 4, 9 October 2017,* or current version thereof.
b. internal noise level goals identified in:
   i. *AAAC Guidelines Education & Child Care Centres – Education.*
   ii. *AS2107:2000 Satisfactory Limits – Public Buildings, Health.*
   iii. *AS2107:2000 Maximum Limits – Office Buildings.*
   iv. *QDC MP4.4 – Residential sleeping areas and other habitable areas.*

6.9.13.5 Strategic Airports and Defence Activities

(1) Where there is an intensification of residential uses or other sensitive land uses on land identified in the Strategic Airports and Defence Activities Overlay Code as being affected by significant aircraft noise (within the 20+ANEF contour), the assessment of aircraft noise impacts on the development is required.

(2) Noise must be assessed using the indoor design sound levels for building type and activity specified in AS2021-2015 'Acoustics – Aircraft Noise Intrusion – Building Siting and Construction'

6.9.13.6 Helipads (Not Emergency or Defence Use)

(1) For the assessment of helipads, the required noise criteria comprises two separate components, each of which should be satisfied at the nearest affected sensitive receptor:

a. the measured LAeq,T (measured over the entire daily operating time of the helipad) must not exceed 55 dB(A) for a residence; and
b. the measured maximum noise level LA max must not exceed 82 dB(A) at the nearest residential premises (See Note below).

Operation outside the hours between 7.00am and 7.00pm must not be permitted except for emergency flights.

Note: These levels will generally be met by a separation between the landing site and the residential premises of 150m for helicopters of less than two tonnes all-up-weight, and 50m for helicopters of less than 15 tonnes all-up-weight.

6.9.13.7 Where a Use Involves Public Address Systems or Amplified / Live Music

(1) Where public address systems or amplified / live music is proposed, the following criteria apply:

Time Period	Noise Level at Sensitive Receptor [1]
Daytime and evening (7.00am – 10.00pm)	As per section 6.9.13.1 [2]
Night (10.00pm – 7.00am)	$L_{oct10} \leq L_{oct90} + 8$ [3]

Note:

[1] *Nearest property boundary* of sensitive receptor.

[2] L_{A90} background noise levels determined using overall A weighted levels.

[3] *Octave band frequencies to include 31.5Hz to 4kHz.* L_{Oct90} *to be determined in the absence of the noise under investigation.*

(2) Where high intensity low frequency noise is likely to be a feature of the use alternative assessment methods, incorporating C-weighted noise emission investigations may be warranted.

6.9.13.8 Where a Use Involves Open-air Events

(1) Where a use involves open-air events, the following criteria apply:

Time Period	LAeq Noise Limit at Nearest Sensitive Receptor

7.00am – 10.00pm	70 dB(A)
10.00pm – 12.00am	The lesser of 50 dB(A) or RBL +10dB(A)
12.00am – 7.00am	Inaudible

(2) The assessment must consider all noise sources associated with events, including amplified music, live music, crowd noise, mechanical plant, traffic or any other noise emitting activity.

(3) The noise level limits for open-air events, as listed in the *Environmental Protection Act 1994* (or current version thereof) are intended to manage noise impacts associated with intermittent uses, rather than regular/continuous events. A development application will therefore need to give consideration to the proposed frequency of events, the nature of the receiving environment that is potentially impacted, and proposals for the restriction of the number of events and or the hours of use for certain noise sources (e.g. amplified / live music) that may be imposed to adequately manage noise impacts.

6.9.14 Preferred Approach to Noise Attenuation Measures

(1) Potential noise impacts are to be identified and addressed prior to establishment of the use in the planning and design stages of new development. The design and layout of new development should clearly reflect the consideration of noise and its appropriate attenuation.

(2) Any noise attenuation measures proposed are required to comply with the performance criteria in the relevant planning 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 the following should be considered:

a. solutions that address potential noise impacts through lot layout, design and location;
b. solutions that are appropriately designed (and if required landscaped) to integrate with the local environment;
c. where noise attenuation is proposed via specific building construction requirements for a development, a statutory covenant will be required as part of the reconfiguration of a lot; and
d. the use of stand-alone noise barriers is Council's *least* preferred noise attenuation treatment. Building acoustic treatments, lot design, layout and location should be comprehensively investigated prior to electing to use acoustic barriers as a means of noise attenuation; or
e. where noise barriers are unavoidable, their visual impact must be considered and if necessary appropriate landscaping treatments used to soften their appearance.

(3) Where the State government has jurisdiction in relation to the assessment of transport infrastructure interests for road, rail or transport corridors, assessment policies and development approval conditions imposed by the State government will take precedence over council's assessment for the State government matter.