

Attachment D

Special Entertainment Precincts Acoustic Technical Report

City of Sydney Special Entertainment Precinct

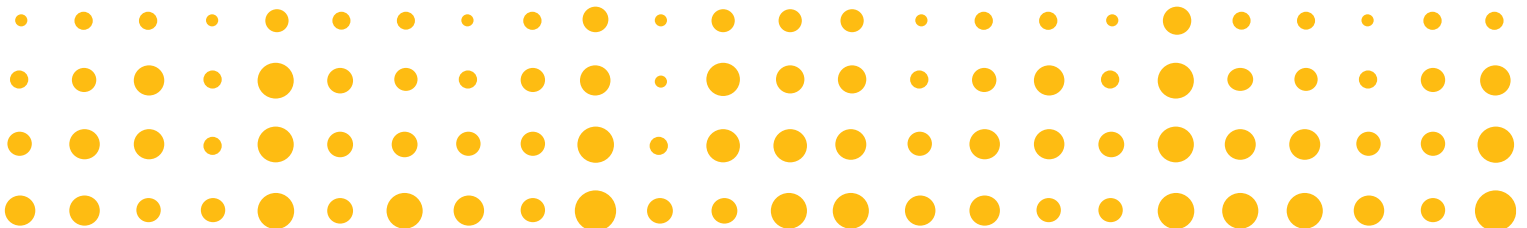
Acoustic Technical Report

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Executive Summary

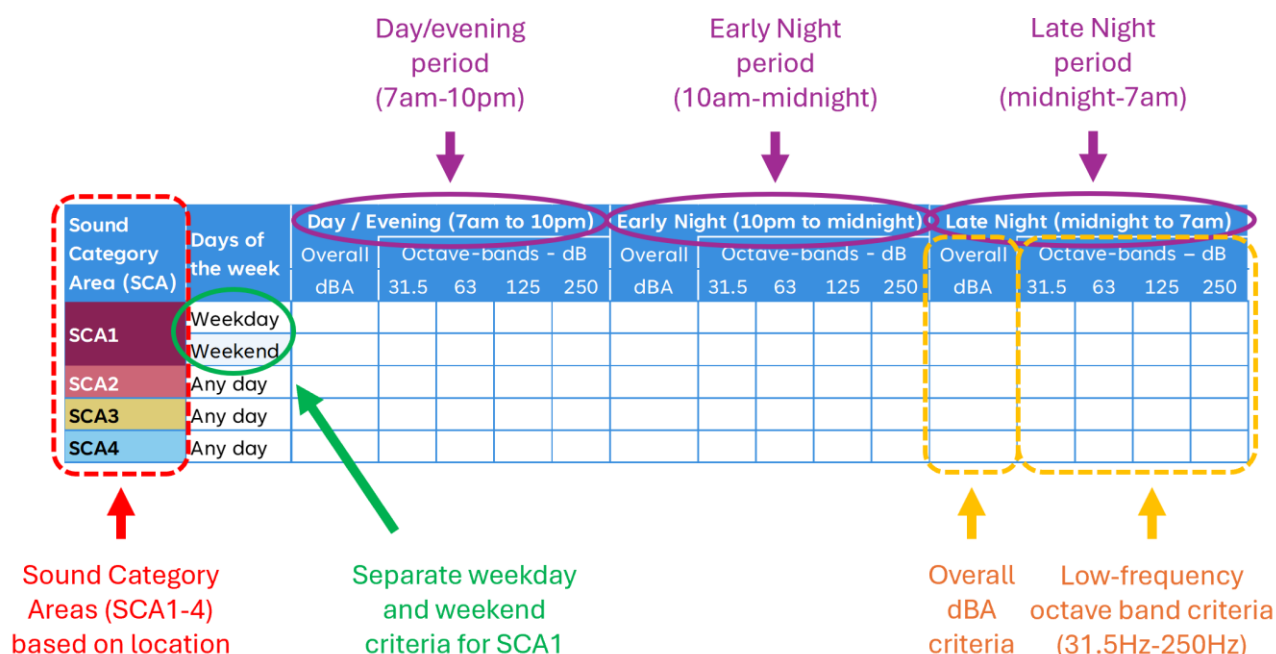
This report recommends sound criteria for City of Sydney's new Special Entertainment Precincts (SEPs) and explains their technical basis. The recommended criteria provide operational certainty for venues and the community because they are:

- **Fixed sound levels:** pre-determined based on background noise monitoring described in this report, so the venues do not need to conduct their own background noise monitoring to know the applicable criteria;
- **Objective criteria:** all numeric sound levels without requiring subjective evaluation, so the assessment outcome will not be ambiguous or disputable; and
- **Easily applicable:** with nearly all criteria defined externally and only one set of criteria per receiver, so the assessment procedure is simple and straightforward.

The key features of the criteria are:

- The criteria are mostly **determined based on existing background noise levels**, as the same venue sound level will be more intrusive in quieter areas than noisier areas, with the exception of night-time criteria which also reference the Defra curve and threshold of hearing as absolute criteria;
- **4 Sound Category Areas (SCAs)** are established, from SCA1 for the noisiest areas to SCA4 for the quietest areas, each with different noise criteria and each SEP is divided into applicable SCAs based on existing noise environment;
- Each day is divided into **3 time periods**: Day and Evening (7am-10pm), Early Night (10pm-midnight), and Late Night (midnight-7am);
- **Day and Evening** criteria are more lenient, to encourage entertainment; **Early Night** criteria act as a transition; and **Late Night** criteria are more stringent to protect acoustic amenity inside residences and avoid sleep disturbance;
- **Two options** are provided for the Late Night criteria - one based on entertainment levels that would be generally inaudible for most people most of the time inside receivers (**Generally Inaudible Approach**), and a less stringent approach that, while accepting entertainment sound inside receivers may be audible, still provides reasonable acoustic amenity and protection of sleep environment for most people (**Reasonable Amenity Approach**);
- In SCA1, the Early Night period criteria are more lenient for **Weekends** (Thu 6pm – Sun 6pm) than for **Weekdays** (Sun 6pm – Thu 6pm), based on the differences in background noise levels;
- An **optional third octave-band assessment** is provided for when the low-frequency content of the entertainment sound is better suited for more detailed analysis than the base octave-band assessment;
- Criteria for **non-residential receivers** are defined based on simple adjustments applied to the residential criteria;
- **Internal sound criteria** only apply where it is not appropriate to use the external criteria. For example, when receivers are structurally connected to the venue (e.g., sharing a common partition wall or within the same building) where the main noise transmission path is via internal structures. The internal criteria are set to be approximately equivalent to the external criteria.

The thumbnail figure below shows an example criteria table (without the criteria values) with the main features highlighted.



We have derived our recommended criteria by carefully assessing and considering:

- The **NSW Vibrancy Reforms** and **City of Sydney's strategic intent** for balancing the needs of communities, businesses and the night-time economy;
- Our **"Soundwalks"** involving **subjective observations** by experienced experts and **600 spot sample measurements** in and around the proposed precincts, to establish a comprehensive understanding of the existing noise environment including background noise and entertainment noise in each precinct;
- Extensive additional noise monitoring carried out specifically for this study, based on insights from the soundwalks and gaps in the publicly available data, including **long term monitoring at 17 locations** and **short term attended measurements at 91 locations**;
- **Previous noise monitoring results** from **70 publicly available acoustic reports** for Development Application (DA) or State Significant Development Application (SSDA); and
- **Relevant existing criteria, standards, and references**, including the City of Sydney (CoS) Development Control Plan (DCP) and the recent sound study conducted by Acoustic Directions and PKA Acoustic Consulting; NSW Liquor and Gaming (L&GNSW) LA10 noise criteria and Noise Policy for Industry (NPfI); NSW SEP Acoustic Toolkit and referenced low frequency noise studies for UK Department for Environment, Food & Rural Affairs (Defra); Inner West SEP Management Plan (SEPMP); and ISO standards relating to the psychoacoustics of hearing.

In summary, we have used our extensive literature review together with a large amount of field measurements and assessments described in this report to propose a set of easy-to-apply criteria that represent the balance that City of Sydney seeks to achieve between promoting entertainment vibrancy and protecting community amenity.

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Appendix B Review of Relevant Documents

Appendix C Summary of publicly available noise monitoring results

Appendix D Long-term noise monitoring details

Appendix E Attended noise monitoring – background noise detailed results

Appendix F Attended noise monitoring – entertainment sound detailed results

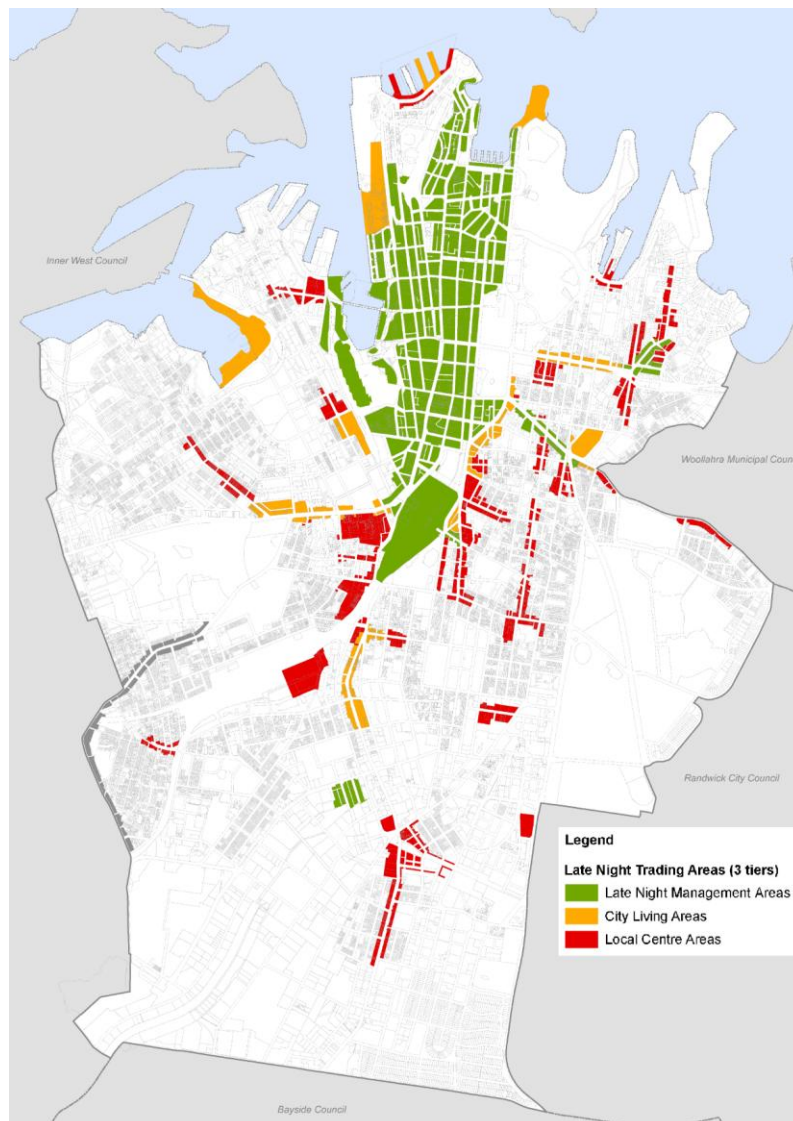
1 Introduction

1.1 SEP Areas and Trading Hours

On 17 March 2025 City of Sydney Council resolved to establish Special Entertainment Precincts (SEPs) in late-night trading areas. These are shown in Figure 1 and include:

- Central Sydney including Barangaroo, Wynyard, Circular Quay, Darling Harbour, Haymarket, Central
- Walsh Bay and the Rocks
- Broadway and Chippendale
- Oxford Street and Darlinghurst
- King Street, Newtown
- Regent Street, Redfern
- Surry Hills
- William Street, Kings Cross and Potts Point
- Union Street and Blackwattle Bay, Pyrmont
- Glebe Point Road
- Oxford Street, Paddington
- Danks Street, Waterloo
- Erskineville Road, Erskineville
- Woolloomooloo
- Redfern Street, Redfern
- Green Square town centre
- North Alexandria
- South Eveleigh
- East Village, Zetland

Figure 1 City of Sydney Special Entertainment Areas (SEPs)



The precincts are designated in 3 tiers:

- Late night management (green): The main night-life destinations or anticipated future night life destinations with the highest concentration of venues. This has the latest / most permissive trading hours, with extended trading hours up to 24 hours.
- City living (yellow): Night-life destinations but with more sensitive uses and a lower density of venues than late-night management areas. This is the middle tier, with extended trading hours up to 5am.
- Local centre (red): Main streets, commercial and mixed-use centres that support communities with shops, services and hospitality in the daytime, extending into the evening and nighttime. This has the earliest / least permissive trading hours, with extended trading hours up to midnight / 2am.

The map above includes some changes that the City is investigating as part of the process of designating special entertainment precincts.

The proposed trading hours are given in Table 1 (using the same colour shading as the SEP map).

Table 1 Proposed trading hours of SEP areas

SEP tier	Proposed trading hours	Category A Larger venues and night clubs		Category B Small bars, clubs and restaurants		Category C Unlicensed shops and hairdressers
		Indoor	Outdoor	Indoor	Outdoor	Indoor
Late night management areas	Base	6am – midnight	9am – 10pm	6am – 2am	7am – 10pm	6am – 2am
	Program incentive	6am – 1am	-	6am – 3am	-	-
	Dedicated venue	6am – 2am	-	6am – 4am	-	-
	Extended	24 hours	9am – 1am	24 hours	7am – 1am	24 hours
City living areas	Base	7am – 11pm	9am – 10pm	7am – 1am	7am – 10pm	7am – 1am
	Program incentive	7am – midnight	-	7am – 2am	-	-
	Dedicated venue	7am – 1am	-	7am – 3am	-	-
	Extended	7am – 5am	9am – midnight	7am – 5am	7am – midnight	24 hours
Local centre areas	Base	9am – 10pm	9am – 10pm	7am – 11pm	7am – 10pm	7am – 11pm
	Program incentive	9am – 11pm	-	7am – midnight	-	-
	Dedicated venue	9am – midnight	-	7am – 1am	-	-
	Extended	9am – midnight	9am – 10pm	7am – midnight/2am	7am – 10pm	7am – 2am

1.2 The Approach

The approach includes a combination of desktop reviews, short-term attended measurements, and long-term noise monitoring to obtain a comprehensive understanding of the current noise environment and relevant guidelines, in order to derive suitable noise criteria that align with City of Sydney’s strategic objectives.

We started by conducting comprehensive desktop reviews of the following background information:

- Relevant reference documents (summarized in **Appendix B**), including existing noise criteria applicable to SEP areas, to understand the approach and basis of existing criteria; and relevant standards and technical literature on psychoacoustic relationships between noise levels and subjective acceptability and audibility; and
- Publicly available noise monitoring results from acoustic reports for Development Application (DA) or State Significant Development Application (SSDA) (summarized in **Section 2** with details in **Appendix C**), to map the available data on existing ambient noise levels, but also to identify gaps and help determine the focus for our site assessments.

The next step in our approach included extensive site measurements and assessments, to obtain reliable primary data to inform the criteria derivation:

- Our innovative “soundwalks” with subjective observations and over 600 spot measurements across all precincts (summarized in **Section 3**), to understand and obtain information on spatial variation of background noise levels and existing entertainment noise levels within each precinct;
- Long-term noise monitoring at 17 locations (summarized in **Section 4.1** with details in **Appendix D**) selected based on soundwalk observations, publicly available noise monitoring data, compliance history, and CoS’s previous work on entertainment sound, to inform the variation of background and ambient noise levels on different days of the week and at different times of the day;
- Short-term attended background measurements at 53 additional locations during long-term noise monitoring (summarized in **Section 4.2** with details in **Appendix E**), to understand how noise varies within an area and to complement long-term noise monitoring; and
- Short-term attended entertainment measurements at 38 representative locations near existing venues (summarized in **Section 4.2** with details in **Appendix F**), including during peak summer season, to understand the range of typical existing entertainment noise levels.

We have then developed a set of criteria based on both the information from literature and data from first-hand measurements and observations:

- **Section 5** provides a high-level summary of the relevant documents reviewed in **Appendix B** and how we used the information from each document to derive the SEP criteria;
- **Section 6** explains how we have considered all of the above information and City of Sydney’s strategic objectives to determine suitable noise criteria derivation methodology for the CoS SEPs; and
- **Section 7** provides the final set of criteria to be applied to venues in the CoS SEPs.

Some simplified example scenarios are given in **Section 8**, to show the type of operations possible under the SEP sound criteria when a new venue is opened at different locations.

Section 9 lists some general good-practice recommendations for venues that are effective and easy to adopt.

Some limitations of the study and criteria are discussed in **Section 10**.

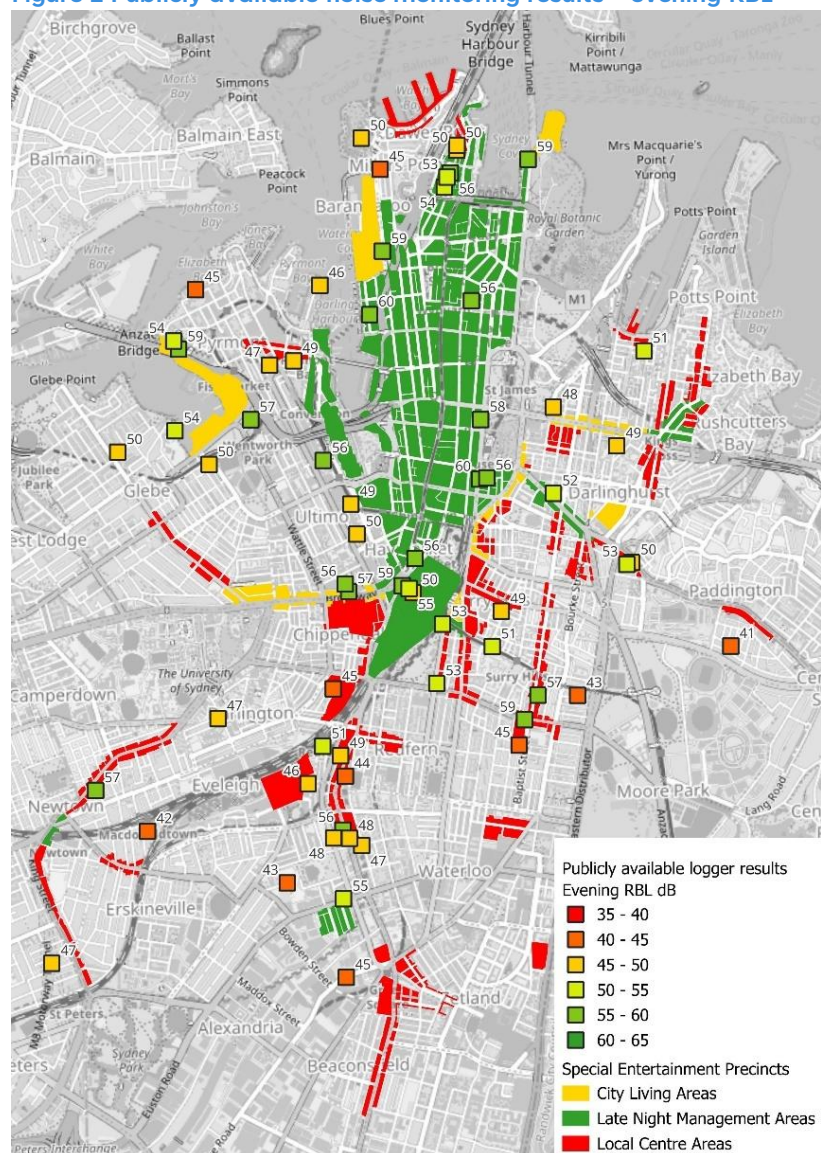
2 Publicly Available Noise Monitoring Data

We have reviewed 70 publicly available DA and SSDA acoustic reports and extracted noise monitoring data from relevant locations within or near the proposed SEPs. This has allowed us to extract Rating Background Noise Level (RBL) and L_{Aeq} results for day, evening, and night periods to guide and supplement our soundwalks and monitoring.

The figure below shows the RBLs for the evening period, plotted against the SEP map, to allow comparison with our soundwalk results (discussed in section 3) that were mostly conducted in the evening. The colour scale approximately matches that used in the SEP tiers, with green for the highest background noise levels (because these are the most tolerant of entertainment noise) to red for the lowest (most stringent). Appendix C provides the full results.

While most of the results showed reasonable alignment with the SEP trading hours (Late Night management areas having the highest background noise levels and Local centre areas having the lowest), there are also notable variations within some of the SEP areas, especially the Local centre areas, depending on the proximity to the main/high street within the area. This is addressed by setting different Sound Category Areas (see Section 6.1 and 7.3), so some areas with the same trading hours may have different sound criteria to reflect these variations in existing noise environment.

Figure 2 Publicly available noise monitoring results - evening RBL



3 Soundwalks

“Soundwalks” provide a meaningful insight into existing acoustic environments in ways that noise monitoring data, alone, does not. A soundwalk is primarily a subjective observation method that focuses on the sound environment through different locations in space. We used this approach for the initial study of the sound environment of all SEP areas, to understand the spatial variation and characteristics of both background noise levels and existing entertainment noise levels within each precinct, and to inform location selection for long-term and attended noise monitoring in the detailed noise monitoring stage.

We have made subjective observations about the background noise and entertainment noise within each SEP and, in addition to a conventional soundwalk methodology, included short-duration spot measurements (typically approximately 30 seconds) at representative locations to sample the acoustic environment. The soundwalks have helped us categorise the different areas in each SEP based on their existing noise characteristics.

We have conducted soundwalks to cover all proposed SEP areas. Each soundwalk involved one or two experienced acoustic consultants walking along representative streets within each SEP typically during the evening and night period, on weekends (Thu – Sat) – when existing entertainment activity levels are typically the highest. The majority of the soundwalks were conducted during the first 3 weeks of September 2025 on days with fair weather conditions.

The spot measurements were separated into measurements with and without existing entertainment sound. The L_{A90} levels from measurements without existing entertainment sound help to illustrate the spatial variation of background noise in each SEP, and are plotted in Figure 3. Notable observations are:

- The Sydney CBD area has consistently high background noise levels, typically 60–70 dB L_{A90}
- Similar noise levels are observed along major roads with continuous traffic flow (e.g., Cleveland St or Broadway), typically 60–70 dB L_{A90}
- High streets in each precinct (e.g., Crown St or Glebe Point Rd) usually have higher noise levels than the rest of the precincts due to higher traffic and pedestrian activities, typically 50–60 dB L_{A90}
- The noise environment on side streets branching from main roads or high streets with direct line-of-sight are usually controlled by the traffic noise on the main roads or high streets, typically 45–55 dB L_{A90}
- Areas that are shielded from the main roads or high streets with minimal local traffic, including the streets or laneways at the back of the high street premises, and the precincts that are currently not activated (e.g., South Eveleigh or Paddington) are relatively quiet with noise levels of typically 40–45 dB L_{A90}

The L_{Aeq} noise levels from measurements including existing entertainment sound help understand the typical levels of different types of entertainment sound, and are plotted in Figure 4. Notable observations are:

- King St Newtown currently has the highest concentration of live music venues and high entertainment noise levels, including the highest observed entertainment level of 86 dB L_{Aeq} . However, entertainment noise is generally inaudible at the rear of venues due to good sound insulation and moderate low-frequency content. This was even the case at the rear of the venue where the highest entertainment level was observed at the front
- Sydney CBD, Walsh Bay and the Rocks, Redfern, Kings Cross, and Darlinghurst have a mixture of clubs and pubs and restaurants with a variety of types of entertainment noise
- Surry Hills and Glebe currently are mostly restaurants with patron noise dominating and minimal externally audible live music
- The other precincts currently have relatively fewer, more scattered venues with minimal existing entertainment noise
- In terms of noise levels, the entertainment levels outside the venues generally ranged between:
 - Amplified music inside venue: generally 62–72 dB L_{Aeq}
 - Live music inside venue: generally 70–76 dB L_{Aeq} with open doors, 62–72 dB L_{Aeq} with closed doors
 - Outdoor patron noise with or without music: generally 62–72 dB L_{Aeq}

Figure 3 Soundwalk results – summary of background noise measurements L_{A90}

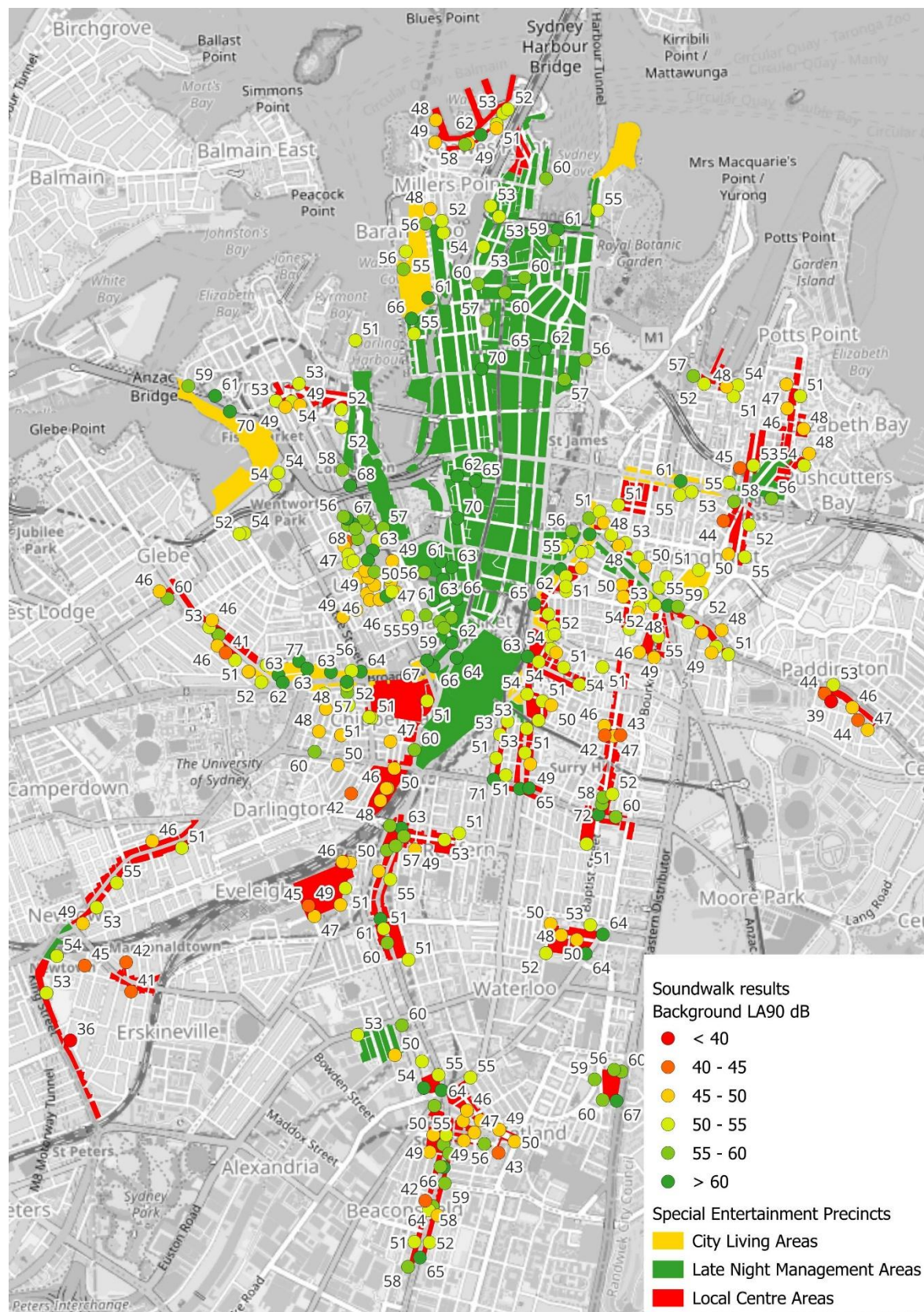
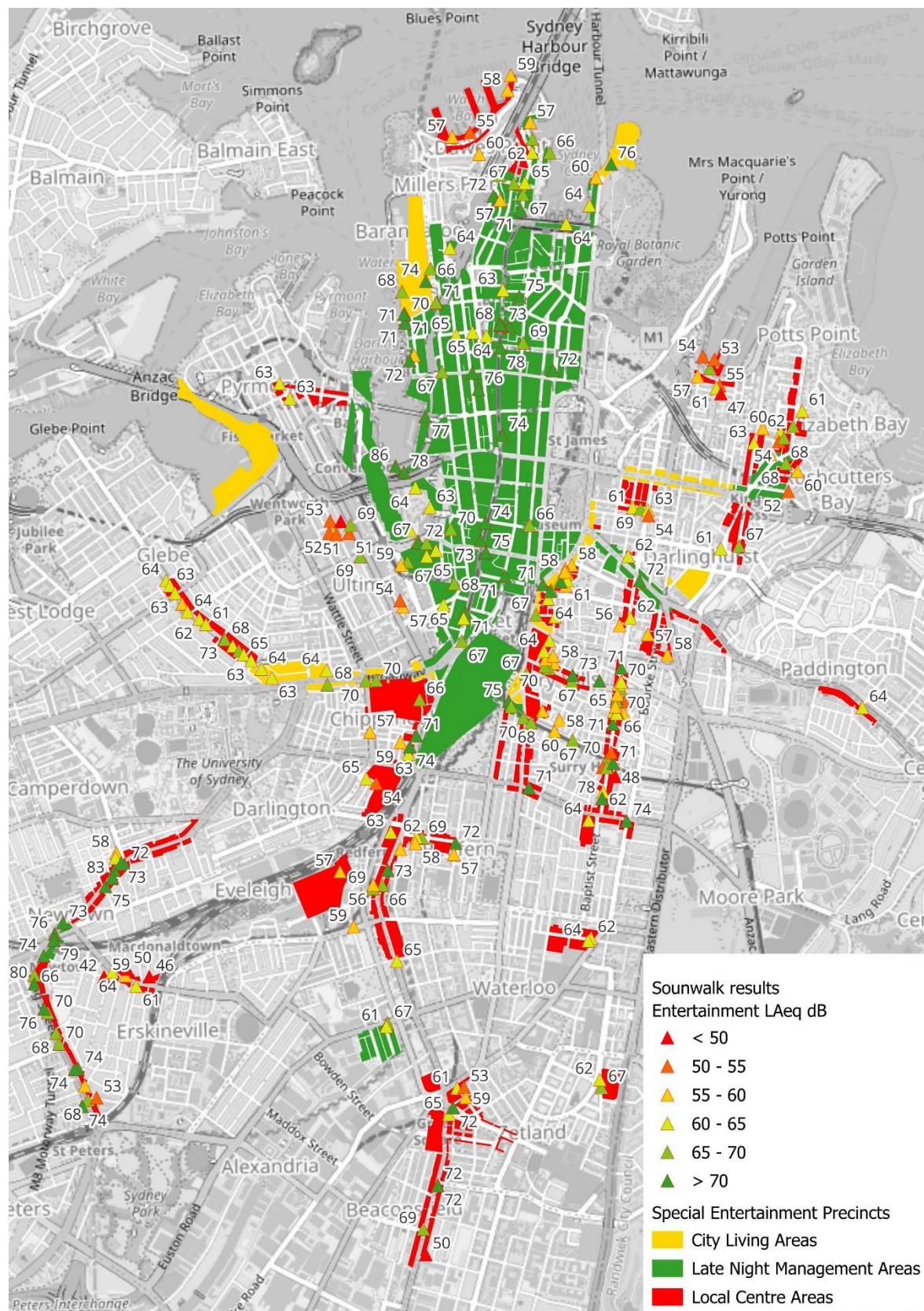


Figure 4 Soundwalk results – summary of entertainment noise measurements L_{Aeq}

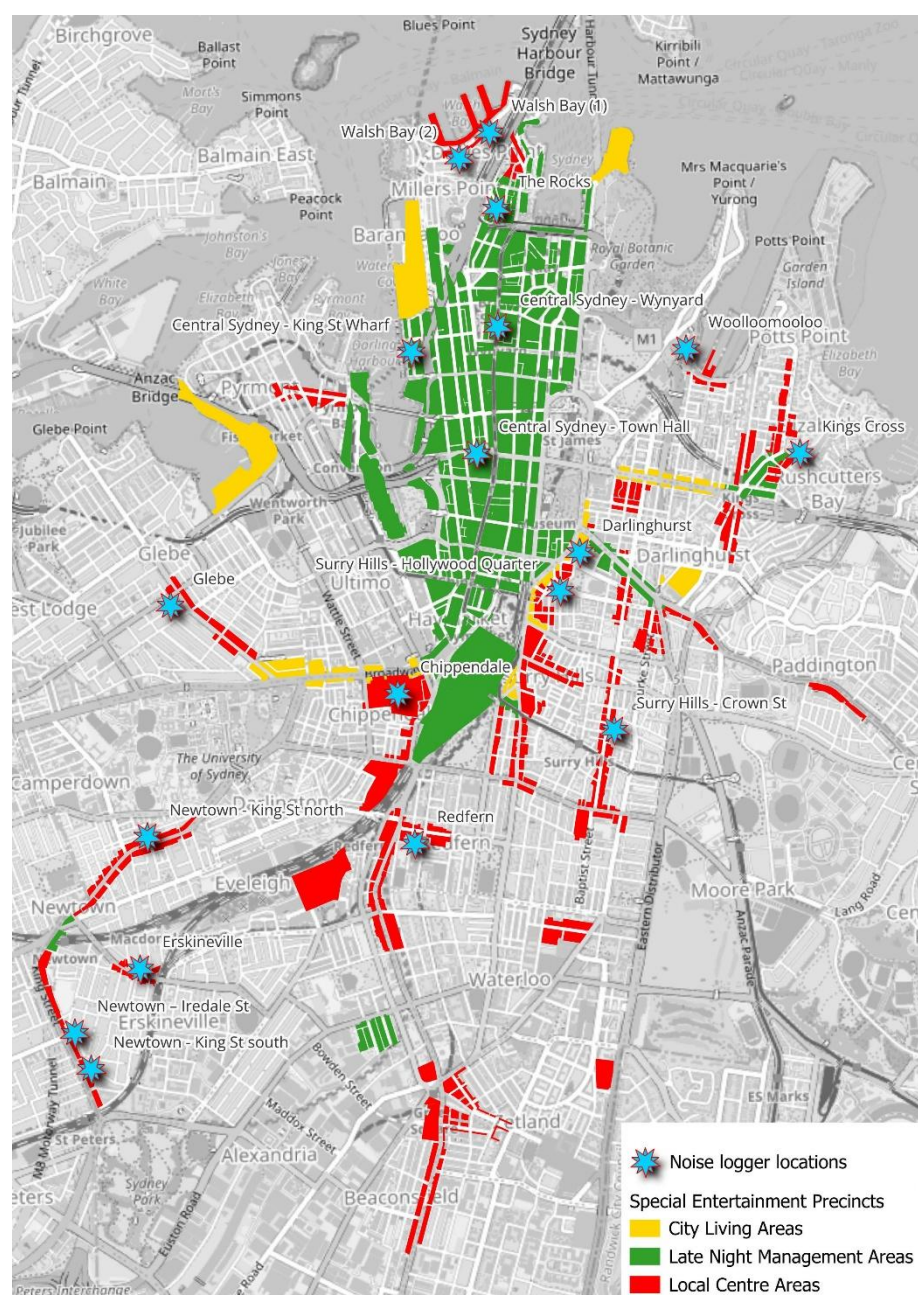


4 Detailed Noise Monitoring Results

4.1 Long-term Noise Monitoring

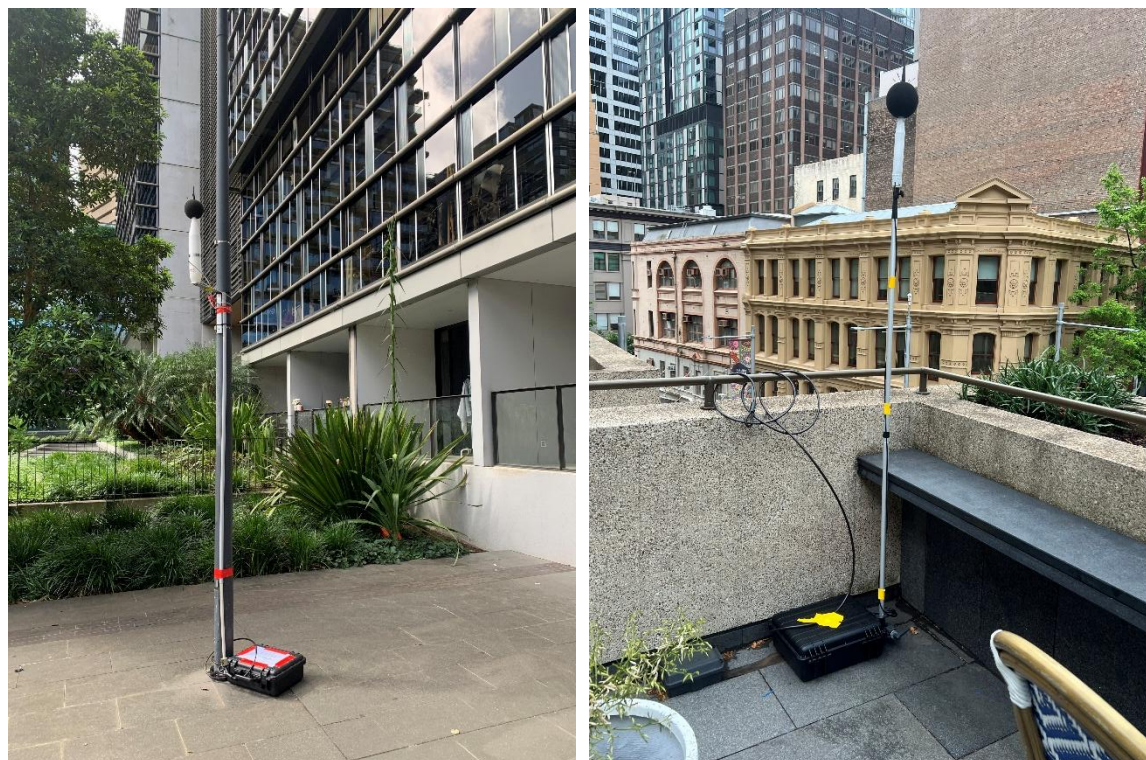
Seventeen (17) long-term noise monitoring locations were selected based on soundwalk observations, publicly available noise monitoring data, compliance history, and CoS's previous work on entertainment sound. At each location, the noise loggers measured continuously for approximately 2 weeks, including 2 weekend periods, to capture the typical noise variation at different times of the day and different days of the week. The locations are shown in Figure 5. Details of the loggers including equipment and monitoring period, zoomed-in locations and photos of each logger are provided in Appendix D.

Figure 5 Long-term noise monitoring locations



Most of the logger locations were mounted on street poles or light poles, with microphone positioned at approximately 2-2.5m above the ground secured to the pole via a metal bracket (Figure 6 left), with the exception of Town Hall, Crown St, and Iredale St which were mounted on a bespoke pole approximately 1.5-2m above the ground or balcony floor (Figure 6 right). The logger locations were selected to have representative background noise levels for most receivers in the area, away from reflective surfaces or extraneous noise sources such as busy roads or existing entertainment noise, with the exception of the Wynyard logger which was to capture variations of existing entertainment noise.

Figure 6 Example logger setups (Left: light pole mounting; Right: ground pole mounting)



The results of the long-term noise monitoring were analysed in accordance with NPfI, but separating the night-time period into “Early Night” (10pm to midnight) and “Late Night” (midnight to 7am), due to the fact that in majority of the SEP areas, the background noise from 10pm to midnight is still relatively high and similar to that of the evening compared to after midnight. This also aligns with the methodology in CoS DCP, Liquor & Gaming NSW Standard Condition and Inner West SEPMP.

The results for weekdays and weekends were calculated separately (where weekends are Friday to Sunday daytime, Thursday to Saturday evening and night).

Data samples during adverse weather conditions as defined by NPfI (wind speed > 5m/s or rainfall > 0mm) was excluded from the analysis. The NPfI also specifies that when a certain number of L_{A90} (15 minute) samples are excluded within each period (Day, Evening, or Night), the whole period needs to be excluded. For Early Night and Late Night periods, the maximum sample exclusion limit is calculated proportionally from the NPfI Night maximum sample exclusion limit.

Rating Background Noise (RBL) was calculated following NPfI procedure. Octave-band RBL was also calculated from L_{Z90} (15 minute) octave-band levels using the same procedure, then normalized to the broadband RBL levels.

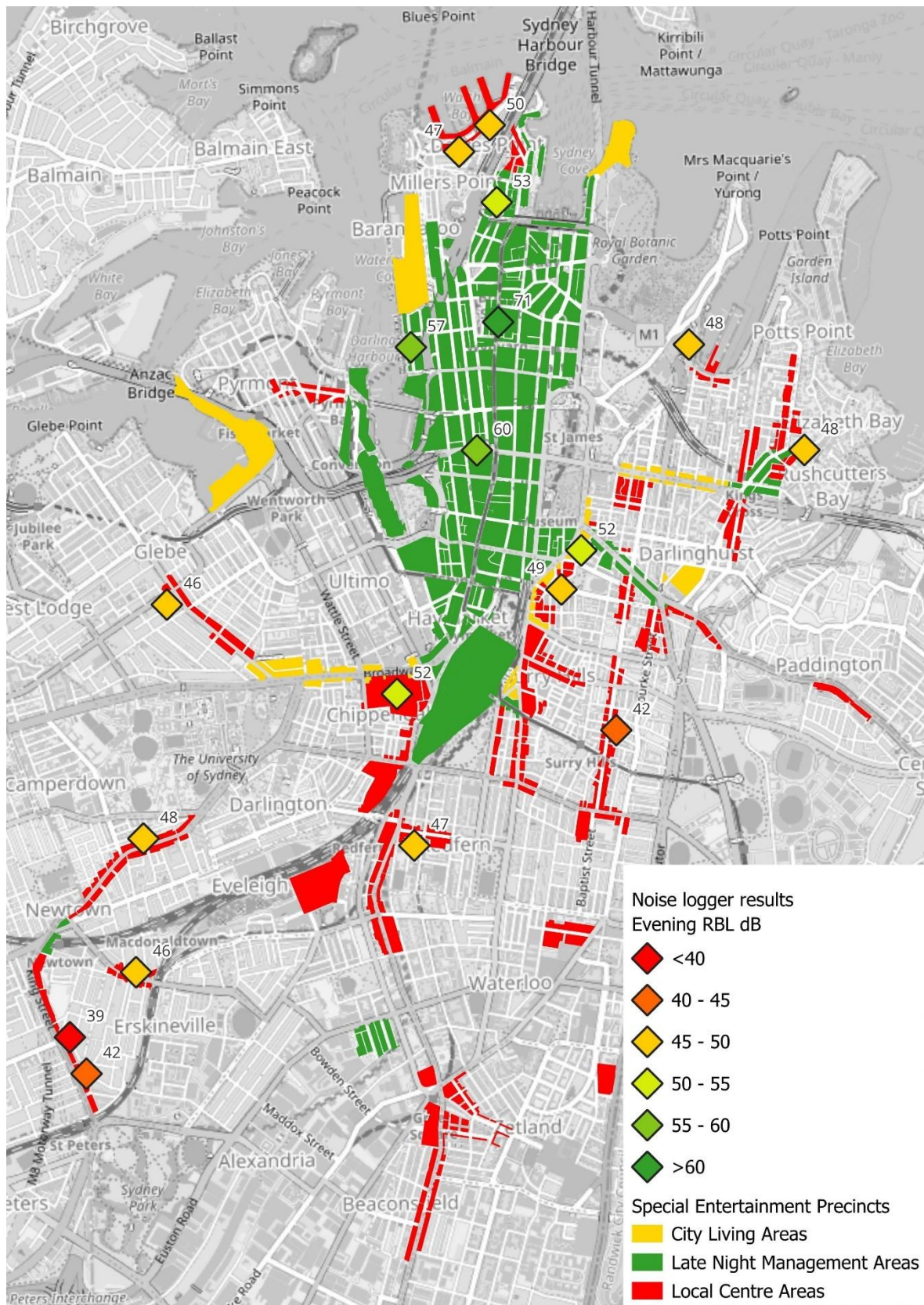
The broadband total RBL and ambient L_{Aeq} of each logger are summarized in Table 2, with the evening RBL graphed against the SEP map in Figure 7, using the same colours scale as publicly available logger data. The full result tables are provided in Appendix D.

Table 2 Summary of noise logger results

#	Location	Rating Background Noise RBL L _{A90} dB				Ambient Noise Levels L _{Aeq} dB			
		Day 7am- 6pm	Evening 6pm- 10pm	Early Night 10pm- mid night	Late Night mid night- 7am	Day 7am- 6pm	Evening 6pm- 10pm	Early Night 10pm- mid night	Late Night mid night- 7am
1	Central Sydney - Wynyard*	64	71	66	54	72	76	78	72
2	Central Sydney - King St Wharf	57	57	53	49	71	68	69	62
3	Central Sydney - Town Hall	62	60	59	54	69	67	67	64
4	Chippendale	53	52	50	48	59	59	55	52
5	Darlinghurst	53	52	51	50	60	57	59	56
6	Erskineville	47	46	40	34	59	56	53	54
7	Glebe	48	46	42	37	57	55	51	50
8	Kings Cross	52	48	44	40	63	59	57	55
9	Newtown - King St north	46	48	44	42	58	54	53	50
10	Newtown - King St south	41	42	37	31	57	55	50	47
11	Redfern	48	47	45	44	59	55	52	51
12	Surry Hills - Crown St	42	42	40	34	57	51	47	46
13	Surry Hills - Hollywood Quarter	51	49	47	44	60	60	57	58
14	The Rocks	54	53	52	49	58	58	56	54
15	Walsh Bay	50	50	45	42	61	58	58	53
		48	47	41	37	60	60	56	56
16	Woolloomooloo	49	48	43	39	60	56	53	54
17	Newtown – Iredale St (extra check)	39	39	36	34	61	55	49	46

* Logger location captures existing entertainment noise levels

Figure 7 Noise logger results - evening RBL



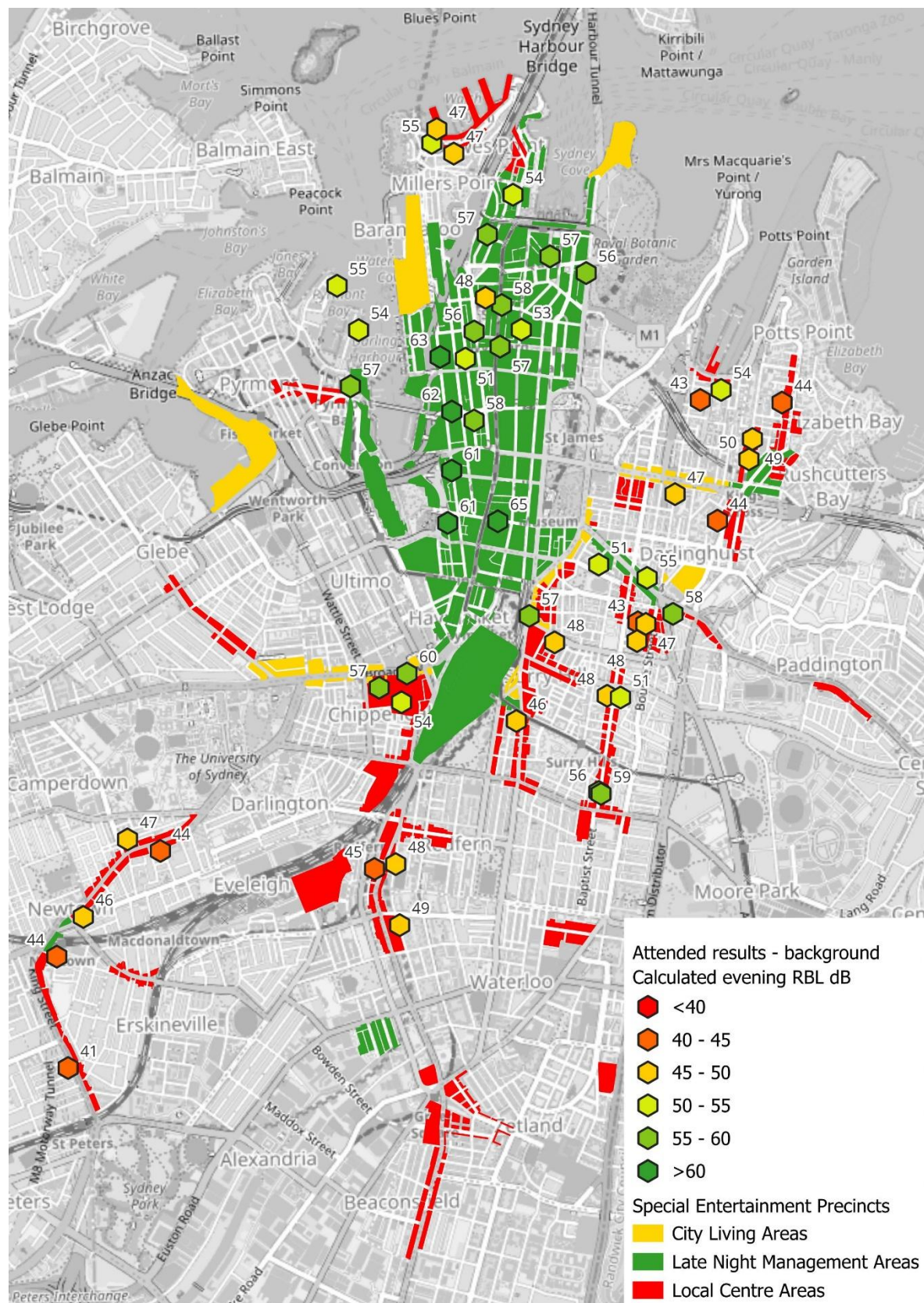
4.2 Attended Noise Monitoring

Short-term attended measurements (5-15 minutes) were conducted at 91 locations, of which 53 were background noise measurements to supplement the long-term noise monitoring results, and 38 were entertainment sound measurements to sample the existing entertainment sound levels.

The 53 background attended measurements were conducted at representative receiver locations that are not affected by existing entertainment sound in various SCAs during the logging period. The simultaneous results at the corresponding logger during each attended measurement were extracted, and the differences between the results at the attended location and logger location were calculated. These differences are used to estimate RBLs at the attended measurement locations based on measured RBLs at logger results. The estimated evening RBLs at attended measurement locations are shown in Figure 8 (using the same colour scale as the logger result figures), and the full attended background measurement results, including the original measured results and calculated RBLs, are provided in Appendix E.

The 38 entertainment attended measurements were conducted at representative existing venue locations or receiver locations near existing venues, including during peak season, to capture typical existing entertainment noise levels at venues and receivers. These provide examples of current entertainment noise levels, which are used to inform suitable criteria for entertainment noise. The measured L_{Aeq} and low-frequency noise levels, along with summary of observation notes are provided in Appendix F. Note that most of these measurements are affected by extraneous noise (such as traffic noise or pedestrian noise), so the measured values are not directly comparable with the criteria. However, as we have obtained observations by experienced acoustic consultants and time-varying data during the measurements, we have been able to approximate the levels of entertainment sound to inform the criteria.

Figure 8 Attended measurement results – background noise – calculated evening RBL



5 Review of Relevant Documents

We reviewed the following documents / policies as relevant background for deriving new sound criteria for the CoS SEPs:

- CoS Development Control Plan (DCP)
- NSW Liquor and Gaming (L&GNSW) LA10 noise criteria
- NSW Environmental Protection Authority (EPA) Noise Policy for Industry (NPfI)
- NSW Government SEP Acoustic Toolkit
- Inner West Council SEP Management Plan (SEPMP)

We also reviewed relevant technical reports and standards to inform our consideration of what levels are generally reasonable or inaudible for entertainment noise, including:

- ISO 389-7:2019 Acoustics — *Reference zero for the calibration of audiometric equipment — Part 7: Reference threshold of hearing under free-field and diffuse-field listening conditions*
- ISO 226:2023 Acoustics — *Normal equal-loudness-level contours*
- CoS DCP Entertainment Sound Study (report ref.: 240927 DCPEntSnd v1.1) prepared by Acoustic Directions and PKA Acoustic Consulting
- *Proposed criteria for the assessment of low frequency noise disturbance* (rev. 1, Dec 2011, contract no.: NANR45) prepared by Moorhouse, Waddington, and Adams for UK Department for Environment, Food & Rural Affairs (Defra)

The key points that we used from each of the references and how it reflected in the derivation of SEP criteria are summarized in Table 3. A more detailed review of each of the documents is provided in Appendix B, with the specific section number for each document provided in the second column of Table 3.

Table 3 Summary of relevant documents

Reference document	Full review	Key points	How it was used in SEP criteria derivation (Section 6)
CoS DCP	Section B.1	External criteria: octave-band RBL + 5 before midnight, octave RBL + 0 after midnight; Internal criteria: octave-band $L_{90} + 0$ before midnight (or -3 for same building), octave-band $L_{90} - 12$ or threshold of hearing after midnight.	One option of the Late Night (post-midnight) criteria is essentially in keeping with the DCP internal criteria, with an additional option that is slightly relaxed but still achieving a reasonable level of amenity to encourage entertainment. Criteria for other time periods are more relaxed than the DCP criteria to encourage entertainment.
L&GNSW LA10 noise criteria	Section B.2	External criteria: octave-band $L_{90} + 5$ before midnight, octave $L_{90} + 0$ after midnight; Internal criteria: inaudibility after midnight.	Replacing the subjective assessment of inaudibility after midnight (as this is difficult to implement) with objective criteria, of which one option aims to retain the goal of general inaudibility.
NSW EPA NPfI	Section B.3	Defines measurement method for Rating Background Noise (RBL) and Day, Evening, and Night periods.	The long-term noise monitoring and analysis followed the NPfI methods, and the time periods are adopted with an additional division within the Night period (before and after midnight).

Reference document	Full review	Key points	How it was used in SEP criteria derivation (Section 6)
NSW SEP Acoustic Toolkit and Inner West SEPMP	Section B.4	Dividing SEP into Sound Category Areas (SCAs) based on acoustic environment; External criteria: fixed dBA and 31.5Hz, 63Hz, 125Hz octave-band criteria for each SCA.	Following the idea of dividing SEP into SCAs based on acoustic environment and setting fixed criteria for each SCA, but different criteria from those in the Inner West SEPMP and NSW SEP Acoustic Toolkit, and with the addition of 250Hz octave-band criteria.
ISO 389-7:2019 threshold of hearing	Section B.5	Provides standard threshold of hearing curve for a normal hearing person.	Threshold of hearing curve set as the lower limit for all criteria, i.e., if background noise-based criteria levels are lower than the ToH, the ToH is used.
ISO 226:2003 equal loudness contours	Section B.6	Subjective loudness changes differently with sound level at different frequencies. Low-frequency loudness perception is more sensitive to changes in levels. For example, 5 dB change at 31.5Hz is equivalent to 10 dB change at 1000 Hz.	When set at the same level above background noise, low-frequency sound may be perceived as louder and thus more annoying. Therefore, for those criteria that are defined based on a certain level above background noise, the low-frequency criteria are scaled accordingly to control low-frequency noise.
CoS DCP sound study	Section B.7	$L_{eq} \leq L_{90} - 12\text{dB}$ for low-frequencies is found to be an equivalent for night-time inaudibility for entertainment noise. Table 5 of the sound study provides listening test results for different levels relative to background noise. The fixed internal criteria that CoS DCP adopted for new residential development (equivalent to 23 dBA) is based on a background noise of 35 dBA (either by sound masking / conditioning, or from other sources such as residual external noise).	Background noise – 12dB is used to inform background-based criteria for Generally Inaudible Approach. Background noise – 6dB is used to inform background-based criteria for Reasonable Amenity Approach. To achieve general inaudibility inside residences with lower levels of internal background sound, the internal criteria (and external criteria informed by the internal criteria) will need to be lower than the recommended criteria in the current DCP.
Defra study	Section B.8	Provides a curve for low-frequency tolerability for industrial-type noise.	The Defra curve is used to inform low-frequency criteria for the Late Night Reasonable Amenity Approach.

6 Criteria Derivation Methodology

The sound criteria derivation detailed in this section is based on the following strategies and understanding:

- The SEP sound criteria should balance the goal of encouraging and boosting night-time economy and live music and the need to protect the acoustic amenity of the local community.
- The most important time period for community acoustic amenity is the Late Night (midnight – 7am) period, when excessive noise could cause the most sleep disturbance and result in annoyance. Two optional approaches have been explored:
 - One approach is based on entertainment levels that would be generally inaudible for most people most of the time inside receivers (General Inaudibility Approach), which broadly aligns with L&GNSW LA10 criteria and current CoS DCP internal criteria. Note that while this approach targets internal inaudibility for most people most of the time, there may be exceptions depending on the characteristics of entertainment sound and background/ambient noise environment, venue and receiver building construction and window open/closed status, and the listener's hearing threshold. This is the most protective of the residents' amenity but more limiting for venues.
 - The other approach accepts that entertainment sound inside receivers may be audible, but still provides reasonable acoustic amenity and protection of sleep environment for most people (Reasonable Amenity Approach). This is less stringent than the General Inaudibility Approach and, therefore, more activating and lenient for the venues whilst still maintaining a suitable level of amenity for residents.
- For Day and Evening periods (7am – 10pm), the impact of entertainment noise on the community is lower, and the existing ambient noise is generally high, so the noise criteria are set higher than the L&GNSW LA10 criteria and current CoS DCP criteria to encourage commercial and entertainment activities. Also, Day and Evening periods have been combined because of the similar noise environment during the two periods.
- Early Night period (10pm – midnight) is designed to be a transition period to allow for higher criteria than Late Night but more stringent than Evening.
- The background noise levels during the Early Night period are generally higher on weekends in SC1 (see Appendix D). Therefore, slightly higher criteria are set for the Early Night periods on the weekends, including Thursday to Saturday.
- Low-frequency criteria are set with consideration of psychoacoustic hearing response (in relation to the equal loudness contours) and typical dwelling sound insulation performance (low-frequency sound insulation performance is usually lower than at mid-to-high frequencies).

The details for the criteria derivation are provided below. These provide the basis for the final criteria in Section 7.

6.1 Sound Category Areas Division

The SEPs and surrounding areas are divided into the following four (4) Sound Category Areas (SCAs) based on observations of site characteristics, sample measurements of background noise levels during the soundwalks, long-term noise monitoring results including the publicly available data and the monitoring conducted by us, and short-term attended noise measurements:

- SCA1: Main Central Sydney area (south of Western Distributor and Cahill Expressway) and areas adjacent to main roads with high traffic volume and/or high existing entertainment activities. Evening L_{A90} typically around or higher than 60 dB. Examples are Wynyard, Circular Quay, Darling Harbour, Haymarket, Central, Cleveland St Surry Hills, north King St Newtown, west Oxford St Darlinghurst, west William St Kings Cross.
- SCA2: Quieter Central Sydney area and areas adjacent to main roads with tidal traffic and/or activated high streets with existing entertainment. Evening L_{A90} typically around 55 dB. Examples are Barangaroo, the Rocks, Union St Pyrmont, Crown St Surry Hills, south King St Newtown, Glebe Point Rd Glebe, Botany Rd Green Square.

- SCA3: The rest of Central Sydney area and areas adjacent to moderately-activated high streets with existing entertainment and some local traffic or main roads with lower tidal traffic. Evening L_{A90} typically around 50 dB.
- SCA4: Side streets and quieter areas. Evening L_{A90} typically around or lower than 45 dB. While the evening RBLs at south King St Newtown (loggers #10 and #17) are close to 40 dB, the difference between existing ambient levels and RBLs at all times of day are very high (12–22 dB) and generally higher than other SCA4 locations. Therefore, it is reasonable to categorize those as SCA4.

While there are some differences between weekend and weekday RBLs at some logger locations, typically the differences between weekends and weekdays are smaller than the differences between SCAs and time periods (see Appendix D for the detailed results of each logger).

In addition, the data sub-set of weekends and weekdays are smaller than the complete dataset and more prone to be affected by daily fluctuations and outliers.

Therefore, for robustness of the data, **the RBLs used in criteria derivation are based on the results of all days (including both weekends and weekdays)**, while the differences between weekends and weekdays at applicable loggers are reflected in the criteria derivation methodology (Table 6 Section 6.3).

The typical broadband RBL of each SCA is provided in the Table 4. These values are used as the A-weighted RBLs in the criteria derivation for each SCA.

Table 4 Typical broadband RBL for Sound Category Areas (SCAs)

Sound Category Areas (SCAs)	Typical Rating Background Noise RBL L_{A90} dB				Example locations	Reference Loggers
	Day 7am–6pm	Evening 6pm–10pm	Early Night 10pm–midnight	Late Night Midnight–7am		
SCA1	60	60	55	50	Broadway in Glebe and Chippendale; Cleveland St in Chippendale and Surry Hills; Oxford St in Darlinghurst	#1 Central Sydney - Wynyard, #2 Central Sydney - King St Wharf, #3 Central Sydney - Town Hall
SCA2	55	55	50	45	Glebe Point Rd in Glebe; Crown St in Surry Hills; King St in Newtown	#4 Chippendale, #5 Darlinghurst, #14 The Rocks
SCA3	50	50	45	40	Redfern St in Redfern; Oxford St in Paddington; Macleay St in Kings Cross	#8 Kings Cross, #11 Redfern, #13 Surry Hills - Hollywood Quarter, #15(1) Walsh Bay (1), #16 Woolloomooloo
SCA4	45	45	40	35	Back of Glebe Point Rd in Glebe; back of Crown St in Surry Hills; back of King St in Newtown	#6 Erskineville, #7 Glebe, #9 Newtown - King St north, #12 Surry Hills - Crown St, #10 Newtown - King St south, #15(2) Walsh Bay (2), #17 Newtown - Iredale St

6.2 Low-frequency Octave-band RBL

For each SCA, the low-frequency octave-band RBLs used to establish the criteria are derived from the measured octave-band RBLs from the corresponding reference noise loggers in Table 4, with reference to the measured octave-band L_{90} levels from soundwalk and attended measurements of background noise to validate the representativeness of the logger results. The low-frequency octave-band RBLs used for criteria derivation are shown in Table 5.

Table 5 Low-frequency octave-band RBL for Sound Category Areas (SCAs)

Sound Category Areas (SCAs)	Typical Low-frequency octave-band RBL L_{90} dB											
	Day / Evening (7am to 10pm)				Early Night (10pm to midnight)				Late Night (midnight to 7am)			
	31.5	63	125	250	31.5	63	125	250	31.5	63	125	250
SCA1	63	63	63	61	61	61	61	59	55	55	55	53
SCA2	57	55	55	53	53	52	52	51	50	50	50	50
SCA3	56	54	53	50	50	49	49	46	47	47	47	44
SCA4	52	50	47	45	47	46	43	41	44	42	40	37

6.3 Residential Receiver Criteria Derivation

The criteria derivation methodology for residential receivers (shown in Table 6) is mostly based on existing background noise in the area, with the exception of Late Night criteria which also referenced the Defra curve and threshold of hearing as absolute criteria. The approach is in general alignment with, or more generous than, the approaches of the L&GNSW and CoS DCP criteria, with modifications detailed and justified in Table 6.

Table 6 External sound criteria derivation methodology for residential receivers

Time period	SCAs	Sound criteria derivation					Justification
		Broadband L _{Aeq} criteria	Octave-band L _{Zeq} criteria				
			31.5 Hz	63 Hz	125 Hz	250 Hz	
Day and Evening 7am-10pm	All SCAs	RBL + 8dB	RBL + 4dB	RBL + 6dB	RBL + 6dB	RBL + 8dB	During Day and Evening periods, entertainment noise has less impact on the health and amenity of the residents than night-time, therefore the criteria is relaxed from the L&GNSW RBL + 5dB to RBL + 8dB to encourage live music and activity in Special Entertainment Precincts. The existing ambient levels in these SCAs are on average about 10dB higher than the RBL, therefore RBL + 8dB is similar to existing ambient levels thus unlikely to cause undue disturbance.

Time period	SCAs	Sound criteria derivation					Justification
		Broadband L _{Aeq} criteria	Octave-band L _{zeq} criteria				
			31.5 Hz	63 Hz	125 Hz	250 Hz	
Early Night 10pm-midnight	SCA1 weekdays SCA2-4 all days	RBL + 5dB	RBL + 2dB	RBL + 3dB	RBL + 3dB	RBL + 5dB	The Early Night period acts as a transition period between Evening and Late Night as both background noise and entertainment noise start to decrease. The criteria of RBL + 5 also serve as transition between the more lenient evening criteria and the more stringent late night criteria, and broadly align with existing CoS DCP criteria.
	SCA1 weekends	RBL + 8dB	RBL + 4dB	RBL + 6dB	RBL + 6dB	RBL + 8dB	The background noise during the Early Night period is generally higher on the weekend than on the weekdays in SCAs 1, while the typical RBLs used for each SCA are based on all days and mostly driven by weekday results. Therefore the noise criteria are relaxed by 3dB.
Late Night midnight-7am Reasonable Amenity Approach	SCA2-4	RBL + 0dB	The higher of the following: - Octave-band RBL - 6dB - Defra study curve - 3dB + outside-to-inside level difference - ISO 389-7 Threshold of Hearing curve + outside-to-inside level difference				The goal of this approach is to provide reasonable acoustic amenity and protection of sleep environment for most people inside receivers, while accepting that entertainment levels may be audible. RBL - 6dB per octave-band is used for the background-based criteria based on Table 5 of the <i>CoS DCP Entertainment Sound Study</i>. Defra curve is for general industrial-type noise and not music. Therefore Defra curve minus 3dB is used to account for the higher fluctuation of music.
	SCA1	RBL + 0dB	The higher of the following: - Octave-band RBL - 3dB - Defra study curve + outside-to-inside level difference - ISO 389-7 Threshold of Hearing curve + 3dB + outside-to-inside level difference				SCA1 is only allocated to the CBD area and areas adjacent busy roads where the Late Night ambient levels remain consistently high (approx. 10-20dB above RBL), so both background-based criteria and absolute criteria are slightly relaxed relative to other SCAs.

Time period	SCAs	Sound criteria derivation				Justification	
		Broadband L _{Aeq} criteria	Octave-band L _{zeq} criteria				
			31.5 Hz	63 Hz	125 Hz		250 Hz
Late Night midnight- 7am Generally Inaudible Approach	SCA2-4	RBL – 3dB	The higher of the following: - Octave-band RBL - 12dB - ISO 389-7 Threshold of Hearing curve + outside-to-inside level difference			The goal of this approach is to reach levels that would be generally inaudible for most people most of the time inside receivers, which broadly aligns with L&GNSW LA10 criteria and current CoS DCP internal criteria. RBL - 12dB per octave-band is used for the background-based criteria based on Table 5 and Section 3.6.2.B of the CoS DCP <i>Entertainment Sound Study</i> .	
	SCA1	RBL – 3dB	The higher of the following: - Octave-band RBL - 6dB - ISO 389-7 Threshold of Hearing curve + outside-to-inside level difference			SCA1 is only allocated to the CBD area and areas adjacent busy roads where the Late Night ambient levels remain consistently high (approx. 10-20dB above RBL), so the background-based criteria are slightly relaxed relative to other SCAs.	

The additional values used for the calculation of the Late Night criteria are provided in Table 7. While for fluctuating sound like music, the even if the L_{eq} is at the threshold of hearing, the louder parts of the sound (e.g., L₁₀ or L₁) may be higher than the threshold and potentially audible. However, using the lowest 1/3 octave-band values as the octave-band criteria is very conservative by nature, so no extra correction is applied. Internal criteria are designed to be equivalent to the external criteria. Therefore, the only difference between the external criteria and internal criteria are the outside-to-inside level difference assumption in Table 7.

Table 7 Additional reference values for Late Night criteria derivation

Reference values	Broadband dBA	31.5 Hz	63 Hz	125 Hz	250 Hz
ISO 389-7 Threshold of Hearing curve (lowest 1/3 octave-band values)	-	51	32	18	9
Defra study curve – 3dB (lowest 1/3 octave-band values)	-	49 ¹	37	31	9 ²
Outside-to-inside level difference assumption for typical construction	15	5	9	12	14
Equivalent external limit for threshold of hearing	-	56	41	30	23
Equivalent external limit for Defra curve	-	56 ¹	46	43	23 ²
Equivalent external limit for SCA1 Reasonable Amenity Approach (Defra + 0dB or ToH + 3dB)	-	59	49	46	26

¹ Defra curve lower than threshold of hearing curve at 31.5 Hz, thus threshold of hearing is used

² Defra curve unavailable at 250 Hz, thus only threshold of hearing is used

6.4 Third octave-band Defra and ToH based criteria

Because human hearing sensitivity at low frequencies changes drastically with frequency, the threshold of hearing and perceived loudness can be very different even for frequencies in the same octave-band. To be conservative, we adopted the lowest 1/3 octave-band values from ISO 389-7 and Defra curves to derive the octave-band criteria. However, a sound exceeding the octave-band criteria may still be inaudible depending on the characteristics of the sound. Therefore, in order not to be unrealistically conservative, a set of 1/3 octave-band levels are also provided.

For the low-frequency criteria that are determined by the absolute curves (e.g., Late Night criteria at 31.5 Hz for all SCAs), if the entertainment sound exceeds the octave-band limit, a 1/3 octave-band assessment may be carried out to determine if the sound is actually exceeding the reference curves. The third-octave-band criteria are based on the ISO 389-7 curve minus 3 dB and Defra curve minus 6 dB, to account for the difference between louder parts of the sound (e.g., L_{10}) and L_{eq} (our assessment metric).

Table 8 Third octave-band absolute criteria

Frequency	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz
ISO 389-7 Threshold of Hearing curve – 3dB	66	57	48	41	35	29	24	19	15	11	8	6
Defra study curve – 6dB	58 ¹	50 ¹	43 ¹	37 ¹	36	34	32	30	28	11 ²	8 ²	6 ²
Outside-to-inside level difference assumption for typical construction	4	5	6	8	9	10	12	12	13	14	14	14
Equivalent external limit for threshold of hearing	70	62	54	49	44	39	36	31	28	25	22	20
Equivalent external limit for Defra curve	70 ¹	62 ¹	54 ¹	49 ¹	45	44	44	42	41	25 ²	22 ²	20 ²
Equivalent external limit for SCA1 Reasonable Amenity Approach (Defra + 0dB or ToH + 3dB)	73	65	57	52	48	47	47	45	44	28	25	23

¹ Defra curve lower than threshold of hearing curve at 31.5 Hz, thus threshold of hearing is used

² Defra curve unavailable at 250 Hz, thus only threshold of hearing is used

6.5 Non-residential Receivers Criteria Derivation

The criteria for other noise-sensitive receivers are derived based on the criteria for residential receivers with a suitable adjustment:

- Compared with residential receivers, hotels and other short-term accommodation have a higher tolerance for noise due to the short stay period and freedom of choice. Visitors may choose their accommodation based on the location and environment, and may choose to prioritise access to entertainment or a quiet environment. In addition, hotels generally have building envelope constructions with higher sound insulation plus mechanical ventilation which increases internal sound masking. Therefore, the criteria for short-term accommodation are set 8 dB above the relevant residential criteria.
- Hospital wards generally have building envelope constructions with higher sound insulation plus mechanical ventilation. Accordingly, these criteria are set 5 dB above the relevant residential criteria.
- School classrooms are sensitive to noise because distraction from noise may have an impact on students' learning outcomes. Therefore, these criteria are the same as the residential criteria.
- Places of worship are not as sensitive as school classrooms as there is no educational impact. However, there is usually a requirement for speech intelligibility. Therefore, these criteria are set 5 dB above the relevant residential criteria.
- Commercial premises are typically less noise-sensitive than all of the above receivers and generally have building envelope constructions with higher sound insulation plus mechanical ventilation. Therefore, these criteria are set 10 dB above the relevant residential criteria.

In addition, the latter three types of receivers (school classrooms, places of worship, and commercial premises) are usually only used during day-time (and occasionally evening) and there is no need to protect sleep amenity. Therefore, only Day and Evening residential criteria are used as the basis for the criteria for these receiver types.

For all non-residential receivers, the broadband criteria are capped at 75 dB L_{Aeq} to avoid unreasonably high levels.

6.6 Comparison with Existing Criteria

Table 9 compares our recommended SEP criteria with the existing L&GNSW LA10 criteria and the current CoS DCP criteria for entertainment noise, and summarises how our proposed approach compares.

Table 9 Proposed SEP criteria comparison with existing relevant criteria

	Existing L&GNSW criteria	Existing CoS DCP criteria	Proposed SEP criteria	Comments
Fixed criteria?	No, criteria vary depending on background and dwelling sound insulation	No, criteria vary depending on background and dwelling sound insulation	Yes, the criteria for each Sound Category Area are fixed	SEP criteria use fixed values that are derived from measured background noise levels, so noise logging is not needed for design or compliance assessment
Completely measurable?	No, the inaudibility criterion requires subjective assessment	Yes, the criteria are all quantitative and measurable	Yes, the criteria are all quantitative and measurable	SEP criteria only use quantitative (same as CoS DCP) to avoid subjectivity in the assessment
Assessment location	External and internal at residential receiver	External and internal at residential receiver	External only at residential receiver, (except where external noise does not control the outcome)	SEP criteria use a single assessment location for each receiver so compliance can be assessed easily and is not affected by dwelling sound insulation
Daytime and Evening 7am – 10pm	L_{10} (octave-bands) < background +5	L_{eq} (octave-bands) < background +5 and internal L_{eq} (octave-bands) < background +0	Most SCAs: L_{Aeq} < background +8 L_{eq} 31.5–250Hz octave-bands scaled according to equal loudness contour	SEP criteria for Day and Evening are more lenient than L&GNSW and CoS DCP to encourage entertainment, with separate criteria for weekends. Low-frequency criteria take into account the equal loudness contour to avoid excessive low-frequency disturbance.
Early Night 10pm – midnight	L_{10} (octave-bands) < background +5	L_{eq} (octave-bands) < background +5 and internal L_{eq} (octave-bands) < background +0	Most SCAs: L_{Aeq} < background +5 L_{eq} 31.5–250Hz octave-bands scaled according to equal loudness contour	SEP criteria for Early Night during the weekdays are roughly equivalent to L&GNSW and CoS DCP external criteria, while criteria for weekends are more lenient to encourage entertainment. Low-frequency criteria take into account the equal loudness contour to avoid excessive low-frequency disturbance.

	Existing L&GNSW criteria	Existing CoS DCP criteria	Proposed SEP criteria	Comments
Late Night Midnight – 7am	L ₁₀ (octave-bands) < background +0 and internal inaudibility	L _{eq} (octave-bands) < background +0 and internal L _{eq} (octave-bands) < background - 12 or Threshold of Hearing	Reasonable Amenity Approach: Most SCAs: L _{Aeq} < background +0 L _{eq} 31.5-250Hz octave-bands < background – 6dB or Defra – 3dB	More lenient than L&GNSW and CoS DCP internal criteria, but more stringent than L&GNSW and CoS DCP external criteria (in low frequencies).
			Generally Inaudible Approach: Most SCAs: L _{Aeq} < background -3 L _{eq} 31.5-250Hz octave-bands < background – 12dB or ToH	Octave-band criteria broadly equivalent to L&GNSW and CoS DCP internal criteria, while more stringent than L&GNSW and CoS DCP external criteria. Third octave-band assessment option adds more leniency without changing the actual target.

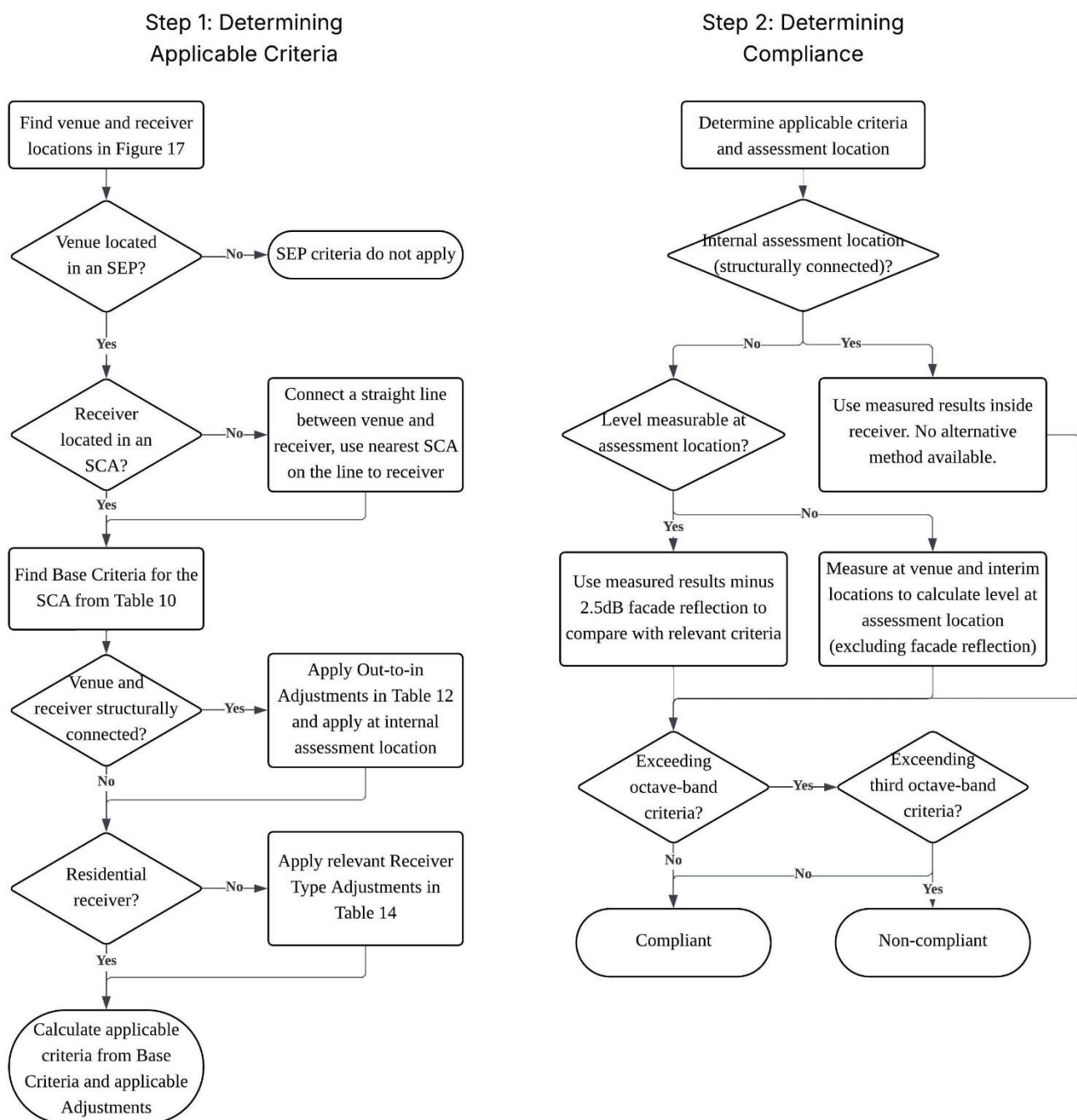
7 Sound Criteria

The final applicable sound criteria derived based on the methodology detailed in Section 6 are given below.

7.1 Assessment Procedure

The assessment procedure is summarised in Figure 9, with details provided in the following sections.

Figure 9 Assessment procedure

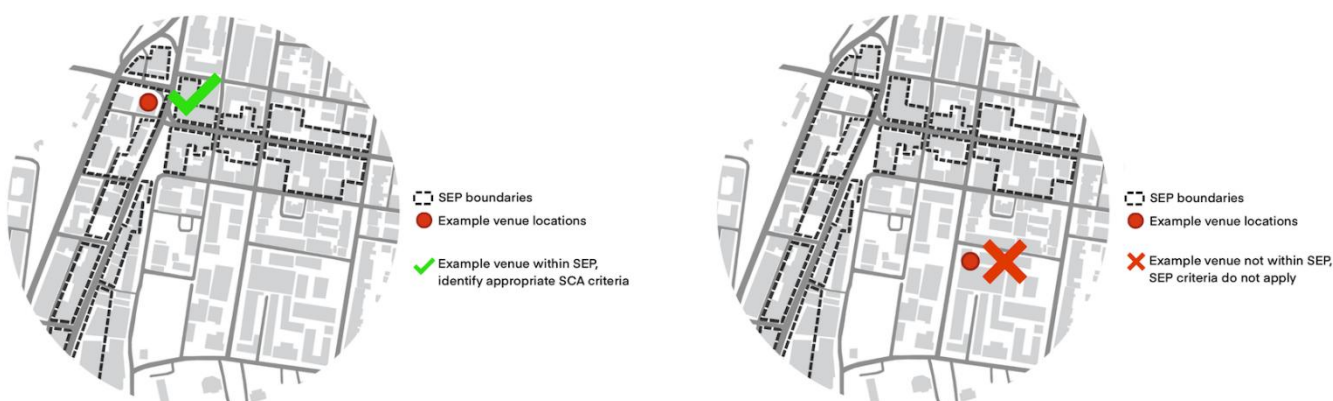


7.2 Assessment Clarifications

The following clarifies the type of sources that the criteria apply to, and assessment location:

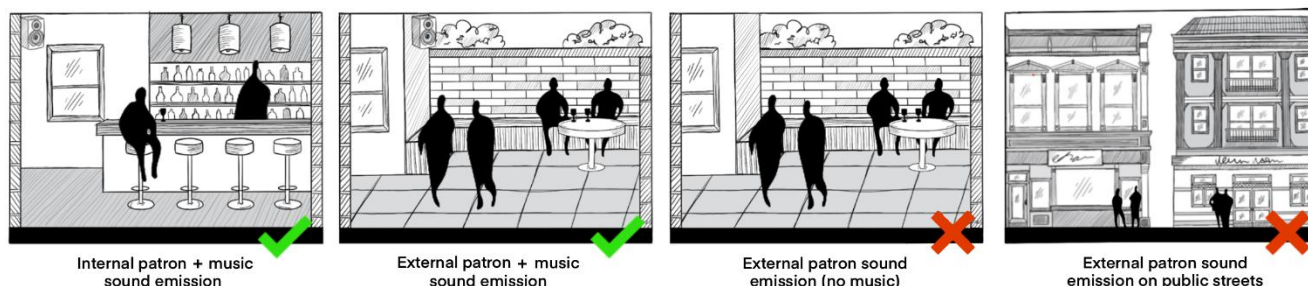
- The SEP criteria apply to all **licensed and unlicensed entertainment venues** (including restaurants, pubs, bars, and other premises) inside an **SEP boundary** (Figure 10).

Figure 10 Venue eligibility examples



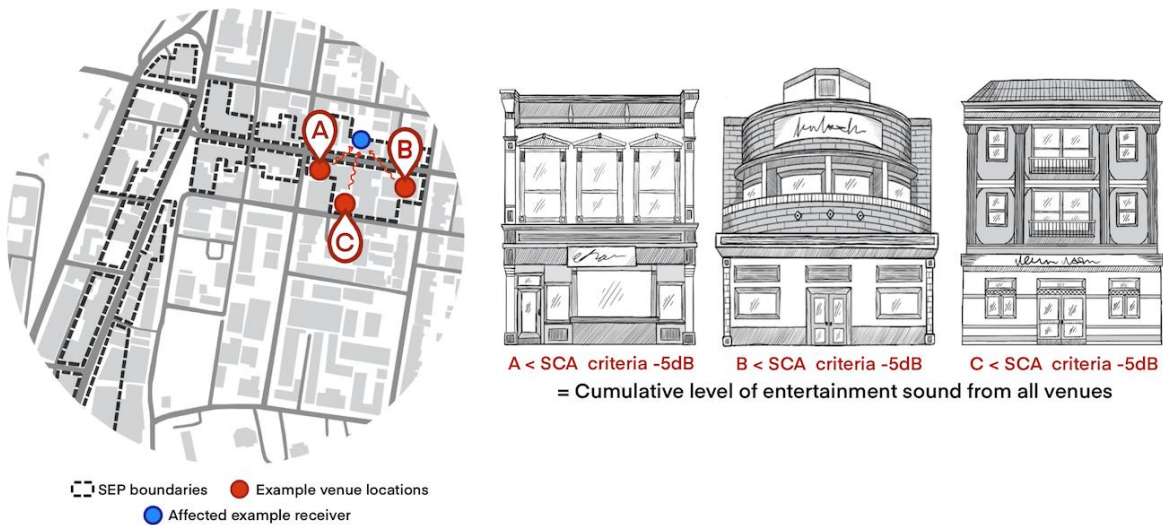
- The criteria apply to the **total sound emission from patrons and music** (amplified and unamplified) both inside the venue and within designated outdoor seating areas, with the exception where the only noise source is outdoor patrons (without music). The exclusion is due to the fact that this usually cannot be controlled or mitigated by the venue. The criteria do apply to outdoor patron sound with music. It also excludes patron noise on public streets. See Figure 11 for some example scenarios where it would apply or not apply.

Figure 11 Source eligibility examples



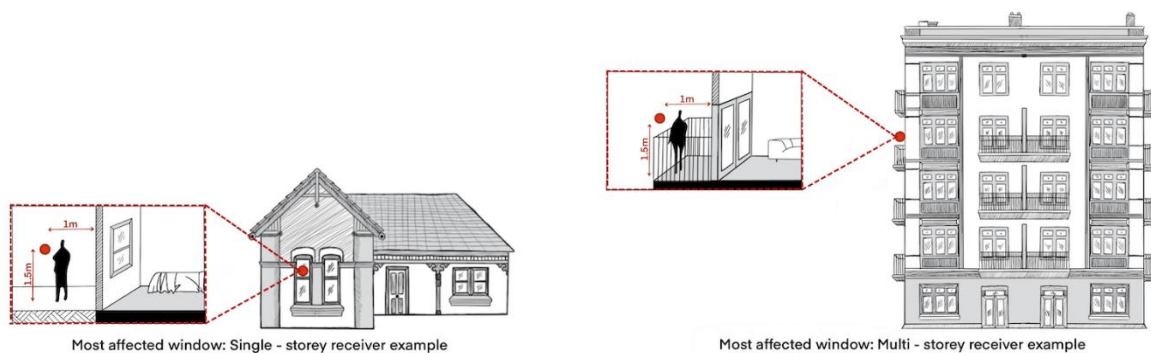
- The criteria apply to the **cumulative level of entertainment sound from all venues**. In areas with multiple venues, the contribution from each single venue should typically not exceed 5 dB below the tabulated values (Figure 12). Alternatively, where practical, the venues may coordinate to schedule their entertainment sound emissions to ensure the cumulative level complies with criteria.

Figure 12 Multiple venue example



- The external criteria apply at **1 m outside the most-affected window of an occupied space** of the receiver (e.g., excluding garages, kitchens, bathrooms, and hallways) at 1.5 m above floor level. This applies to both single and multi-storey receivers and venues (Figure 13). For example, for a rooftop venue on level 4, the most-affected window might be of a bedroom on level 6 of an apartment building.

Figure 13 External criteria assessment location examples



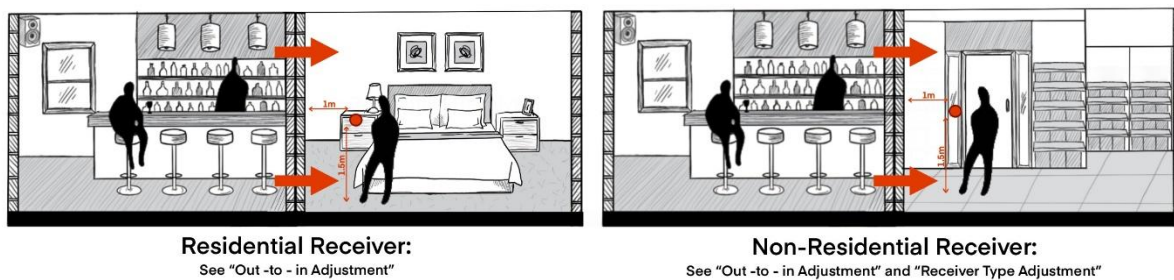
- If the assessment location is not accessible for measurement (e.g., high-level assessment location with no external balcony, or access to balcony is not permitted by the resident), or if the entertainment level at the assessment location cannot be measured due to extraneous noise, the **sound level at the assessment location should be calculated** by a qualified acoustic consultant based on measurements at the venue and at interim locations (Figure 14).

Figure 14 Assessment location accessibility examples



- In the case where external criteria apply but direct measurement is not possible at the assessment location (e.g., high-rise apartment building with no balcony), the calculation of sound level at the assessment location can either be done by measuring at the venue and/or interim locations and calculate sound reduction of the airborne propagation (e.g., distance, shielding, air absorption), or it can be done by measuring inside the receiver and calculate the sound reduction of the receiver window. In the case where the receiver window sound reduction is lower than the standard assumed reduction in the report, the standard assumed reduction should be used.
- The **external criteria exclude façade reflection**, so a -2.5 dB façade correction should be applied to direct measurement results before comparing with the criteria.
- For receivers that are **structurally connected to a venue** (e.g., sharing a common partition wall or within the same building), **internal criteria apply** (see Section 7.5). The internal criteria apply at the most affected location of an occupied space of the receiver (e.g., excluding garages, kitchens, bathrooms, and hallways) at 1.5 m above floor level and at least 1 m from any surfaces (Figure 15 left).
- For internal criteria assessment, all external windows and doors should be closed for the assessment.
- If a non-residential receiver is structurally-connected to the venue (e.g., hotel or commercial), then both Out-to-in Adjustment (see Section 7.5) and Receiver Type Adjustment (see Section 7.6) need to be applied (Figure 15 right).

Figure 15 Internal criteria and non-residential criteria examples



7.3 Sound Category Area

All SEPs and surrounding areas are divided into four Sound Category Areas (SCAs) based on the existing sound environment:

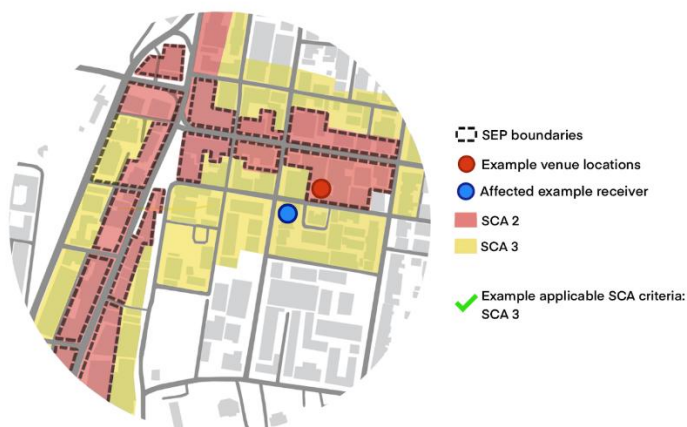
- SCA1: Main Central Sydney area (south of Western Distributor and Cahill Expressway) and areas adjacent to main roads with high traffic volume and/or high existing entertainment activities.
- SCA2: Quieter Central Sydney area and areas adjacent to main roads with tidal traffic and/or activated high streets with existing entertainment.
- SCA3: The rest of Central Sydney area and areas adjacent to moderately-activated high streets with existing entertainment and some local traffic or main roads with lower tidal traffic.
- SCA4: Side streets and quieter areas.

The locations of each SCA are shown in the map in Figure 17.

The sound criteria provided below are only applicable to venues located within the SEP boundaries (black dashed lines). For venues outside the SEP boundaries, other pre-existing criteria (L&GNSW LA10 criteria and CoS DCP) apply.

The SCAs (SCA1-4) are only relevant to receivers, not venues. The criteria applicable to a receiver are determined from the SCA that the receiver is located in, regardless of which SCA the venue affecting this receiver is located in (as demonstrated in Figure 16).

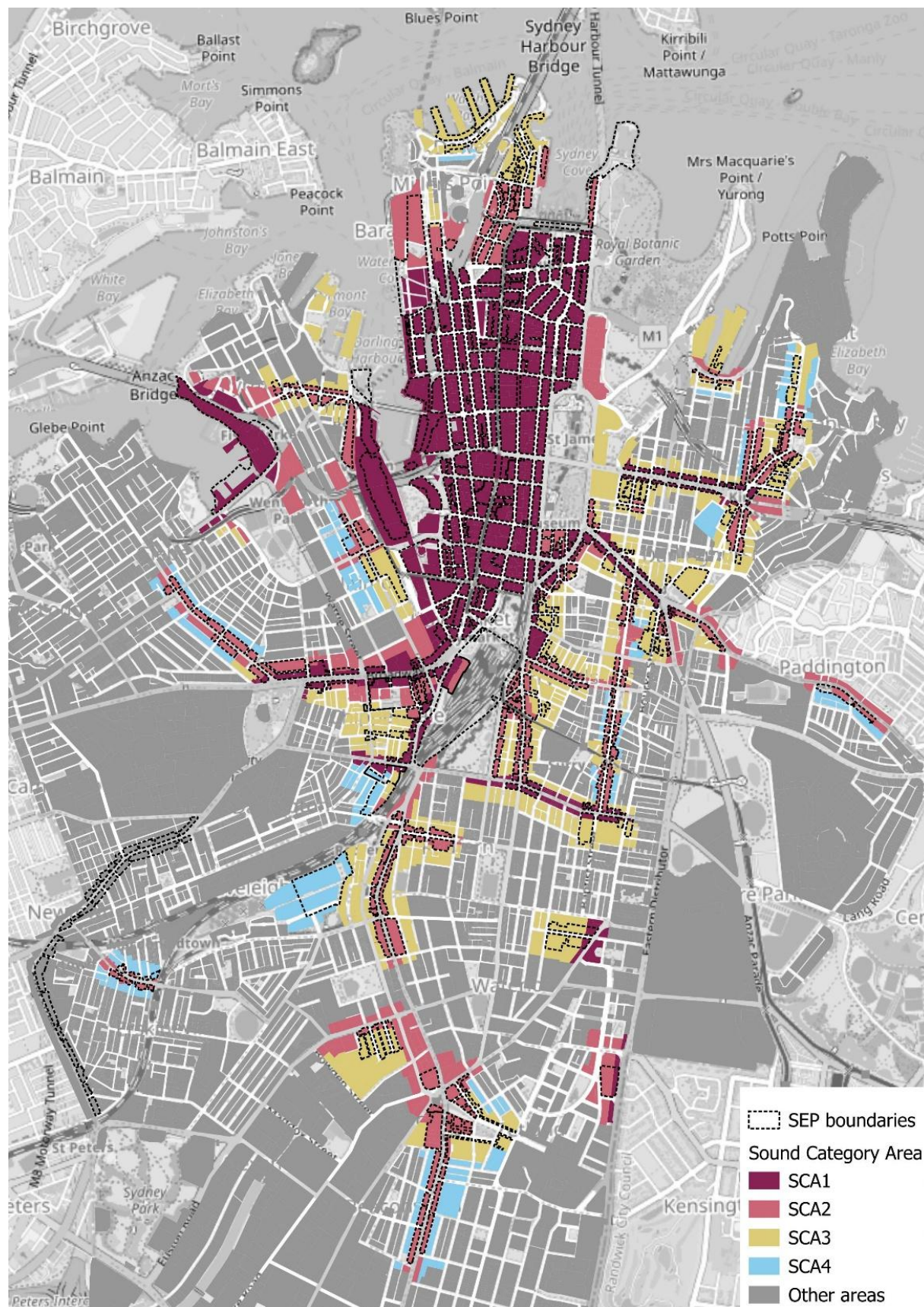
Figure 16 Applicable SCA example



Only areas within 50 m of an SEP boundary, or those closest to an SEP boundary if there is no receiver within 50 m of the boundary in that direction, have been assigned SCAs. This is because the entertainment sound emission criteria of a venue would typically be determined by the nearest receivers, and compliance assessment at further locations (grey shaded areas) is not required.

In the event of compliance needing to be assessed for a receiver outside the SCAs (grey areas), the applicable criteria at the receiver may be determined by establishing a straight line between the receiver and the venue in question – and the closest SCA to the receiver in question on the connected line is then adopted.

Figure 17 Map of Sound Category Areas (SCAs)



7.4 Base Sound Criteria (for Residential Receivers)

The external sound criteria for residential receivers are given in Table 10. These are also used as the base criteria for deriving the criteria for structurally-connected receivers and non-residential receivers.

Table 10 External sound criteria for residential receivers

Sound Category Area (SCA)	Days of the week	Day / Evening (7am to 10pm)					Early Night (10pm to midnight)					Late Night (midnight to 7am) Reasonable Amenity Approach					Late Night (midnight to 7am) Generally Inaudible Approach				
		Overall dBA	Octave-bands - dB				Overall dBA	Octave-bands - dB				Overall dBA	Octave-bands - dB				Overall dBA	Octave-bands - dB			
			31.5	63	125	250		31.5	63	125	250		31.5	63	125	250		31.5	63	125	250
SCA1	Sun 6pm to Thurs 6pm	68	67	69	69	69	60	63	64	64	64	50	59 ¹	52	52	50	47	56 ³	49	49	47
	Thurs 6pm to Sun 6pm	68	67	69	69	69	63	65	67	67	67	50	59 ¹	52	52	50	47	56 ³	49	49	47
SCA2	Any day	63	61	61	61	61	55	56 ²	55	55	56	45	56 ²	46 ²	44	44	42	56 ³	41 ³	38	38
SCA3	Any day	58	60	60	59	58	50	56 ²	52	52	51	40	56 ²	46 ²	43 ²	38	37	56 ³	41 ³	35	32
SCA4	Any day	53	56	56	53	53	45	56 ²	49	46	46	35	56 ²	46 ²	43 ²	31	32	56 ³	41 ³	30 ³	25

Note 1-3: If these levels are exceeded, an optional third octave-band assessment may be carried out, and compliance with the corresponding third octave-band levels provided in Table 11 will demonstrate compliance.

Table 11 Optional third octave-band assessment criteria

Scenario	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz
Reasonable Amenity Approach SCA1 (Note 1)	73	65	57	-	-	-	-	-	-
Early Night and Reasonable Amenity Approach other SCAs (Note 2)	70	62	54	49	45	44	44	42	41
Late Night Generally Inaudible Approach (Note 3)	70	62	54	49	44	39	36	31	28

7.5 Out-to-in Adjustment (for Structurally-connected Receivers)

For structurally-connect receivers, internal sound criteria apply. These are calculated from the base sound criteria detailed above, plus the “Out-to-in Adjustments” in Table 12.

Table 12 Out-to-in Adjustments for internal assessment

Frequency	Broadband dBA	31.5 Hz	63 Hz	125 Hz	250 Hz
Out-to-in adjustment	-15	-5	-9	-12	-14

Similarly, if third octave-band assessment needs to be carried out, the adjustments in Table 13 apply.

Table 13 Third octave-band out-to-in adjustments for internal assessment

Frequency	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz
Out-to-in adjustment in 1/3 octave-band	-4	-5	-6	-8	-9	-10	-12	-12	-13	-14	-14	-14

7.6 Receiver Type Adjustment (for Non-residential Receivers)

For other noise-sensitive receivers, the applicable criteria are calculated from the base sound criteria plus the “Receiver Type Adjustments” in Table 14. **In the case that the resulting broadband dBA criterion is over 75 dBA, the criterion will be set at 75 dBA.**

Table 14 Receiver Type Adjustments for non-residential receivers (broadband criteria capped at 75 dBA)

Receiver type	Time period	Broadband dBA	31.5 Hz	63 Hz	125 Hz	250 Hz
Short-term accommodation bedrooms (e.g. hotels, serviced apartments)	Corresponding residential time periods apply	+8	+4	+6	+6	+8
Hospital wards		+5	+2	+3	+3	+5
School classrooms	Day and Evening criteria apply at all times	+0	+0	+0	+0	+0
Places of worship		+5	+2	+3	+3	+5
Commercial premises		+10	+5	+7	+7	+10

8 Example Scenarios

Four fictional scenarios are provided below as examples to show the typical types of operation possible under the sound criteria for a venue - based on the location of the venue and relationships with nearby receivers.

The simplified propagation predictions are made in general accordance with ISO 9613-2:2024, and includes distance attenuation, façade reflection and shielding from buildings, and atmospheric attenuation.

For simplicity, only A-weighted results and criteria are shown, and only airborne noise transfer (external criteria) is calculated. Therefore, while the examples show the type of operation typically possible under the broadband criteria, the low-frequency content sound levels may need to be limited depending on the type of music, building construction, and internal noise transfer paths.

The example scenarios include:

- Example 1: Sydney CBD area, venue and all receivers in SCA1.
- Example 2: North Alexandria, venue located in SCA3 (industrial/commercial area), nearest residential receiver in SCA2.
- Example 3: William St Kings Cross, venue in SCA1, nearest residential receiver in SCA1 across the street and SCA3 one street behind.
- Example 4: Crown St Surry Hills, venue in SCA2 corner of side street, nearest residential receivers in SCA2 across the street and SCA4 one street behind.

We have assumed the following standard constructions in the example calculations:

- Conventional pub layout with stage at middle to rear of the venue
- Doors and windows closed, but with poor or no seals
- No air-lock or sound-lock

However, we have measured at venues with constructions which perform significantly better than the above standard constructions. Some simple sound insulation measures will make higher sound levels inside venues possible. Some typical examples of these types of measures are recommended in Section 9.

8.1 Example 1 – Sydney CBD

Example 1 shows a fictional venue in the CBD area. The nearest receivers are: residential receiver 120m away, short-term accommodation 75m away with shielding, and commercial receivers all around. This is typical to the CBD area, as it consists of mostly commercial receivers, and residential blocks are scattered. Commercial receivers are assumed to be only used during the Day and Evening period, and they are the limiting receivers during this period due to the short distance. In this scenario, any type of regular entertainment operation would likely to be possible under the sound criteria at any time of the day due to the large distance to the residential and short-term accommodation receivers and the relatively high sound criteria in SCA1.

Figure 18 Example 1 location



Table 15 Example 1 noise levels

Time period	Limiting receiver	Criteria at controlling receiver L _{Aeq} dB	Level attenuation (ISO 9613-2:2024)	Criteria outside venue L _{Aeq} dB	Typical type of operation possible internally with standard construction	Typical type of operation possible outdoors
Day and Evening	Commercial (SCA1)	75	10	85	Loud live band or DJ	Outdoor dining with live music
Early Night (weekday)	Residential (SCA1)	60	36	96	Loud live band or DJ	Outdoor dining with live music
Late Night – Reasonable Amenity Approach	Residential (SCA1)	50	36	86	Loud live band or DJ	Outdoor dining with live music
Late Night – Generally Inaudible Approach	Residential (SCA1)	47	36	83	Loud live band or DJ	Outdoor dining with live music

8.2 Example 2 – North Alexandria

North Alexandria is a relatively unique SEP because it is an industrial/commercial area with no residential receivers within the SEP area. The nearest residential receivers are on Wyndham St and McEvoy St in SCA2, and are protected by shielding from buildings to much of the SEP area. The outcome for Example 2 is similar to Example 1, with commercial receivers limiting the Day and Evening operations, while residential receivers limiting the night-time operations. Any type of regular entertainment operation is also likely to be possible under the criteria at any time of the day.

Figure 19 Example 2 location

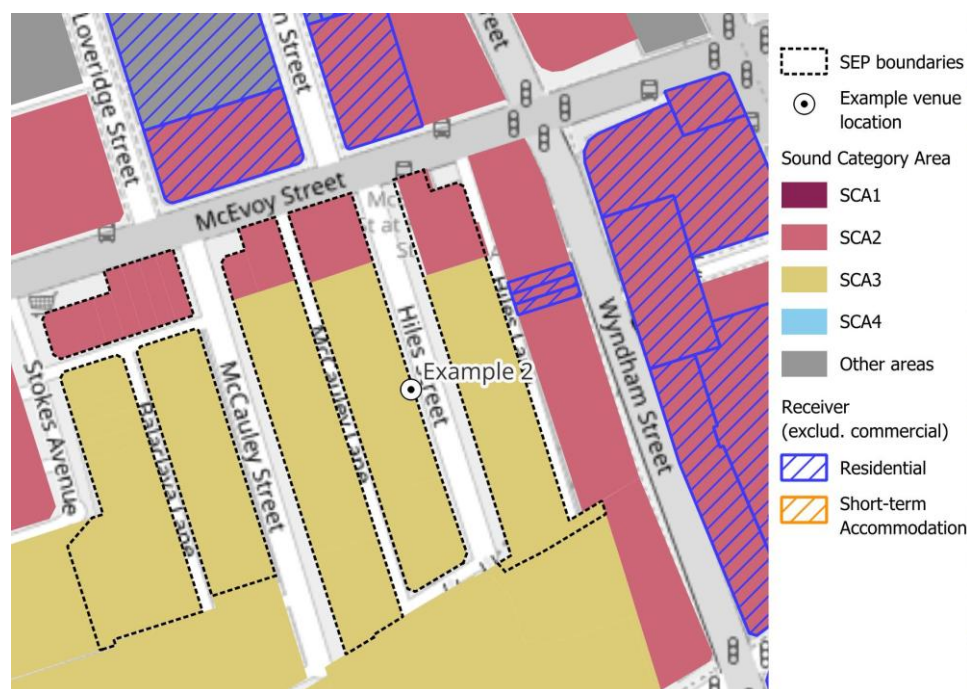


Table 16 Example 2 noise levels

Time period	Limiting receiver	Criteria at controlling receiver L _{Aeq} dB	Level attenuation (ISO 9613-2:2024)	Criteria outside venue L _{Aeq} dB	Typical type of operation possible internally with standard construction	Typical type of operation possible outdoors
Day and Evening	Commercial (SCA3)	68	10	78	Loud live band or DJ	Outdoor dining with live music
Early Night (weekday)	Residential (SCA2)	55	34	89	Loud live band or DJ	Outdoor dining with live music
Late Night – Reasonable Amenity Approach	Residential (SCA2)	45	34	79	Loud live band or DJ	Outdoor dining with live music
Late Night – Generally Inaudible Approach	Residential (SCA2)	42	34	76	Moderate live band or DJ	Outdoor dining with background music

8.3 Example 3 – William St Kings Cross

Example 3 shows a fictional venue located on and facing William St. The nearest residential receivers are SCA1 receivers diagonally across William St and SCA3 receivers one street back on both sides of the street. There are also SCA1 short-term accommodation receivers and commercial receivers on both sides William St. The outcome is very similar to Example 2 because while there residential receiver is closer, they are located in SCA1 and thus have higher noise limit. The SCA3 receivers in the back are all protected by shielding from building and will not be limiting for the venue entertainment.

Figure 20 Example 3 location

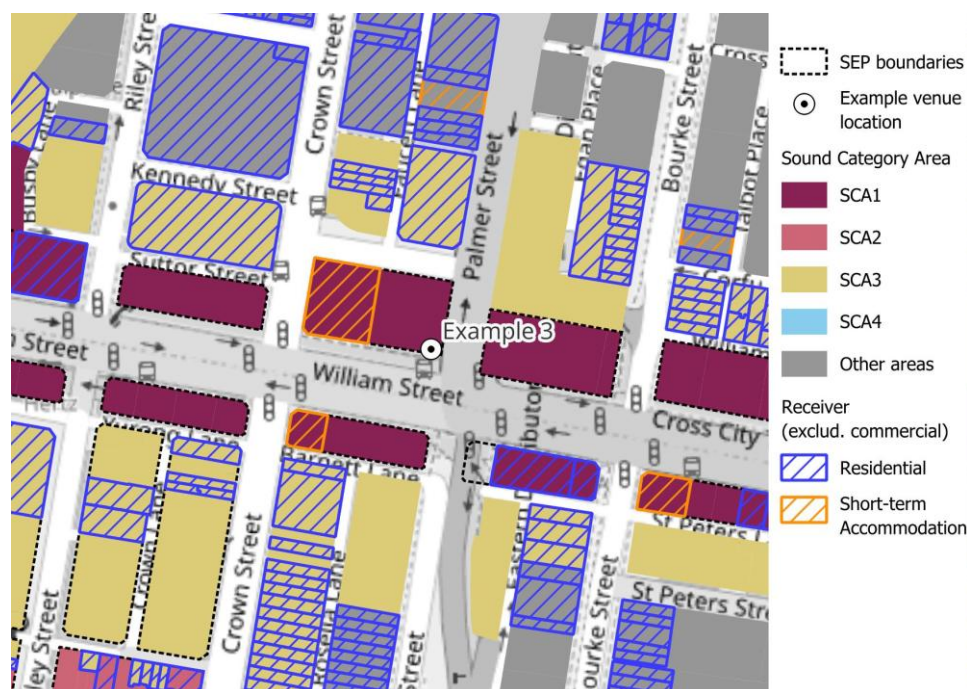


Table 17 Example 3 noise levels

Time period	Limiting receiver	Criteria at controlling receiver L _{Aeq} dB	Level attenuation (ISO 9613-2:2024)	Criteria outside venue L _{Aeq} dB	Typical type of operation possible internally with standard construction	Typical type of operation possible outdoors
Day and Evening	Commercial (SCA1)	75	10	85	Loud live band or DJ	Outdoor dining with live music
Early Night	Residential (SCA1)	60	29	89	Loud live band or DJ	Outdoor dining with live music
Late Night – Reasonable Amenity Approach	Residential (SCA1)	50	29	79	Loud live band or DJ	Outdoor dining with live music
Late Night – Generally Inaudible Approach	Residential (SCA1)	47	29	76	Moderate live band or DJ	Outdoor dining with background music

8.4 Example 4 – Crown St Surry Hills

Example 5 shows a fictional venue located on Crown St at a corner of a side street. There are SCA2 receivers across the street on both sides, and SCA4 receivers one street back. Due to the corner location, there is no shielding from buildings between the venue and either of the receivers. The SCA4 receivers are controlling the criteria at the venue. The outcome for this example slightly more limiting but still most types of operation would be possible under the sound criteria during Day and Evening period.

Figure 21 Example 5 location

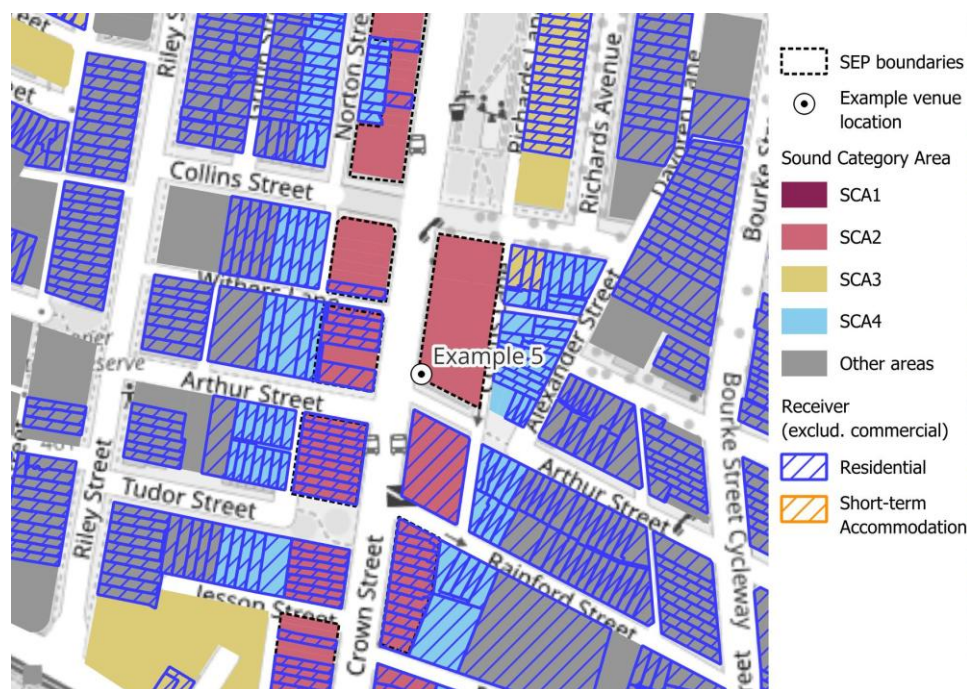


Table 18 Example 5 noise levels

Time period	Limiting receiver	Criteria at controlling receiver L_{Aeq} dB	Level attenuation (ISO 9613-2:2024)	Criteria outside venue L_{Aeq} dB	Typical type of operation possible internally with standard construction	Typical type of operation possible outdoors
Day and Evening	Residential (SCA4)	53	27	80	Loud live band or DJ	Outdoor dining with live music
Early Night	Residential (SCA4)	45	27	72	Moderate live band or DJ	Outdoor dining with background music
Late Night – Reasonable Amenity Approach	Residential (SCA4)	35	27	62	Quiet live band (e.g., jazz, acoustic)	No outdoor dining
Late Night – Generally Inaudible Approach	Residential (SCA4)	32	27	59	Quiet live band (e.g., jazz, acoustic)	No outdoor dining

9 Recommendations for Venues

9.1 Site Selection

When opening a new venue, especially one that is intended for loud live music or night club, the location and building selection is very important.

As the examples in Section 8 show, the type of operation possible under the sound criteria in a venue with standard construction may be significantly different depending on its distance to the nearest receivers and the SCA of the receivers. In terms of building construction, concrete or brick building constructions are typically better for sound insulation compared to lightweight construction. In addition, opening a venue in a new building specifically designed for the purpose will also likely be less costly than renovating an old building with acoustically poor constructions. Therefore, when selecting a site for a new venue or determining the type of operation for a certain site, the venue operators should take these factors into consideration to inform their decisions.

If a new venue opens in a lightweight building in a very quiet area immediately adjacent SCA4 receivers, it will likely cost more to soundproof the venue to become a venue for loud live bands; at the other extreme, if the venue opens in a concrete-structured basement inside the CBD area, it may be able to play the same type of music at any time with no additional renovation cost. While it may still be possible to soundproof the first venue sufficiently to play loud music at any time of day or night, the cost may outweigh the benefits. However, it may be suitable for some moderate live music during the day and evening, especially if the venue applies some of the simple sound insulation measures listed below.

9.2 Simple Internal Sound Insulation

Some simple, cost-efficient sound insulation measures such as below examples can also reduce the sound emission from venues effectively without significant investment, and in turn enable more possibilities for venue operation:

- Adding acoustic door and window seals around the perimeter
- Using solid-core doors rather than glass or hollow-core, using laminated or double glazing rather than single
- Adding sound-locks for patrons entering and exiting the venue
- Adding thick, dense sound-absorptive insulation in ceiling cavity
- Vibration-isolating sub-woofers with spring isolators
- Using directional and distributed speaker systems that promote even coverage inside the venue and minimise sound spill to outside the venue
- Optimising internal layout to use ancillary spaces (e.g., kitchen, amenity, storage) as buffers between the entertainment source and nearby receivers.

9.3 Simple External Sound Mitigation

For outdoor entertainment sound, while it is more difficult to isolate the source from receivers, there are still some simple measures that will effectively reduce the entertainment sound emission:

- Using directional loudspeakers with purposefully designed location and orientation, to provide coverage for the venue outdoor area with minimum spill to surrounding receivers
- Managing patrons' behaviours reasonably (e.g., intervene when patrons are acting in an unacceptable manner)
- Limit the use of bass (low-frequency sound) in outdoor performances
- Limit the level of background music when patron noise levels are high
- Use solid fences (e.g., corrugated metal, double-lapped timber, clear acrylic) with minimum 1.8 m height around outdoor beer gardens and courtyards
- Install partial covers or awnings, potentially with sound-absorptive or scattering finishes, over higher noise areas.

10 Discussion and Limitations

The sound criteria recommended in this report reflect the balance that City of Sydney seeks to achieve between promoting entertainment vibrancy and protecting community amenity. The criteria are also simple to implement because they are fixed criteria (so background monitoring is not required), they apply externally (except where external noise transfer is not the controlling issue) and they do not require subjective assessment. The subsections below discuss some potential limitations of this work.

10.1 Low frequency entertainment noise at night

Our starting point has been to consider internal amenity during the late night (midnight to 7am) period. We have based our recommended goals for internal sound on available literature and standards related to sleep disturbance and night-time noise acceptability, but note that this is not always directly applicable to low frequency noise and/or to entertainment sound.

Our recommended goals are more stringent than the equivalent criteria in the Acoustic Toolkit. They can be adjusted if supported by evidence during the trial, or from emerging research. At the same time, it must be recognised that the recommended criteria do not guarantee that entertainment noise will be inaudible to all people within all residences at all times.

The recommended approach represents a practical balance between safeguarding late-night amenity for most people, most of the time, and ensuring that criteria can be readily measured and enforced.

10.2 Sound insulation of buildings

Our recommended external criteria are based on a reasonably conservative estimate of building sound insulation (or the difference in sound level from outside-to-inside), but also assume windows are closed.

It is not practical to assess the sound insulation of all buildings so, in reality, many buildings may have better sound insulation than assumed if the windows are closed, and less than assumed if windows are open.

10.3 Variation in ambient sound levels within precincts

The recommended Sound Category Areas have been developed from the results of our field measurements and assessments at numerous locations throughout the precincts, together with publicly available monitoring data. While this process was extensive, it is important to recognise that there may be locations that are unusually quiet or noisy and not accurately represented by the typical noise levels we have assessed or the Sound Category Area allocated. The Sound Category Areas can be refined, if necessary, to reflect any issues or discrepancies identified during the trial.

During the 12-month trial period of the SEPs, it is recommended that CoS maintains close communication with the community and businesses to identify any major concerns or discrepancies from the Sound Category Areas, so that the sound criteria may be fine-tuned, if required. It would also be prudent to consider ways to address the potential limitations discussed above during the trial.

Due to the large extent of the SEP areas, and despite best endeavours, there may still remain unresolved issues or discrepancies after the end of the 12-month trial. Where issues or discrepancies are identified that may result in unbalanced impact on businesses or residents, the specific scenarios should be reviewed and the criteria modified accordingly.

The SCA divisions and corresponding background noise levels should also be reviewed systematically every 5-10 years in accordance the methodology outlined in this report, to check the proposed criteria, and update if applicable.

10.4 Compliance Measurement Guidance

We recognise that measuring venue noise in the field is difficult, due to the presence of extraneous noise, and particularly for night-time criteria that target acoustic amenity for the resident.

In practice, it is expected that an experienced acoustic specialist would need to consider methods of measuring venue noise that allow the venue noise content to be estimated based on established measurement methods. In some cases, the assessment location may not be directly accessible, and the same method applies.

An L_{eq} criterion has been adopted, similar to other NSW EPA noise emissions guidelines and policies, as it is a repeatable measure which can be used in calculations (for example addition and subtraction of noise sources). However, we realise that the prevailing ambient noise level from existing sources such as transportation noise (road, rail, ferries, aircraft) and mechanical plant can all influence the measured noise level at the receiver location.

We expect that a receiver location measurement would typically need to be supplemented by other measurements such as immediately outside the venue and interim locations closer to the venue, applying transfer functions to assist with identifying the venue contribution to measured sound levels at the receiver.

We also expect that the sound level meter used will record L_1 , L_{10} and L_{eq} . Examination of L_{10} in particular can help distinguish repeatable music-type sounds from other ambient noises. An experienced operator would take observations of which sounds are dominant in a measurement, and which sounds are likely to contribute to the measured L_{eq} .

Compliance measurements should be conducted at a time and day considered to be representative of the typical worst-case impact, taking into account the views of the affected community and regulators. A 15-minute field measurement period is required as a minimum, along with detailed notes about extraneous noise sources and other factors that may affect the measurements. To extract the venue-only L_{eq} as far as practicable, removing extraneous noise is likely to be necessary during data post-processing. This may result in reporting a shorter duration L_{eq} for measured venue sound, for example 5-minutes L_{eq} , which is acceptable with justification on the methodology. Repeat measurements may be required if the measurements are found not to represent typical-worst case.

Appendix A Glossary of Acoustic Terminology

Term	Definition
dB	Decibel (dB) is the unit used for expressing sound pressure level (SPL) or power level (SWL).
dBA	Decibel expressed as an 'A – weighted' sound pressure level, based on the frequency response of the human ear and has been found to correlate well with human subjective reactions to various sounds. It is noted that an increase or decrease of approximately 10 dB corresponds to a subjective doubling or halving of the loudness of a noise, and a change of 2 to 3 dB is subjectively barely perceptible.
Frequency	The rate of repetition of a sound wave. Frequency is measured Hertz (Hz), or cycles per second. Human hearing ranges approximately from 20 Hz to 20 kHz (2000 Hz).
Octave-band	The most commonly used frequency bands are octave-bands, in which the centre frequency of each band is twice that of the band below it.
Low Frequency	Long wavelength sound associated with low musical notes, bass, and rumble. The audible low-frequency octave-bands of interest in room acoustics and sound insulation reviews are typically from 31.5Hz to 125Hz or 250Hz.
Sound Pressure Level (SPL)	Expressed in dB, it is the level of noise measured by a standard sound level meter and requires a description of where the noise was measured relative to the source.
L₁₀(period)	The sound pressure level that is exceeded for 10% of a measurement period. This is commonly accepted as the typical maximum noise level.
L₉₀(period)	The sound pressure level that is exceeded for 90% of a measurement period. This is commonly accepted as the background noise level or typical minimum noise level.
L_{Aeq}(period)	The equivalent continuous sound pressure level. The level of noise equivalent to the energy average of noise levels occurring over a measurement period.
Background Noise Level	The background noise level is the baseline noise level or noise floor in an area (e.g., urban hum). It is roughly the level of the quietest periods during breaks of intermittent or short-term noise events (e.g., passing cars, birds). It is usually measured using L ₉₀ .
Rating Background Level (RBL)	Rating background level is the overall single-figure background level representing each assessment period (day/evening/night) over a measurement period, as defined in the Noise Policy for Industry.
Ambient Noise Level	The ambient noise level is the existing sound environment in an area (e.g., traffic noise), usually measured using L _{eq} .

Appendix B Review of Relevant Documents

B.1 CoS Development Control Plan (DCP)

The primary purpose of a development control plan (DCP) is to guide development according to the aims of the corresponding local environmental plan (LEP). Section 3.18 *Acoustic Amenity* in the City of Sydney Development Control Plan (DCP) sets the current noise criteria for development generating entertainment sound and development affected by entertainment sound.

Section 3.18.1.1 of the DCP is for development generating entertainment sound, including new building or operation and modification to existing building or operation. Table 3.18.1-1 (reproduced in Table 19) sets out the external sound criteria at the nearest residential receiver, while 3.18.1-2 (reproduced in Table 20) sets out the internal sound criteria inside the residential receiver. The internal L_{Z90} (15 minute) in 31 Hz – 500 Hz octave-band is also limited to the hearing threshold in Table 3.18.1-3 (reproduced in Table 21) or above. Provision (7) also notes that when there is inconsistency between the external and internal criteria, internal criteria prevail.

Table 19 CoS DCP Table 3.18.1-1: External sound criteria as measured at the property boundary of the nearest identified sensitive receiver

Sensitive receiver	Time period	Sound criteria L_{Zeq} (15 minute)
Residential accommodation or serviced apartments	7am to midnight	Must not exceed 5dB above RBL* in each octave-band
	Midnight to 7am	Must not exceed RBL* in each octave-band

* Provision (5) specifies that RBL is the background L_{Z90} level for 31.5 Hz to 4 kHz octave-bands for 7am to 10pm, 10pm to midnight, midnight to 3am, and 3am to 8am, measured in accordance with Fact Sheet B of NPfI.

Table 20 CoS DCP Table 3.18.1-2: Internal sound criteria as measured inside any habitable room of the nearest sensitive receiver

Sensitive receiver	Time period	Sound criteria L_{Zeq} (15 minute)
Residential accommodation or serviced apartments	7am to midnight	Must not exceed L_{Z90} (15 minute) in each octave-band
	Midnight to 7am	Must not exceed 12dB below L_{Z90} (15 minute) or the threshold of audibility in each octave-band
Where the dwelling is inside the same building	7am to midnight	Must not exceed 3dB below L_{Z90} (15 minute) in each octave-band
	Midnight to 7am	Must not exceed 12dB below L_{Z90} (15 minute) or the threshold of audibility in each octave-band

Table 21 CoS DCP Table 3.18.1-3: Threshold of audibility by octave-band

Octave-band	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz
L_{Zeq}	51 dB	32 dB	18 dB	9 dB	3 dB

Section 3.18.1.2 of the DCP is for development of residential receivers that are currently or may be affected by entertainment sound, including new residential development, and conversions and additions that include residential components. The Draft DCP Entertainment Sound Management Maps shows the extent to which the criteria apply. Table 3.18.1-4 (reproduced in Table 22) sets out the internal criteria, which should be met for the loudest 1 hour of existing entertainment noise, or the minimum planned noise level in Table 3.18.1-6 (reproduced in Table 23) if the existing entertainment noise is lower.

Table 22 CoS DCP Table 3.18.1-4: Internal criteria for entertainment sound with reference dBA equivalent from Table 3.18.1-5

Residential accommodation									
Octave-band Centre Frequency dB									
L _{Zeq} (15 minute)									
Bedrooms									
Octave-band	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	dBA*
7am to midnight	60	50	39	30	25	20	15	13	30
Midnight to 7am	53	43	32	23	18	13	8	6	23
Other living areas									
Octave-band	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	dBA*
7am to midnight	65	55	44	35	30	25	20	18	35
Midnight to 7am	55	48	37	28	23	18	13	11	28

* dBA value for reference only

Table 23 CoS DCP Table 3.18.1-6: Minimum planned external entertainment noise spectrum

Octave-band	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	dBA*
L _{Zeq}	69	63	53	49	47	44	42	45	51

* dBA value for reference only

B.2 NSW Liquor and Gaming (L&GNSW) LA10 noise criteria

Any premises that serves or sells alcohol is required to have a liquor licence, which is issued and regulated by Liquor & Gaming NSW (L&GNSW). Liquor licences contain a range of conditions that must be upheld whilst alcohol is being served and consumed. Conditions cover a range of matters including but not limited to security requirements, licencing boundaries, noise restrictions and hours of operation.

When a venue is subject to formal statutory disturbance complaints under the Liquor Act 2007, L&GNSW will investigate and publish a decision, and possible outcomes include “imposing licence conditions on the venue’s liquor licence, such as a requirement to comply with the LA10 noise criteria.”

The standard wording of the LA10 noise criteria is as follows, which may be imposed on liquor licences by L&GNSW directly or with modifications:

The LA10 noise level emitted from the licensed premises shall not exceed the background noise level (LA90) in any Octave-band Centre Frequency (31.5Hz – 8kHz inclusive) by more than 5dB between 07:00am and 12:00 midnight at the boundary of any affected residence.*

The LA10 noise level emitted from the licensed premises shall not exceed the background noise level (LA90) in any Octave-band Centre Frequency (31.5Hz – 8kHz inclusive) between 12:00 midnight and 07:00am at the boundary of any affected residence.*

**Notwithstanding compliance with the above, the noise from the licensed premises shall not be audible within any habitable room in any residential premises between the hours of 12:00 midnight and 07:00am.*

The applicable criteria are summarised in Table 24.

Table 24 Liquor and Gaming LA10 criteria

Assessment location	Time period	Sound criteria L_{Z10}
Boundary of any affected residence	7am to midnight	Must not exceed 5dB above background noise* in each octave-band
	Midnight to 7am	Must not exceed background noise* in each octave-band
Within any habitable room in any residence	Midnight to 7am	Inaudibility

* 31.5 Hz to 8 kHz inclusive

B.3 NSW EPA Noise Policy for Industry (NPfI)

The NSW EPA Noise Policy for Industry 2017 (NPfI) provides guidance on methodology for determining limiting noise criteria for external noise emissions from industrial-type noise associated with a development. While entertainment noise (music and patron) from licensed premises has been excluded from the policy, the CoS DCP references Fact Sheet B of the NPfI for measuring the Rating Background Noise Level (RBL).

The NPfI time periods are defined as day (7am to 6pm Monday to Saturday, 8am to 6pm Sundays and public holidays), evening (6pm to 10pm), and night (remaining periods).

The method in NPfI Fact Sheet B calculates the 10th percentile of $L_{A90(15\text{ minute})}$ within each assessment period on each day, and then takes median of the same period on each day. It also requires that data affected by high wind or rainfall be excluded, and where number of excluded $L_{A90(15\text{ minute})}$ samples exceed 8, 2, or 4 for day, evening, or night, respectively, the whole period should be excluded, unless if it can be demonstrated that the affected samples are not within the expected “quieter” times of an assessment period.

The NPfI does not specify a standard method for determining the octave-band RBL, nor does it specify how many samples can be excluded before a whole period needs to be excluded when using non-NPfI time periods, such as those in the CoS DCP.

The NPfI also suggests that for residential receivers, when $L_{Aeq(15\text{ minute})}$ is greater than 40 dBA or RBL plus 5 dB, or when L_{Amax} is greater than 52 dBA or RBL plus 15 dB, sleep disturbance should be taken into consideration.

B.4 Inner West City Council SEP Management Plan (SEPMP)

The Inner West SEPs are the only SEPs currently in operation in NSW. There are currently seven SEPs within the Inner West local government area, and the Inner West Special Entertainment Precincts Management Plan (SEPMP) sets out the applicable criteria for all SEP areas. In the Inner West SEPMP, five Sound Category Areas (SCAs) are defined with different external sound criteria. The criteria for external noise define three time periods: Day/Evening (7am to 10pm), Early Night (10pm to midnight), and Late Night (midnight to 7am), and provides different criteria for weekends (Thursday 7am to Sunday 7am). The external sound criteria are summarized in Table 25.

Table 25 Inner West SEP external noise criteria

Sound Category Area (SCA)	Days of the week	Venue external assessment criteria, dBL _{eq} (15 minute)											
		Day / Evening (7am to 10pm)				Early Night (10pm to midnight)				Late Night (midnight to 7am)			
		dB(A)	Octave-band (Hz)			dB(A)	Octave-band (Hz)			dB(A)	Octave-band (Hz)		
			31.5	63	125		31.5	63	125		31.5	63	125
SCA 1: Main Road Frontages in High Traffic / Activation Areas	Sun 7am to Thurs 7am	65	69	68	66	60	64	63	61	55	59	58	56
	Thurs 7am to Sun 7am	65	69	68	66	65	69	68	66	60	64	63	61
SCA 2: Street Frontages in Moderate Traffic / Activation Areas	Sun 7am to Thurs 7am	60	64	63	61	55	59	58	56	50	54	50	46
	Thurs 7am to Sun 7am	65	69	68	66	60	64	63	61	55	59	58	56
SCA 3: Side streets and rear lanes close to the SEP interface	Sun 7am to Thurs 7am	55	59	58	56	50	54	50	46	45	54	50	46
	Thurs 7am to Sun 7am	55	59	58	56	55	59	58	56	50	54	50	46
SCA 4: All other areas	Sun 7am to Thurs 7am	50	54	50	46	50	54	50	46	45	54	50	46
	Thurs 7am to Sun 7am	55	59	58	56	50	54	50	46	45	54	50	46
SCA ET: Lane adjacent the Enmore Theatre	Sun 7am to Thurs 7am	65	69	68	66	60	64	63	61	50	54	50	46
	Thurs 7am to Sun 7am	65	69	68	66	65	69	68	66	50	54	50	46

It is noted that as the criteria are for cumulative noise levels, where a venue is adjoined by another venue, the noise targets below are to be reduced by 3dB(A) unless reporting demonstrates that cumulative noise emissions will not cause an exceedance of the criteria.

There are also fixed internal sound criteria for when receivers are attached to venues by a common wall or floor/ceiling.

Receiver	Period	Broadband dBL _{Aeq} (15 minute)	Octave-band centre frequency (Hz), dBZ		
			31.5	63	125
Residential accommodation - bedrooms	7am – 10pm	35	59	52	46
	10pm – 7am	30	54	47	41
Residential accommodation – other habitable rooms	7am – 10pm	35	59	52	46
	10pm – 7am	35	59	52	46
Tourist and visitor accommodation (bedrooms & sleeping areas)	7am – midnight	38	62	55	49
	Midnight – 7am	33	57	50	44
Information and education facilities	All times	35	59	52	46
Place of public worship	All times	38	62	55	49
Health services facility	7am – 10pm	40	64	57	51
	10pm – 7am (wards only)	35	59	52	46

We have also reviewed the NSW Special Entertainment Precinct Acoustic Toolkit, which provides example external and internal noise criteria in Table 3 and Table 4, and confirms that the Inner West SEPMP external criteria spectra match those in the SEP Acoustic Toolkit, and the internal criteria match those in the SEP Acoustic Toolkit, with the exception of the time period for education facilities and place of public worship (“all times” instead of “when in use”), and the absence of criteria for commercial premises. It was also noted in the SEP Acoustic Toolkit that the octave-band criteria have been derived by reference to the DEFRA studies. 31.5 Hz band based on 40 Hz 1/3 octave. 63 Hz and 125 Hz bands based on arithmetic average. Cumulative levels assume + 5 dB addition from single venue levels. Day time criteria and/or less sensitive uses include a further + 3-5 dB addition.

B.5 ISO 389-7:2019 Threshold of Hearing

ISO 389-7:2019 *Acoustics — Reference zero for the calibration of audiometric equipment Part 7: Reference threshold of hearing under free-field and diffuse-field listening conditions* is the ISO standard for threshold of hearing, and Table 1 of the standard provides the reference threshold of hearing for pure tones at each third-octave-band centre frequency. It is the level at which a person gives 50% of correct detection responses on repeated trials. While the threshold of hearing is for pure tone signals, Fastl and Baumgartner¹ reported that the threshold of hearing results given by pure tones and narrow bands of noise are almost identical. In addition, music signals, especially at low-frequencies, are usually tonal, and therefore we think that applying the pure tone threshold of hearing for music criteria is reasonable and valid.

Usually, audibility at low frequencies is controlled by threshold of hearing, while audibility at mid-to-high frequencies is controlled by background noise levels. Therefore, only the threshold of hearing curve below 315 Hz is shown here in

¹ Fastl, H., & Baumgartner, H. (1975). Hearing Thresholds for Sinus Tone or Narrow Band Noise. *Acustica*, 34(2), 111-114.

Table 26. The octave-band hearing threshold referenced in CoS DCP (Table 21) matches the lowest dB value (highest frequency) in the octave-band in ISO 389-7:2019 (marked **bold** in Table 26).

Table 26 ISO 389-7:2019 Reference thresholds of hearing under free-field listening condition at low frequencies (frontal incidence) (rounded to integer)

Frequency	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz
Reference threshold of hearing T_r dB	69	60	51	44	38	32	27	22	18	14	11	9

B.6 ISO 226:2023 Equal Loudness Contours

Human loudness perception is not linearly related to sound pressure level, and while the threshold of hearing at low frequencies are higher, once the threshold is reached, the perceived loudness increases faster with increased sound pressure level compared to mid to high frequencies. This should be taken into consideration when determining suitable noise criteria at different frequencies.

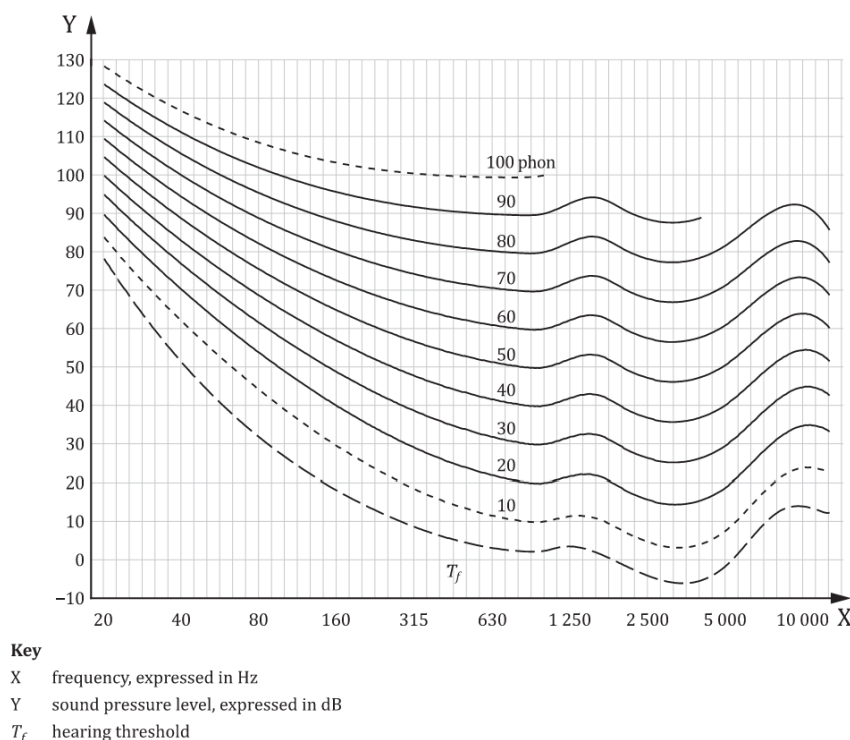
ISO 226:2023 *Acoustics — Normal equal-loudness-level contours* is the ISO standard for equal loudness contours at different loudness levels and frequencies. The loudness levels are presented in phons, and the value means that it has the same perceived loudness as a pure tone at 1000 Hz of the same sound pressure level value in dB. For example, a sound of 30 phon means that the sound is perceived as equally loud as a 30 dB 1000 Hz pure tone. Table B.1 of the standard provides the sound pressure level at each third-octave-band centre frequency of different loudness in phons, and part of it is reproduced in Table 27. This is illustrated in Figure 22, a reproduction of Figure A.1 of the standard.

Table 27 ISO 226:2023 Equal loudness contours of pure tones at low frequencies / low loudness (rounded to integer)

Loudness level, phon	Sound pressure level, dB / Frequency Hz											
	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz
10	76*	69*	62*	56*	60*	44*	39*	34*	29*	25*	22*	18*
20	83	76	70	64	59	53	49	44	40	37	32	29
30	89	83	77	71	66	61	57	53	48	45	41	38
40	94	88	83	78	73	68	64	60	57	53	50	48

* For information only.

Figure 22 ISO 226:2023 Figure A.1 Normal equal-loudness-level contours for pure tones (binaural, free-field listening, frontal incidence)



NOTE 1 The hearing threshold under free-field listening condition, T_f is indicated by a dashed line as defined in ISO 389-7[1].

NOTE 2 The contour at 10 phon is drawn by dotted lines because of the lack of experimental data between 20 phon and the hearing thresholds. Moreover, the 100-phon contour is also described by a dotted line because data from only one institute are available at this loudness level.

When comparing between 30 and 40 phon curves, there is a 5 dB difference at 31.5 Hz, 7 dB difference at 63 Hz and 125 Hz, and 9 dB difference at 250 Hz.

B.7 CoS DCP Entertainment Sound Study (Acoustic Directions & PKA)

Acoustic Directions and PKA Acoustic Consulting prepared a *DCP Entertainment Sound Study* (Issue v1.1, Report ref.: 240927 DCPEntSnd v1.1) for the City of Sydney as part of the basis for the current entertainment sound criteria in the CoS DCP. The study is comprehensive and extensive. It discussed various issues relating to the acceptability of entertainment sound, and conducted subjective experiments along with measurements to determine a suitable level of acceptable entertainment sound as the DCP criteria.

In particular, Section 3.6 of the report described a subjective listening test to determine a suitable objective equivalent to the L&GNSW post-midnight inaudibility criteria, and has concluded that $L_{eq} \leq L_{90} - 12$ dB is a suitable equivalent. This has formed the basis for CoS DCP post-midnight internal entertainment noise criteria.

However, we also note that the CoS DCP internal entertainment noise criteria for new residential development is based on the recommendations in the Sound Study based on an internal ambient noise level of 35 dBA, which would be provided by masking and other sources. In reality, most residential premises do not have masking system and when there is no air-conditioning or other types of internal mechanical sources to provide the ambient level, the internal ambient noise level may be much lower, in the order of 20–25 dBA. This means that internal entertainment noise levels will also need to be much lower than the CoS DCP criteria in order to provide inaudibility.

B.8 Defra study (Moorhouse, Waddington, & Adams)

Moorhouse, Waddington and Adams prepared a *Proposed criteria for the assessment of low frequency noise disturbance* (Revision 1, December 2011, Contract no.: NANR45). The report summarized a range of field studies and laboratory tests, and proposed a reference curve for low-frequency noise L_{eq} , that if exceeded may cause disturbance. The curve is reproduced in Table 28.

It also specifies that if the noise occurs during the day, or if the noise is steady, then a 5dB relaxation may be applied to all third octave-bands.

In addition, in the introduction section of the report, it stated that “the guidance is intended to cover low frequency noise from industrial, commercial and domestic sources, in particular rotating machinery but also including for example combustion noise and turbulence. Music noise is not included.”

Table 28 Proposed reference curve from Defra study

Frequency	10 Hz	12.5 Hz	16 Hz	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz
dB, L_{eq}	92	87	83	74	64	56	49	43	42	40	38	36	34

While the Inner West SEPMP and NSW SEP Acoustic Toolkit internal low-frequency criteria are based on the Defra reference curve, they added 5 dB to the reference curve values for cumulative levels.

Appendix C Summary of publicly available noise monitoring results

Precinct	Address	Year	RBL			Ambient L _{Aeq}			Source
			Day	Eve	Night	Day	Eve	Night	
Broadway	2 Lee St, Haymarket	2022	61	59	54	64	63	59	Toga Central RTA
Broadway	2 Lee St, Haymarket	2022	56	55	53	59	58	55	Toga Central RTA
Broadway	61 Broadway, Ultimo	2015	58	57	53	68	67	62	UTS Central ACS
Broadway	61 Broadway, Ultimo	2015	56	56	53	58	57	55	UTS Central ACS
Central Sydney	140 Elizabeth St, Sydney	2025	64	60	54	-	-	-	140 Elizabeth Street Sydney RWDI
Central Sydney	140 Elizabeth Street, Sydney	2025	60	56	53	-	-	-	140 Elizabeth Street Sydney RWDI
Central Sydney	201 Elizabeth St, Sydney	2024	63	58	54	72	71	68	201 Elizabeth St PWNA
Central Sydney	40 Lime St, Sydney	2025	60	60	51	64	63	57	25-55 Lime Street Sydney Norrebro
Central Sydney	85 Harrington St, The Rocks	2015	56	54	48	65	58	53	85 Harrington St, The Rocks ACS
Central Sydney	21 Playfair St, Sydney	2023	52	50	45	60	53	49	Argyle Terrace Courtyard Upgrade Resonate
Central Sydney	7 Atherden St, The Rocks	2023	52	50	45	60	53	49	Argyle Terrace Courtyard Upgrade Resonate
Central Sydney	1 Sussex St, Barangaroo	2024	62	59	50	70	70	68	Barangaroo EOT Facility NDY
Central Sydney	277 Pyrmont Street, Ultimo	2024	58	56	50	62	62	57	HDI SYD1 Data Centre PWNA
Central Sydney	500 Harris St, Ultimo	2022	49	49	44	55	54	50	Powerhouse Ultimo RWDI

Precinct	Address	Year	RBL			Ambient L _{Aeq}			Source
			Day	Eve	Night	Day	Eve	Night	
Central Sydney	84 Mary Ann St, Haymarket	2022	47	50	45	57	56	52	Powerhouse Ultimo RWDI
Central Sydney	33-55 Harrington St, The Rocks	2022	56	56	55	66	64	63	Quincy Hotel PWNA
Central Sydney	Cambridge Street	2022	54	53	51	57	55	54	Quincy Hotel PWNA
Central Sydney	199 George St, Sydney	2013	63	62	57	69	67	65	Sydney Light Rail SLR
Central Sydney	255&269 Pitt Street, Sydney	2013	64	62	56	73	71	68	Sydney Light Rail SLR
Central Sydney	8/10 Lee Street, Sydney 2000	2015	51	50	49	65	64	62	Sydney Metro SLR
Central Sydney	1 Hoskings Place, Sydney	2015	61	56	52	66	62	63	Sydney Metro SLR
Central Sydney	26A High Street, Millers Point	2015	50	45	40	61	64	51	Sydney Metro SLR
Central Sydney	812 George St, Haymarket	2009	58	56	52	70	69	66	Sydney Metro SLR
Central Sydney	260 Pitt St, Sydney	2009	66	64	61	71	70	68	Sydney Metro SLR
Central Sydney	1E Macquarie St, Sydney	2016	59	59	48	64	62	57	Sydney Opera House Arup
Chippendale	16 Vine St, Redfern	2024	47	45	41	57	56	51	16 Vine St, Redfern PWNA
Darlinghurst	56 Oxford St, Darlinghurst	2025	54	52	44	64	58	53	56-62 Oxford Street Darlinghurst Acoustic Dynamics
Erskineville	43 Burren Street, Erskineville	2015	46	42	39	65	64	50	Sydney Metro SLR
Glebe	375 Glebe Point Rd, Glebe	2025	50	50	40	-	-	-	375 Glebe Point Rd, Glebe VMS

Precinct	Address	Year	RBL			Ambient L _{Aeq}			Source
			Day	Eve	Night	Day	Eve	Night	
Green Square	28 Bourke Rd, Alexandria	2022	52	45	39	68	66	62	Alexandria Health Centre ACOR
Kings Cross	1 Boomerang Pl, Woolloomooloo	2018	50	48	44	57	55	51	Australia Museum Addition EMM
Kings Cross	184 Forbes St, Darlinghurst	2018	50	49	47	55	55	53	SCEGGS Darlinghurst WM
Newtown	212 King St, Newtown	2025	56	57	53	62	61	58	212-214 King Street Newtown MAC
Newtown	46 Dickson Street, Newtown	2015	47	47	47	61	59	53	Sydney Metro SLR
Newtown	87 Darlington Road, Darlington	2015	49	47	43	63	57	53	Sydney Metro SLR
North Alexandria	107 McEvoy St, Alexandria	2023	59	55	52	71	66	63	76 McEvoy Street Alexandria GHD
North Alexandria	Alexandria Park Community School	2017	46	43	37	60	50	45	Alexandria Park Community School WM
Paddington	17 Oxford St, Paddington	2023	57	50	47	67	65	64	17 Oxford St, Paddington RTA
Paddington	17 Oxford St, Paddington	2023	53	53	50	55	55	52	17 Oxford St, Paddington RTA
Paddington	43 Stewart Street, Paddington	2018	43	41	37	57	55	49	Sydney Football Stadium Redevelopment Arup
Pymont	96 Bank St, Pymont	2023	61	59	54	66	63	61	Bank Street Park Stantec
Pymont	1 Distillery Dr, Pymont	2023	57	54	45	60	58	55	Bank Street Park Stantec
Pymont	31-35 Bank Street, Pymont	2018	66	64	60	71	68	65	Fish Market SLR

Precinct	Address	Year	RBL			Ambient L _{Aeq}			Source
			Day	Eve	Night	Day	Eve	Night	
Pymont	132 Bank Street, Pymont	2018	70	70	61	75	74	70	Fish Market SLR
Pymont	Unit 217, 1 Wattle Crescent, Pymont	2018	62	57	50	71	68	64	Fish Market SLR
Pymont	Sydney Secondary College, Taylor St, Glebe	2018	55	54	49	58	56	52	Fish Market SLR
Pymont	6/82 Wentworth Park Road, Glebe	2018	54	50	42	67	64	58	Fish Market SLR
Pymont	56A Pirrama Rd, Pymont	2014	51	46	41	56	52	47	Sydney Metro SLR
Pymont	1-5 Harwood St, Pymont	2019	52	49	46	61	59	56	Sydney Metro West SLR
Pymont	200 Paternoster Row, Pymont	2021	50	47	45	56	50	47	Sydney Metro West SLR
Pymont	203/38 Refinery Drive, Pymont	2017	48	45	44	52	49	48	Western Harbour Tunnel RTA
Redfern	100 Botany Rd, Alexandria	2024	60	56	46	69	68	66	100 Botany Rd Alexandria RTA
Redfern	100 Botany Rd, Alexandria	2024	52	48	41	65	66	62	100 Botany Rd, Alexandria RTA
Redfern	William Lane, Redfern	2020	53	49	45	59	55	51	90-102 Regent Street Redfern Northrop
Redfern	1-9 Marian St, Redfern	2019	53	51	39	61	58	57	Redfern Station Upgrade AECOM
Redfern	52 Cope Street, Redfern	2019	44	44	37	53	54	48	Redfern Station Upgrade AECOM
Redfern	122 Wellington Street, Waterloo	2015	54	47	39	65	62	58	Sydney Metro SLR
Redfern	119 Botany Rd, Waterloo	2020	54	48	41	72	73	67	Waterloo Metro Quarter Stantec
South Eveleigh	13 Garden St, Eveleigh	2017	51	46	42	60	55	53	ATP Locomotive

Precinct	Address	Year	RBL			Ambient L _{Aeq}			Source
			Day	Eve	Night	Day	Eve	Night	
									Workshops Arup
Surry Hills	612 Crown St, Surry Hills	2024	52	57	46	60	59	56	612 Crown St, Surry Hills ANAVS
Surry Hills	102 Kippax St, Surry Hills	2024	50	49	47	56	53	50	98-106 Kippax Street Surry Hills PWNA
Surry Hills	188 Chalmers St, Surry Hills	2017	56	53	46	69	66	64	Inner Sydney High School ACS
Surry Hills	40 Baptist St, Redfern	2018	48	45	41	58	55	51	Surry Hills Shopping Village RTA
Surry Hills	399 Cleveland St, Redfern	2018	62	59	52	69	68	66	Surry Hills Shopping Village RTA
Surry Hills	158 Devonshire Street, Surry Hills	2013	53	51	47	63	62	59	Sydney Light Rail SLR
Surry Hills	44 Parkham Street, Surry Hills	2013	44	43	39	60	52	46	Sydney Light Rail SLR
Surry Hills	101 Chalmers Street, Chippendale	2015	56	53	45	68	66	64	Sydney Metro SLR
Walsh Bay	22 Merriman Street, Millers Point	2022	51	50	42	60	54	50	Barangaroo Cutaway Arup
Walsh Bay	2-60 Cumberland St, The Rocks	2015	62	62	52	66	65	63	Sydney Metro SLR
Woolloomooloo	31 Nicholson St, Woolloomooloo	2016	51	51	45	63	61	56	Sydney Opera House Arup

Appendix D Long-term noise monitoring details

Table 29 lists the details of all long-term noise loggers, including details of the location, the equipment, and the monitoring period. The sub-sections in this appendix provides more details on each individual noise logger location.

Table 29 Long-term noise monitoring details

#	Location	Location description	Logger model	Logger serial no.	Installation date	Removal date
1	Central Sydney - Wynyard	Street pole on George St near Wynyard light rail station	SV307A	157201	13/10/2025	31/10/2025
2	Central Sydney - King St Wharf	Street pole on Lime St near 25 Lime St	SV307A	137601	31/10/2025	12/11/2025
3	Central Sydney - Town Hall	Town Hall balcony facing Druiitt St	Svan 977C	92622	29/10/2025	12/11/2025
4	Chippendale	Light pole in Chippendale Green near 1 Park Ln	SV307A	157204	13/10/2025	31/10/2025
5	Darlinghurst	Street pole on Brisbane St near 21 Brisbane St	SV307A	137619	13/10/2025	30/10/2025
6	Erskineville	Light pole in Maureen Oliver Reserve near 6 John St	SV307A	137607	24/10/2025	7/11/2025
7	Glebe	Light pole in Dr H J Foley Rest Park near 75 St Johns Rd	SV307A	137620	13/10/2025	31/10/2025
8	Kings Cross	Light pole in Lawrence Hargrave Reserve near 2 Ward Ave	SV307A	157201	31/10/2025	12/11/2025
9	Newtown - King St north	Street pole on Longdown St near 69 Campbell St	SV307A	131864	24/10/2025	7/11/2025
10	Newtown - King St south	Street pole on Rochford St near 201 Rochford St	SV307A	160750	24/10/2025	7/11/2025
11	Redfern	Street pole on Turner St near 42-50 Turner St	SV307A	157296	24/10/2025	7/11/2025
12	Surry Hills - Crown St	Backyard of 14 Rainford St facing Collins Ln	Svan 977	92622	13/10/2025	28/10/2025
13	Surry Hills - Hollywood Quarter	Street pole on Commonwealth St near 113 Commonwealth St	SV307A	137619 / 157296 ¹	30/10/2025	12/11/2025
14	The Rocks	Street pole on Gloucester St near 64 Gloucester St	SV307A	157204	31/10/2025	12/11/2025
15	Walsh Bay	Street pole on Pottinger St near 39-41 Lower Fort St / Windmill St near 1 Pottinger St ²	SV307A	137601	13/10/2025	31/10/2025
16	Woolloomooloo	Street pole on Lincoln Cres near 10 Lincoln Cres	SV307A	137620	31/10/2025	12/11/2025
17	Newtown - Iredale St ³	Footpath on Iredale St near 16 Iredale St	Svan 977C	98818	8/09/2025	17/09/2025

¹ Logger unit changed on 7/11 due to error in remote connection

² Logger relocated on 20/10 due to construction noise affecting first location during weekday day periods

³ Additional logger for one week period to capture an identified potential outlier location with very low background noise

D.1 Central Sydney – Wynyard

Figure 23 Logger location zoomed: Central Sydney – Wynyard

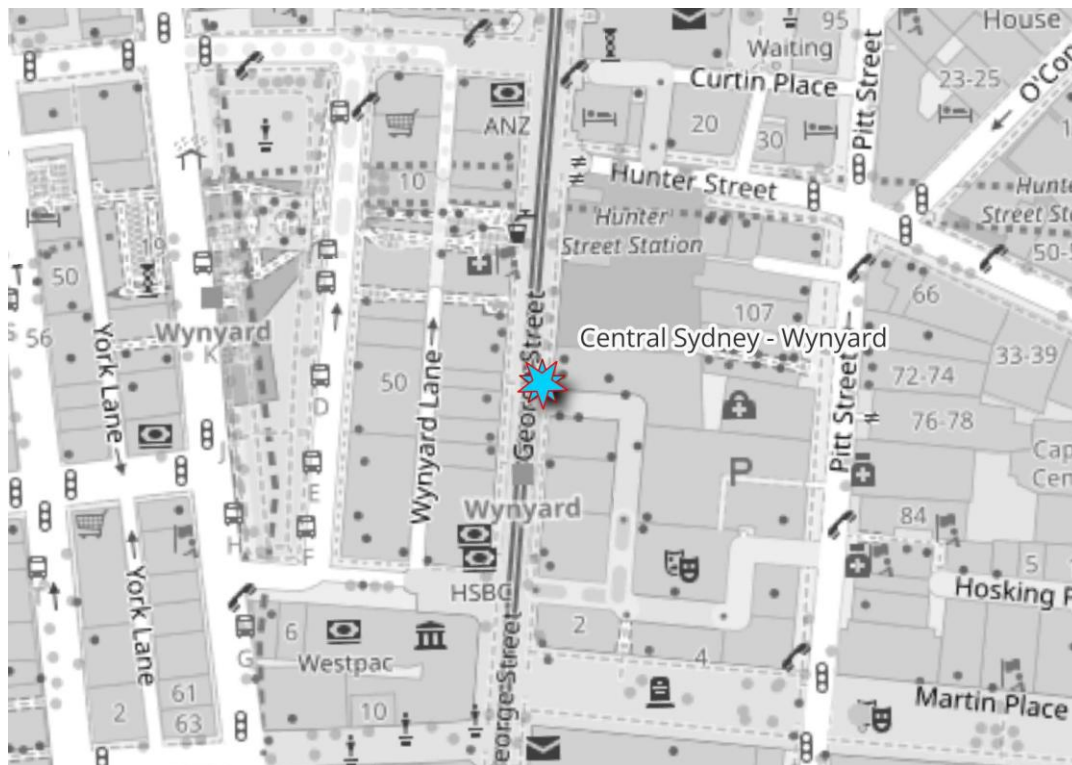


Figure 24 Logger photo: Central Sydney – Wynyard



Table 30 Broadband RBL and L_{Aeq} : Central Sydney – Wynyard

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm–Thu 6pm)	Weekends (Thu 6pm–Sun 6pm)	All days	Weekdays (Sun 6pm–Thu 6pm)	Weekends (Thu 6pm–Sun 6pm)
Day (7am–6pm)	64	64	61	72	72	70
Evening (6pm–10pm)	71	67	72	76	73	78
Early Night (10pm–midnight)	66	65	76	78	73	80
Late Night (midnight–7am)	54	54	54	72	65	75

Table 31 Octave-band RBL: Central Sydney – Wynyard

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	62	65	65	64	61	59	56	51	45
Evening	61	68	69	67	69	67	63	58	52
Early Night	60	67	67	64	64	61	58	54	49
Late Night	55	55	55	54	51	49	43	41	31

D.2 Central Sydney - King St Wharf

Figure 25 Logger location zoomed: Central Sydney - King St Wharf

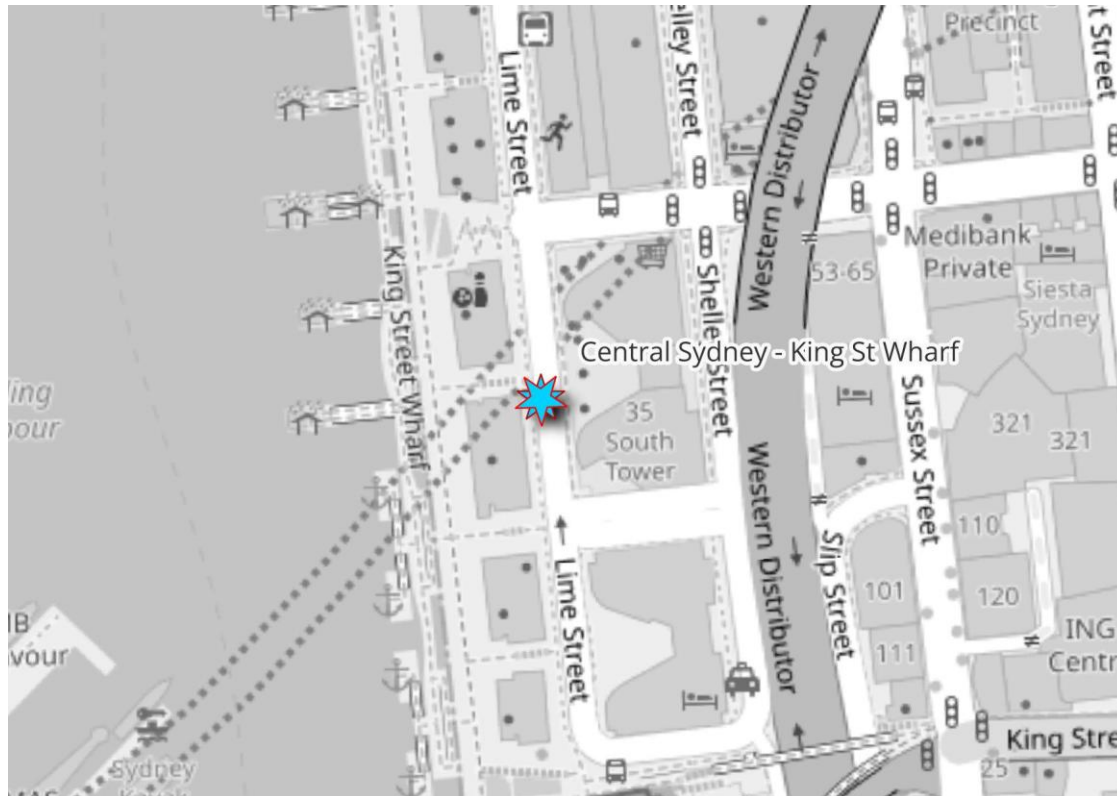


Figure 26 Logger photo: Central Sydney - King St Wharf



Table 32 Broadband RBL and L_{Aeq} : Central Sydney - King St Wharf

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)
Day (7am-6pm)	57	56	57	71	65	72
Evening (6pm-10pm)	57	57	60	68	66	71
Early Night (10pm-midnight)	53	52	60	69	63	73
Late Night (midnight-7am)	49	49	51	62	60	64

Table 33 Octave-band RBL: Central Sydney - King St Wharf

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	60	59	59	57	53	53	48	41	32
Evening	63	63	60	57	54	53	48	41	33
Early Night	61	59	57	54	50	48	43	38	32
Late Night	54	53	54	51	47	43	40	37	31

D.3 Central Sydney - Town Hall

Figure 27 Logger location zoomed: Central Sydney - Town Hall

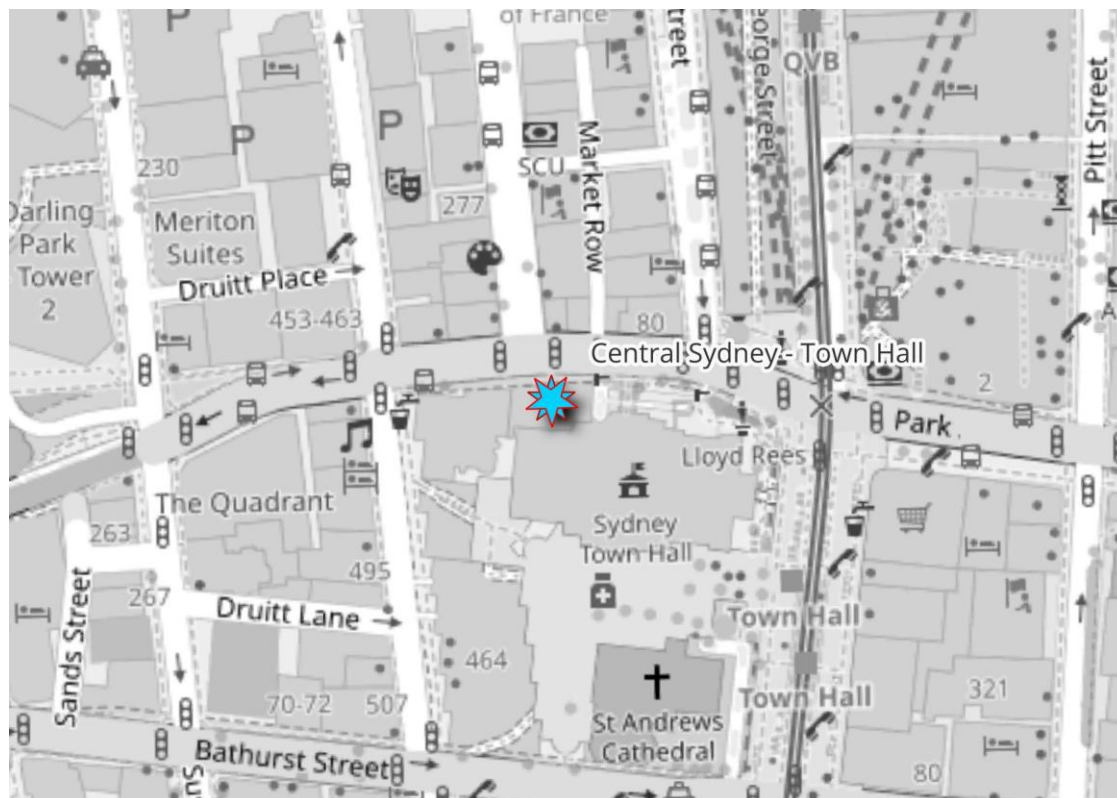


Figure 28 Logger photo: Central Sydney - Town Hall



Table 34 Broadband RBL and L_{Aeq} : Central Sydney - Town Hall

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)
Day (7am-6pm)	62	62	60	69	70	68
Evening (6pm-10pm)	60	60	62	67	67	68
Early Night (10pm-midnight)	59	58	63	67	66	68
Late Night (midnight-7am)	54	54	55	64	64	65

Table 35 Octave-band RBL: Central Sydney - Town Hall

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	65	64	62	61	59	57	53	46	38
Evening	62	62	61	59	58	56	51	45	42
Early Night	60	61	60	58	56	55	50	45	40
Late Night	55	55	56	54	52	49	44	39	33

D.4 Chippendale

Figure 29 Logger location zoomed: Chippendale

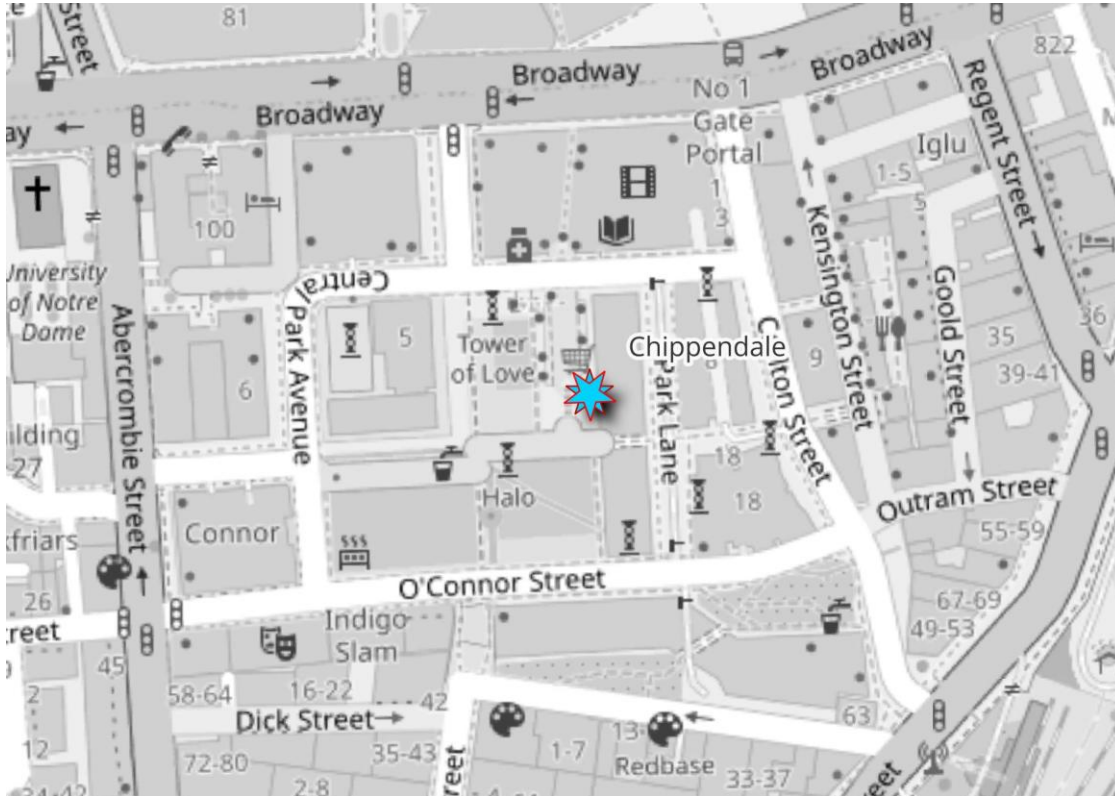


Figure 30 Logger photo: Chippendale



Table 36 Broadband RBL and L_{Aeq} : Chippendale

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)
Day (7am-6pm)	53	53	51	59	59	58
Evening (6pm-10pm)	52	53	52	59	59	58
Early Night (10pm-midnight)	50	49	50	55	54	55
Late Night (midnight-7am)	48	48	48	52	52	52

Table 37 Octave-band RBL: Chippendale

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	57	56	55	53	50	48	43	36	29
Evening	56	54	53	52	50	48	43	37	29
Early Night	51	51	51	51	47	45	40	33	27
Late Night	48	49	50	50	45	43	37	30	26

D.5 Darlinghurst

Figure 31 Logger location zoomed: Darlinghurst

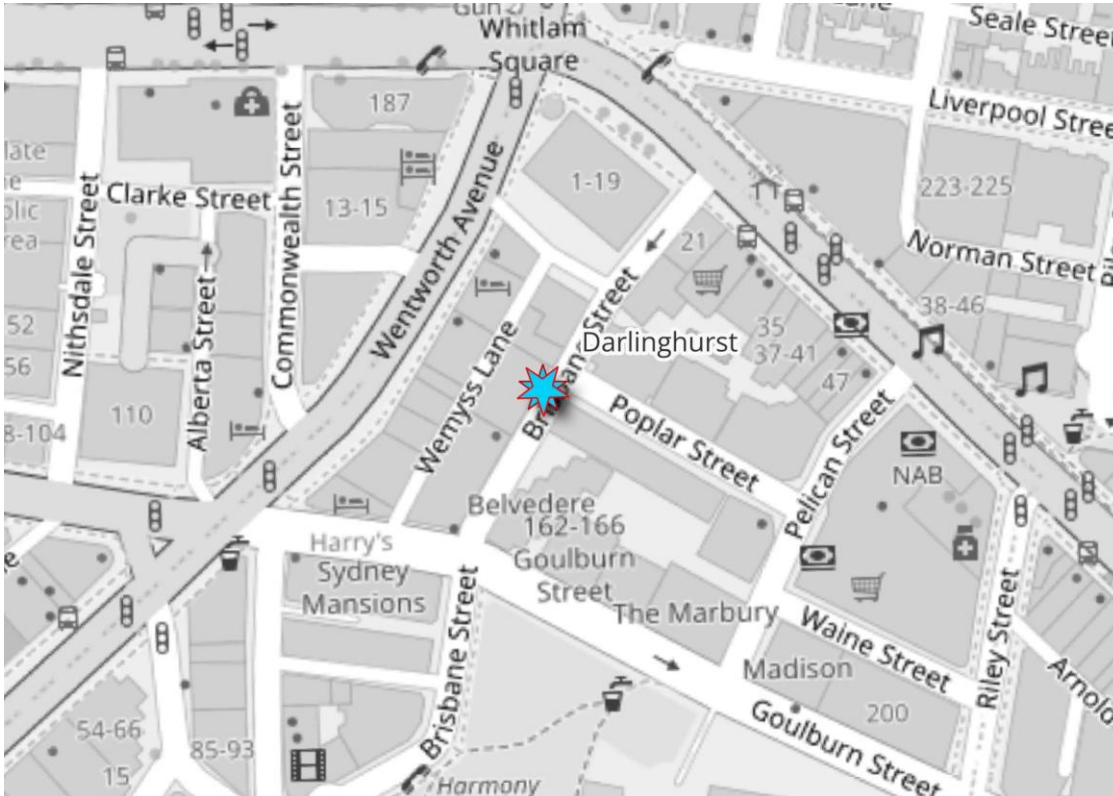


Figure 32 Logger photo: Darlinghurst



Table 38 Broadband RBL and L_{Aeq} : Darlinghurst

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)
Day (7am-6pm)	53	53	52	60	60	60
Evening (6pm-10pm)	52	52	52	57	57	58
Early Night (10pm-midnight)	51	50	52	59	54	62
Late Night (midnight-7am)	50	49	50	56	54	57

Table 39 Octave-band RBL: Darlinghurst

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	57	55	56	54	51	48	43	37	30
Evening	55	54	55	53	50	47	41	36	30
Early Night	53	52	54	52	49	45	40	33	28
Late Night	52	50	54	52	48	44	38	31	26

D.6 Erskineville

Figure 33 Logger location zoomed: Erskineville

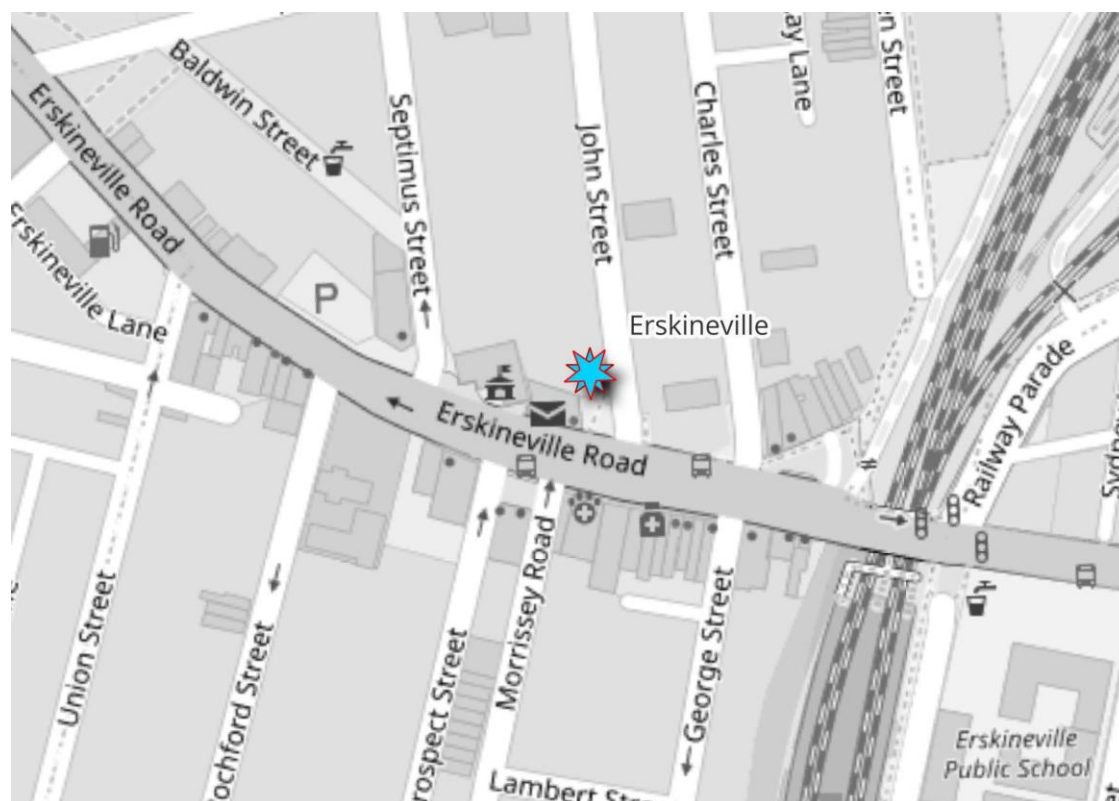


Figure 34 Logger photo: Erskineville



Table 40 Broadband RBL and L_{Aeq} : Erskineville

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)
Day (7am-6pm)	47	47	44	59	59	59
Evening (6pm-10pm)	46	45	48	56	56	57
Early Night (10pm-midnight)	40	39	42	53	52	54
Late Night (midnight-7am)	34	34	36	54	54	54

Table 41 Octave-band RBL: Erskineville

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	55	53	49	47	43	42	38	33	28
Evening	52	51	47	47	43	40	37	29	27
Early Night	47	47	43	42	37	34	30	26	26
Late Night	42	41	39	36	32	27	22	23	24

D.7 Glebe

Figure 35 Logger location zoomed: Glebe

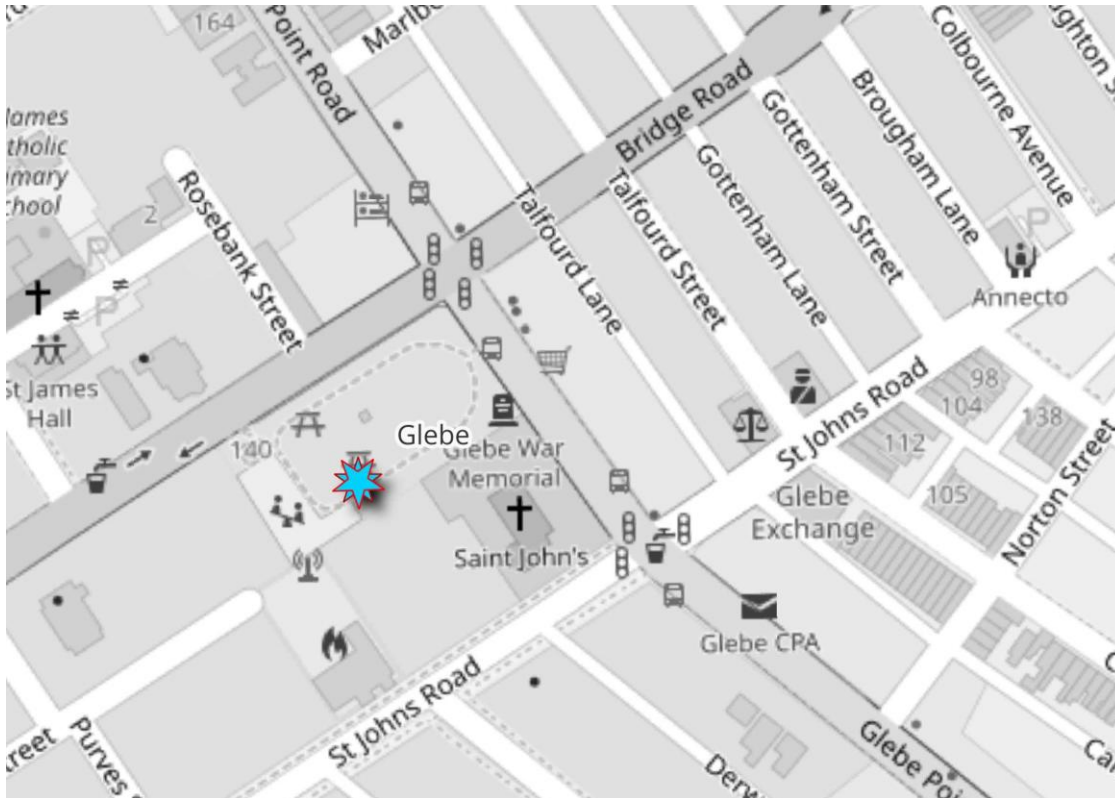


Figure 36 Logger photo: Glebe



Table 42 Broadband RBL and L_{Aeq} : Glebe

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)
Day (7am-6pm)	48	48	47	57	58	55
Evening (6pm-10pm)	46	46	46	55	56	55
Early Night (10pm-midnight)	42	42	43	51	50	51
Late Night (midnight-7am)	37	37	37	50	50	50

Table 43 Octave-band RBL: Glebe

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	60	57	50	46	44	44	40	34	28
Evening	55	54	49	45	43	42	37	30	28
Early Night	50	49	44	42	39	38	31	28	28
Late Night	46	45	41	38	35	31	25	24	25

D.8 Kings Cross

Figure 37 Logger location zoomed: Kings Cross

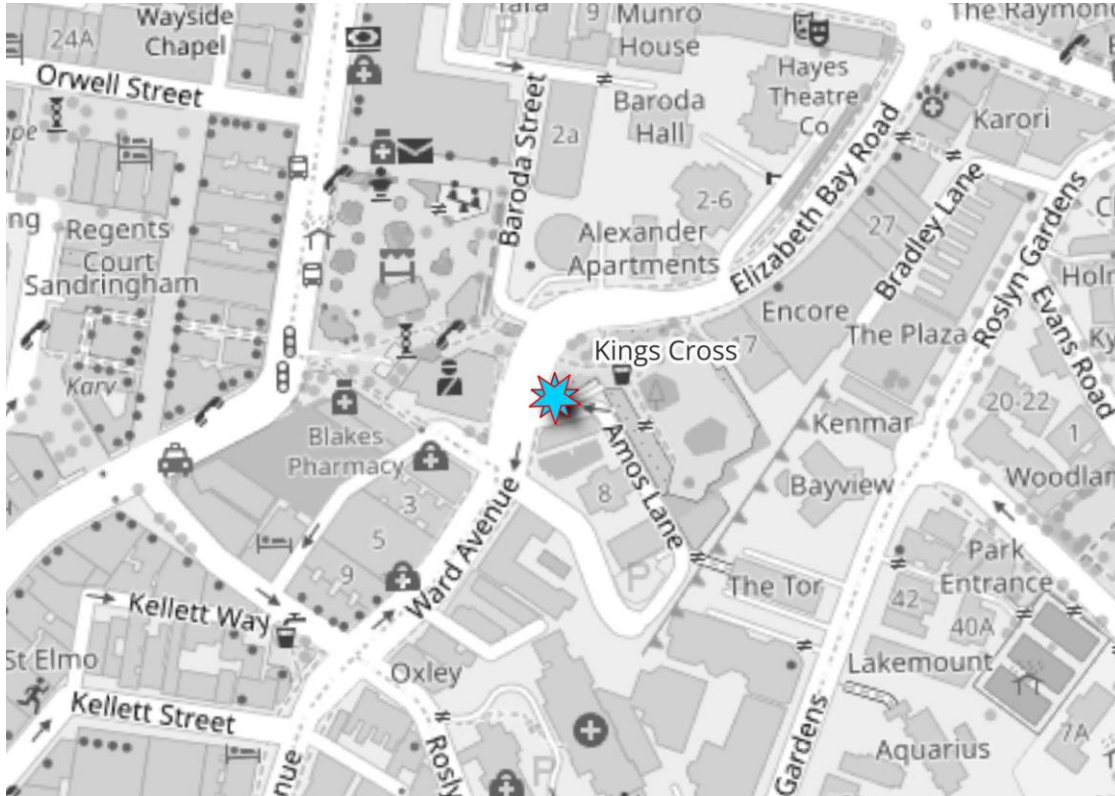


Figure 38 Logger photo: Kings Cross



Table 44 Broadband RBL and L_{Aeq} : Kings Cross

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)
Day (7am-6pm)	52	52	52	63	63	63
Evening (6pm-10pm)	48	48	53	59	58	61
Early Night (10pm-midnight)	44	44	46	57	56	58
Late Night (midnight-7am)	40	40	41	55	54	55

Table 45 Octave-band RBL: Kings Cross

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	60	57	53	51	48	47	44	39	33
Evening	54	53	50	48	44	43	41	36	32
Early Night	49	47	46	44	40	38	36	33	30
Late Night	46	45	45	42	37	34	28	27	25

D.9 Newtown – King St north

Figure 39 Logger location zoomed: Newtown – King St north

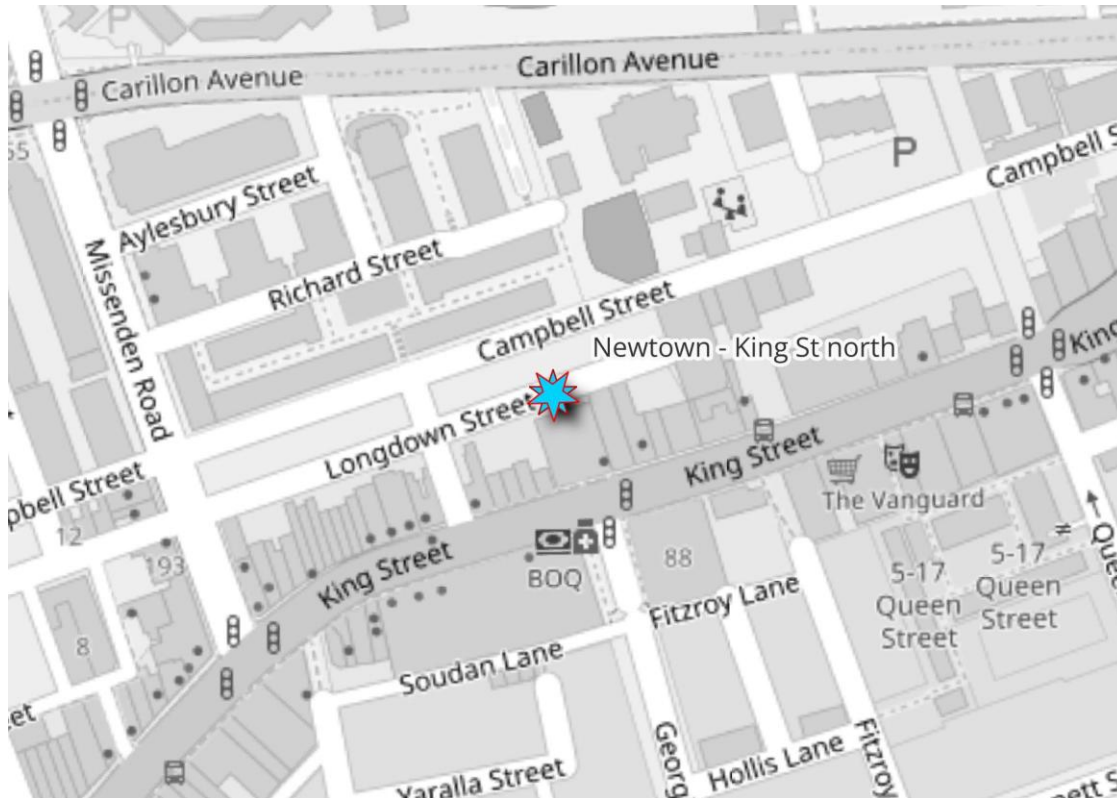


Figure 40 Logger photo: Newtown – King St north



Table 46 Broadband RBL and L_{Aeq} : Newtown - King St north

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)
Day (7am-6pm)	46	46	44	58	60	54
Evening (6pm-10pm)	48	48	48	54	53	55
Early Night (10pm-midnight)	44	43	45	53	55	51
Late Night (midnight-7am)	42	42	42	50	51	50

Table 47 Octave-band RBL: Newtown - King St north

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	55	52	49	46	43	41	37	31	27
Evening	54	52	54	50	45	41	38	33	27
Early Night	52	49	47	45	41	38	35	28	26
Late Night	49	46	44	42	39	37	32	26	25

D.10 Newtown - King St south

Figure 41 Logger location zoomed: Newtown - King St south

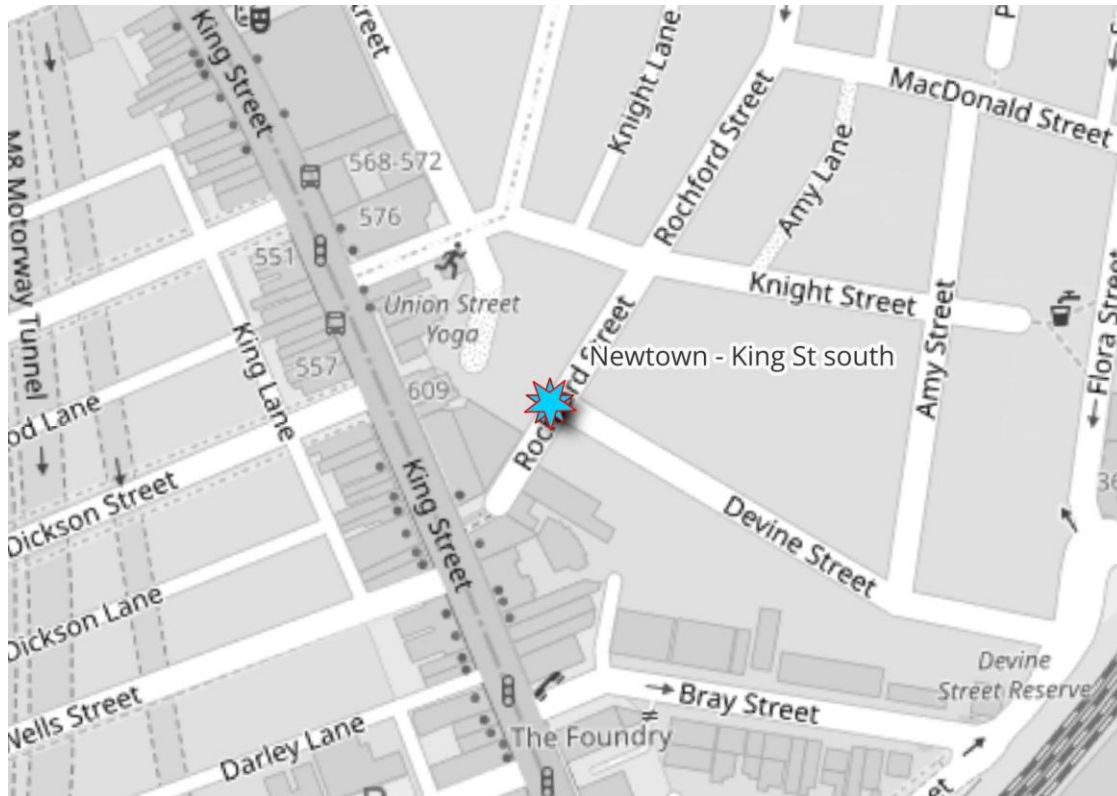


Figure 42 Logger photo: Newtown - King St south

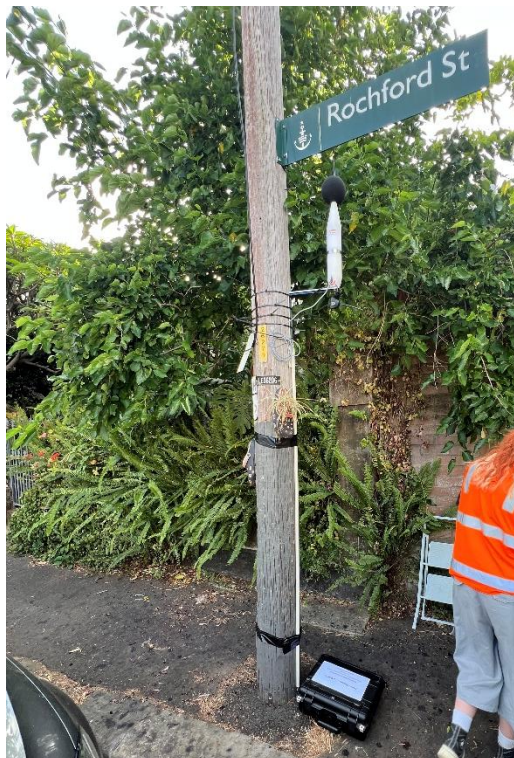


Table 48 Broadband RBL and L_{Aeq} : Newtown - King St south

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)
Day (7am-6pm)	41	42	39	57	58	55
Evening (6pm-10pm)	42	41	42	55	55	55
Early Night (10pm-midnight)	37	35	38	50	49	51
Late Night (midnight-7am)	31	30	32	47	47	46

Table 49 Octave-band RBL: Newtown - King St south

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	48	47	43	42	39	36	31	25	22
Evening	46	46	44	44	39	37	29	20	21
Early Night	42	41	40	38	35	32	26	18	20
Late Night	38	37	36	34	29	24	20	15	19

D.11 Redfern

Figure 43 Logger location zoomed: Redfern

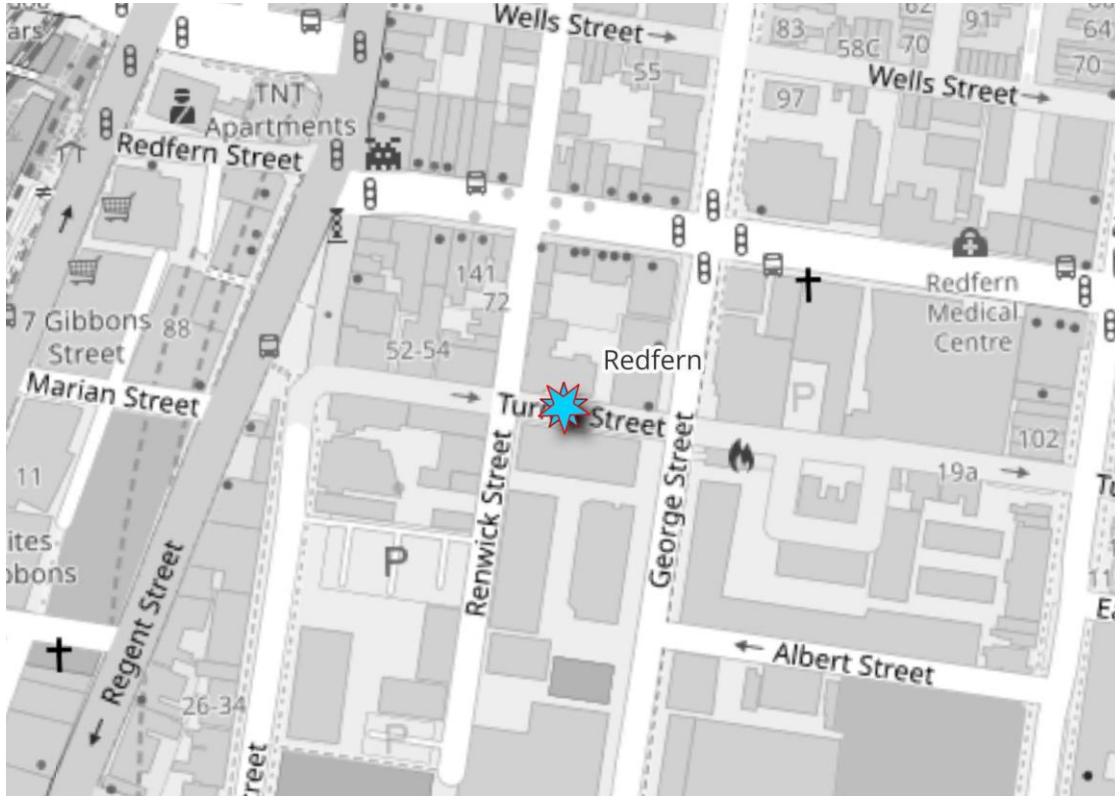


Figure 44 Logger photo: Redfern



Table 50 Broadband RBL and L_{Aeq} : Redfern

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm–Thu 6pm)	Weekends (Thu 6pm–Sun 6pm)	All days	Weekdays (Sun 6pm–Thu 6pm)	Weekends (Thu 6pm–Sun 6pm)
Day (7am–6pm)	48	48	47	59	61	57
Evening (6pm–10pm)	47	47	48	55	55	55
Early Night (10pm–midnight)	45	45	46	52	51	53
Late Night (midnight–7am)	44	45	44	51	52	51

Table 51 Octave-band RBL: Redfern

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	51	50	51	51	44	43	35	29	22
Evening	48	49	51	51	43	43	34	27	22
Early Night	45	46	49	50	41	40	31	24	20
Late Night	43	45	49	49	40	39	29	21	19

D.12 Surry Hills – Crown St

Figure 45 Logger location zoomed: Surry Hills – Crown St

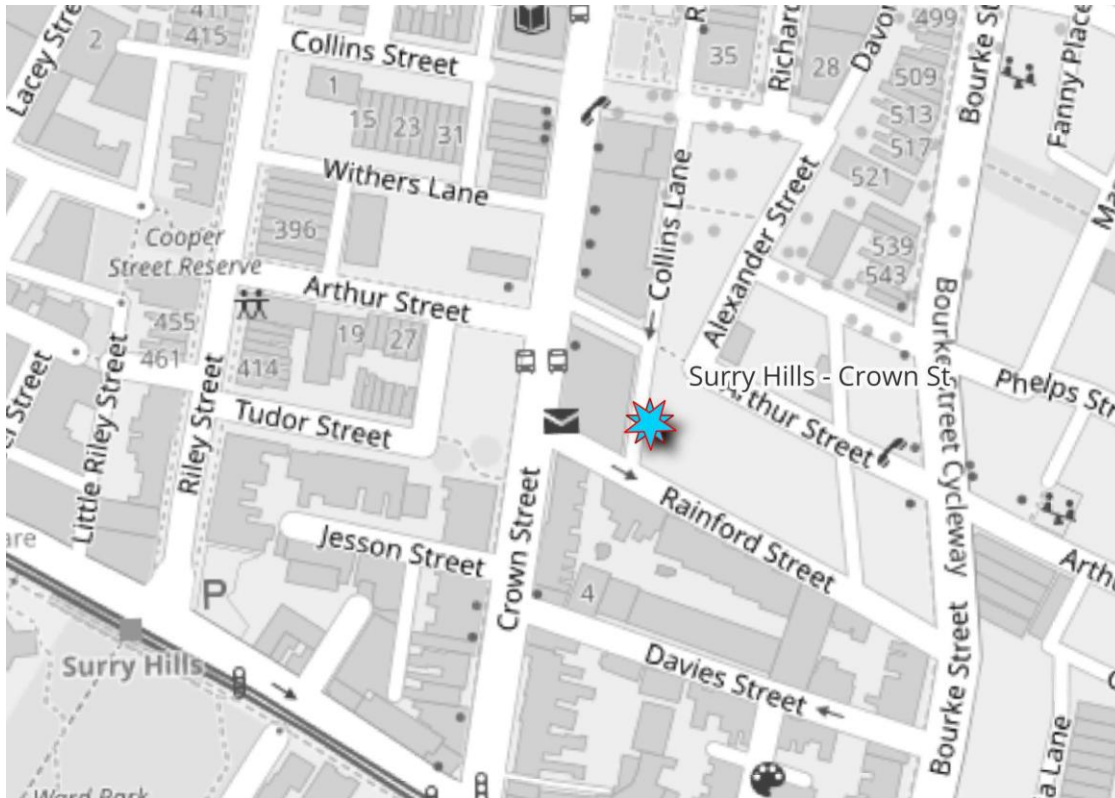


Figure 46 Logger photo: Surry Hills – Crown St

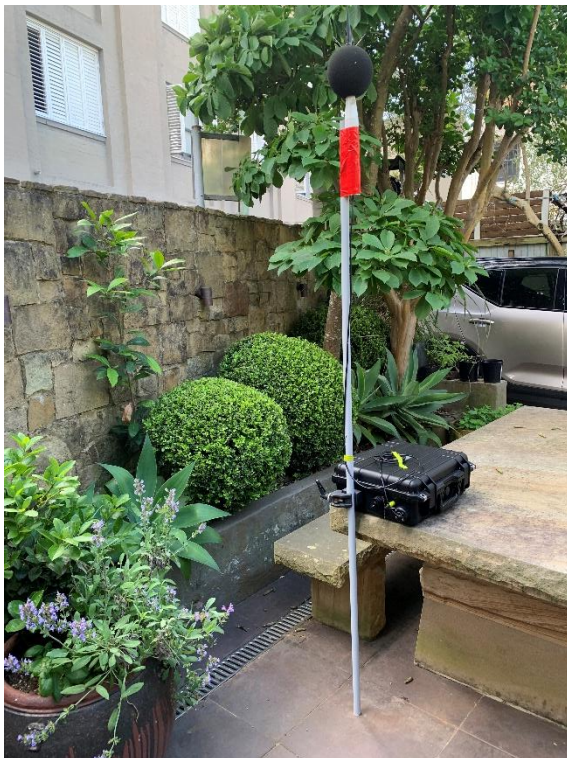


Table 52 Broadband RBL and L_{Aeq} : Surry Hills – Crown St

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm–Thu 6pm)	Weekends (Thu 6pm–Sun 6pm)	All days	Weekdays (Sun 6pm–Thu 6pm)	Weekends (Thu 6pm–Sun 6pm)
Day (7am–6pm)	42	44	40	57	57	57
Evening (6pm–10pm)	42	41	42	51	53	51
Early Night (10pm–midnight)	40	38	41	47	47	47
Late Night (midnight–7am)	34	34	35	46	47	46

Table 53 Octave-band RBL: Surry Hills – Crown St

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	51	49	46	43	39	36	33	29	24
Evening	50	48	45	42	40	37	32	26	22
Early Night	48	46	43	40	37	35	30	25	21
Late Night	46	41	39	36	31	29	25	20	18

D.13 Surry Hills - Hollywood Quarter

Figure 47 Logger location zoomed: Surry Hills - Hollywood Quarter

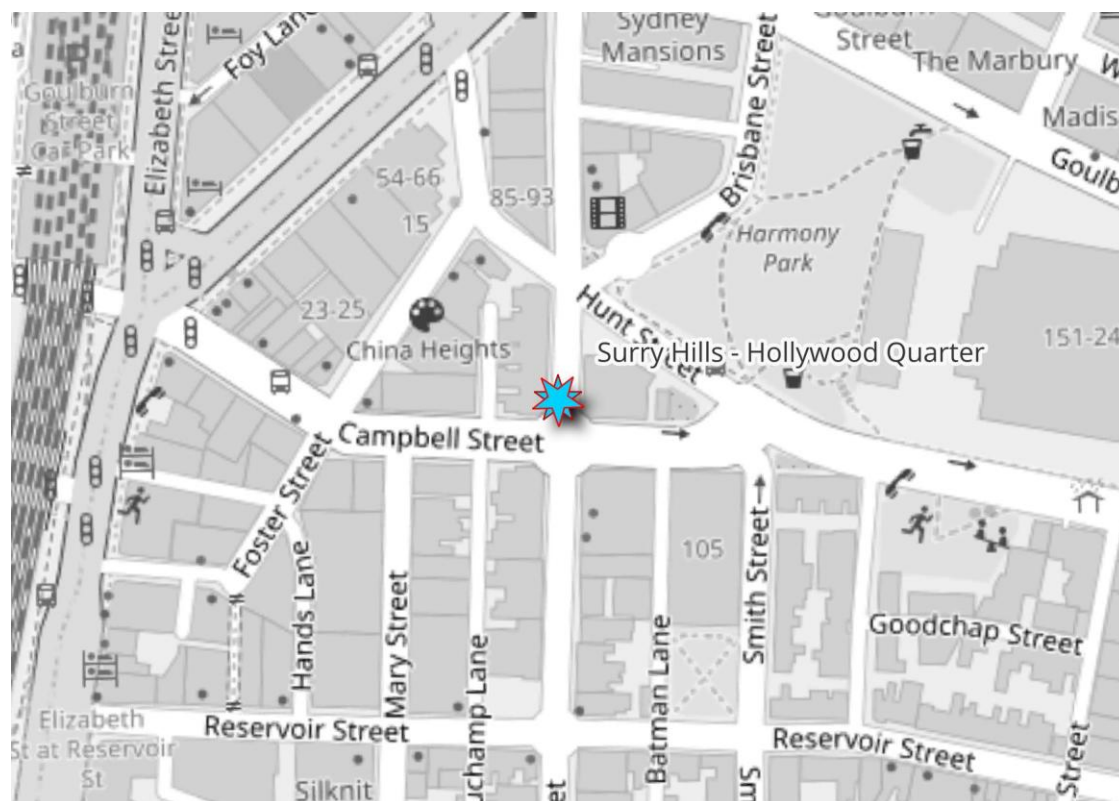


Figure 48 Logger photo: Surry Hills - Hollywood Quarter



Table 54 Broadband RBL and L_{Aeq} : Surry Hills - Hollywood Quarter

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)
Day (7am-6pm)	51	52	50	60	61	60
Evening (6pm-10pm)	49	49	50	60	59	62
Early Night (10pm-midnight)	47	47	49	57	56	58
Late Night (midnight-7am)	44	44	45	58	56	59

Table 55 Octave-band RBL: Surry Hills - Hollywood Quarter

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	56	55	55	52	49	45	41	35	29
Evening	54	54	53	51	47	44	39	33	29
Early Night	51	51	51	49	45	41	35	31	27
Late Night	48	49	49	47	43	39	32	27	25

D.14 The Rocks

Figure 49 Logger location zoomed: The Rocks

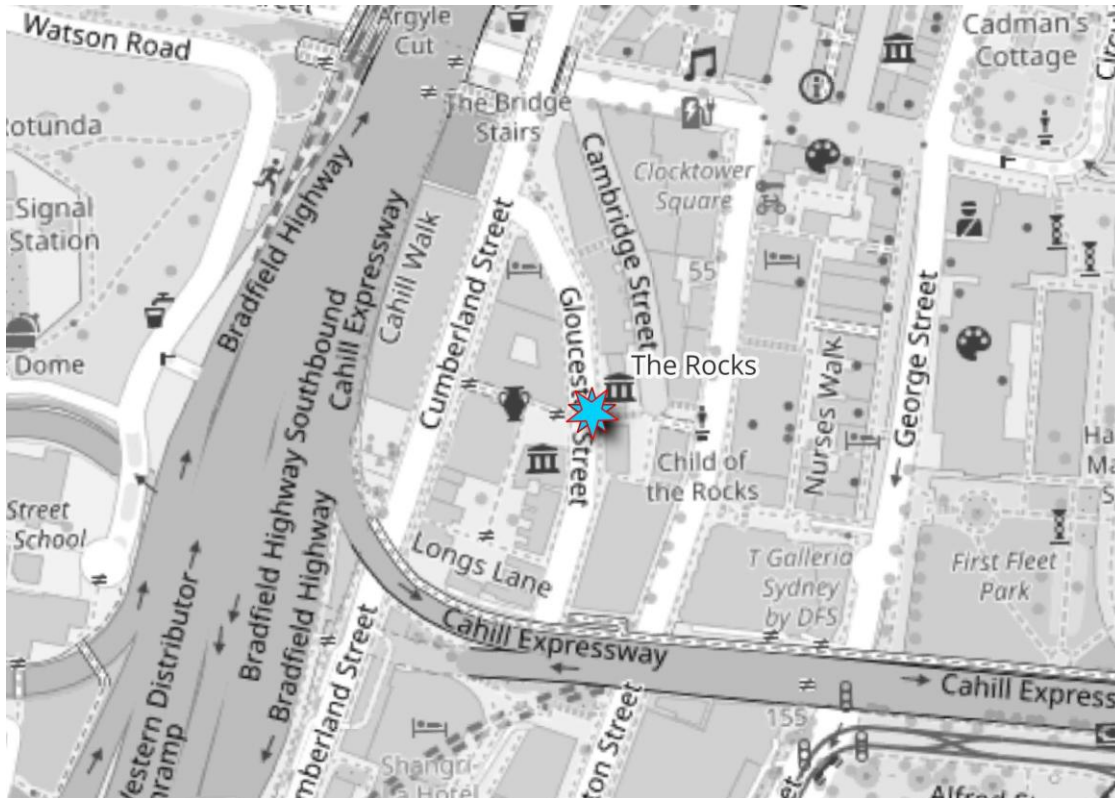


Figure 50 Logger photo: The Rocks



Table 56 Broadband RBL and L_{Aeq} : The Rocks

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)
Day (7am-6pm)	54	55	54	58	58	58
Evening (6pm-10pm)	53	53	55	58	57	60
Early Night (10pm-midnight)	52	51	53	56	54	58
Late Night (midnight-7am)	49	49	50	54	54	54

Table 57 Octave-band RBL: The Rocks

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	59	57	56	53	51	50	44	36	28
Evening	57	55	54	51	51	50	44	35	28
Early Night	54	52	52	50	49	48	42	34	28
Late Night	50	49	50	48	47	45	40	33	28

D.15 Walsh Bay

Figure 51 Logger location zoomed: Walsh Bay

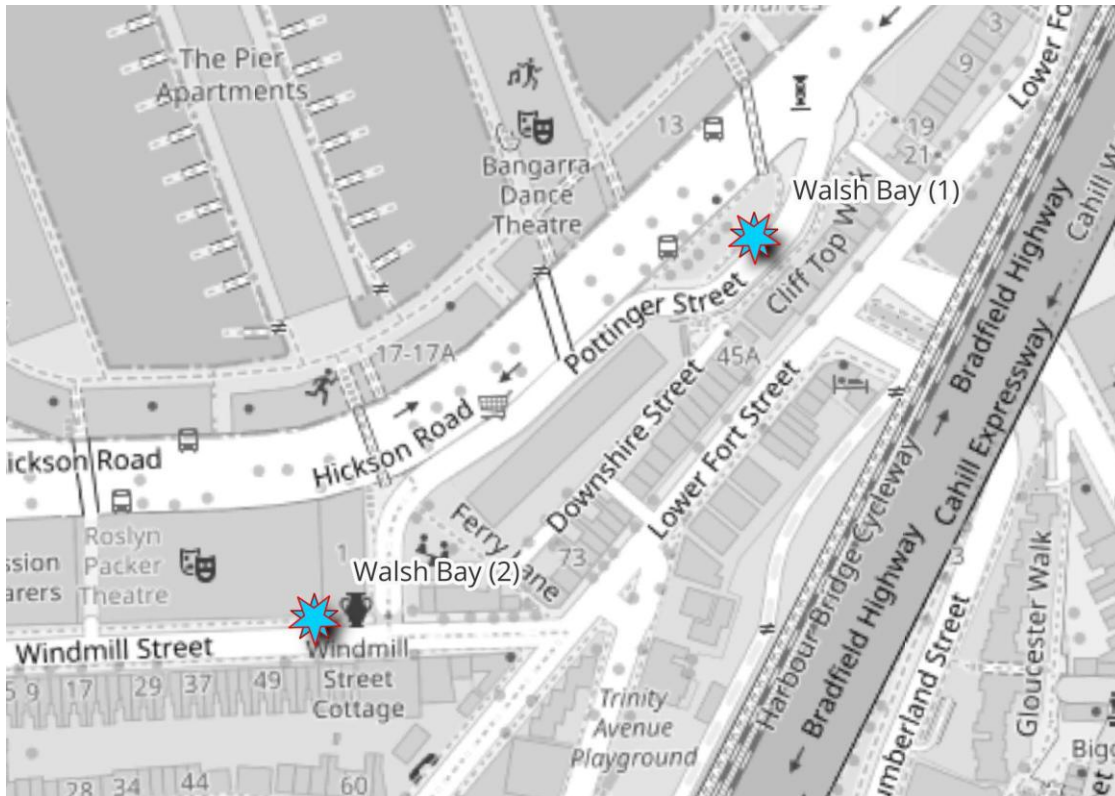


Figure 52 Logger photo: Walsh Bay (Left: location 1; Right: location 2)

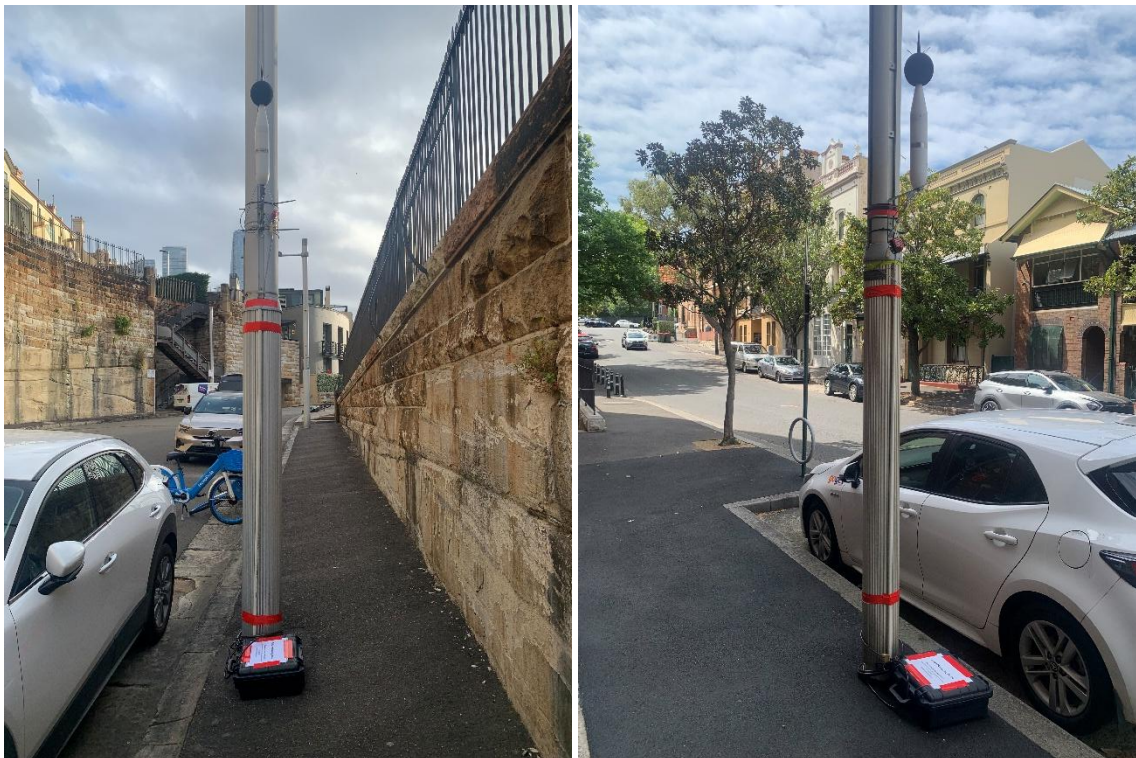


Table 58 Broadband RBL and L_{Aeq} : Walsh Bay

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)
Location 1 (weekday day-time levels by be affected by construction noise)						
Day (7am-6pm)	50	50	50	61	60	62
Evening (6pm-10pm)	50	49	51	58	56	59
Early Night (10pm-midnight)	45	45	48	58	56	61
Late Night (midnight-7am)	42	41	42	53	51	54
Location 2						
Day (7am-6pm)	48	49	45	60	61	59
Evening (6pm-10pm)	47	47	48	60	59	60
Early Night (10pm-midnight)	41	40	42	56	53	58
Late Night (midnight-7am)	37	37	37	56	53	57

Table 59 Octave-band RBL: Walsh Bay

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Location 1 (weekday day-time levels by be affected by construction noise)									
Day	60	58	55	50	47	45	40	33	27
Evening	58	57	54	50	47	47	41	31	27
Early Night	55	54	52	46	42	40	35	28	26
Late Night	50	52	50	43	38	36	31	26	25
Location 2									
Day	55	55	51	48	46	44	38	31	27
Evening	52	52	48	46	45	44	37	27	26
Early Night	49	48	44	42	38	38	30	24	25
Late Night	45	44	42	37	33	31	26	23	24

D.16 Woolloomooloo

Figure 53 Logger location zoomed: Woolloomooloo

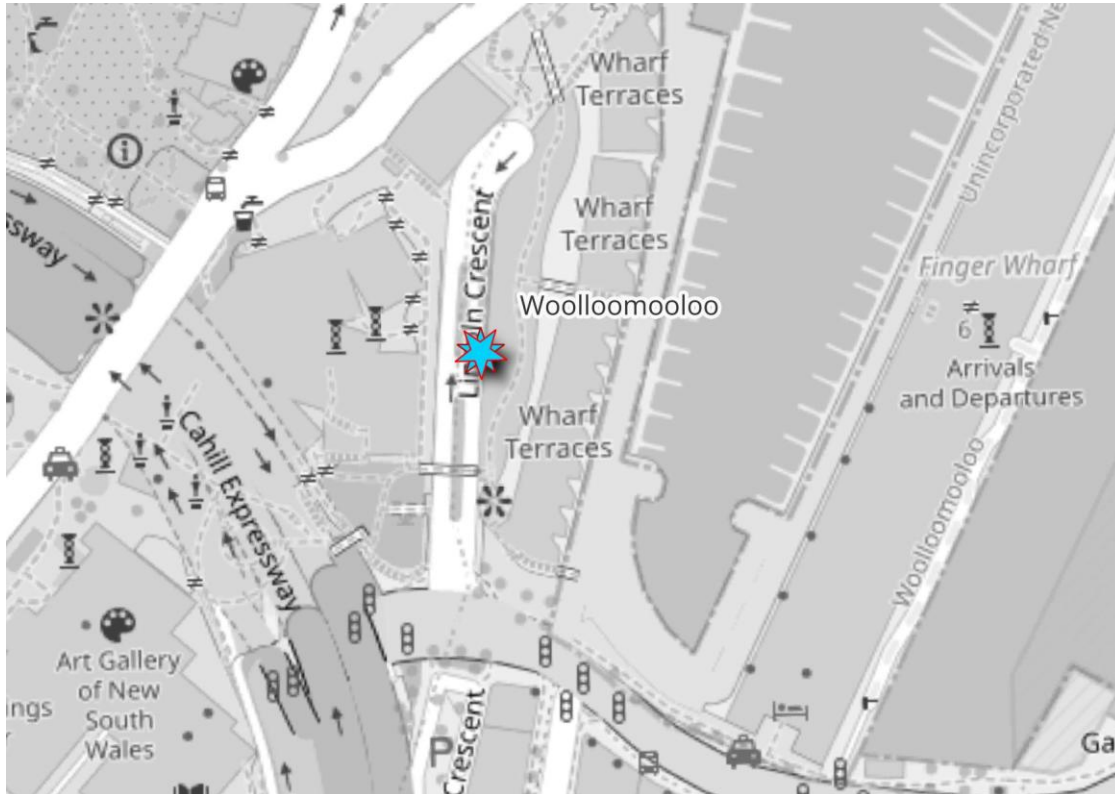


Figure 54 Logger photo: Woolloomooloo



Table 60 Broadband RBL and L_{Aeq} : Woolloomooloo

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)	All days	Weekdays (Sun 6pm-Thu 6pm)	Weekends (Thu 6pm-Sun 6pm)
Day (7am-6pm)	49	48	49	60	62	58
Evening (6pm-10pm)	48	47	49	56	56	57
Early Night (10pm-midnight)	43	42	47	53	51	55
Late Night (midnight-7am)	39	39	42	54	54	53

Table 61 Octave-band RBL: Woolloomooloo

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	59	56	53	50	46	44	38	32	28
Evening	55	54	53	48	45	44	36	29	27
Early Night	51	49	45	43	40	38	31	27	27
Late Night	48	45	43	41	37	34	27	26	26

D.17 Newtown – Iredale St

Figure 55 Logger location zoomed: Newtown – Iredale St

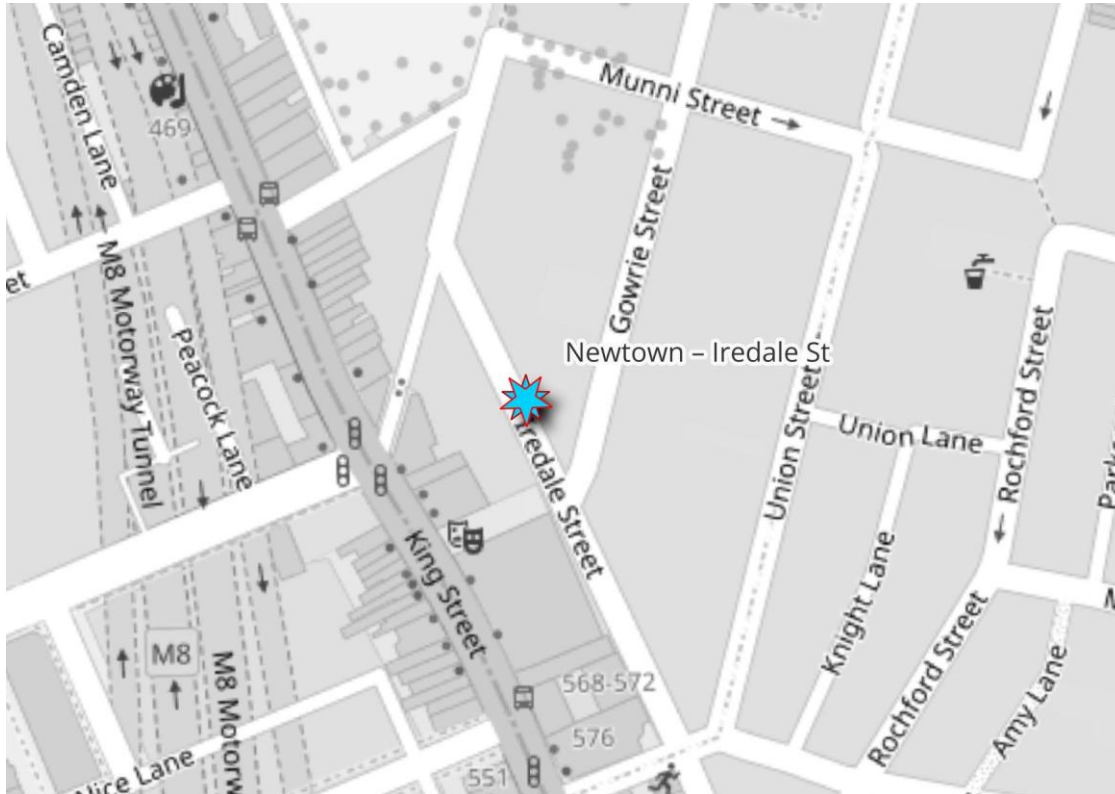


Figure 56 Logger photo: Newtown – Iredale St



Table 62 Broadband RBL and L_{Aeq} : Newtown – Iredale St

Time period	Rating Background Noise RBL L_{A90} dB			Ambient Noise Levels L_{Aeq} dB		
	All days	Weekdays (Sun 6pm–Thu 6pm)	Weekends (Thu 6pm–Sun 6pm)	All days	Weekdays (Sun 6pm–Thu 6pm)	Weekends (Thu 6pm–Sun 6pm)
Day (7am–6pm)	39	38	39	61	54	62
Evening (6pm–10pm)	39	38	40	55	52	57
Early Night (10pm–midnight)	36	35	39	49	45	51
Late Night (midnight–7am)	34	32	35	46	45	46

Table 63 Octave-band RBL: Newtown – Iredale St

Time period	RBL Octave-band Levels L_{Z90} dB / Octave-band Centre Frequency Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
Day	46	45	42	39	36	34	30	23	19
Evening	44	44	41	40	36	34	28	21	17
Early Night	40	40	37	36	33	31	25	17	17
Late Night	39	40	37	35	31	29	23	17	17

Appendix E Attended noise monitoring – background noise detailed results

Precinct	Location	Logger	Measured L ₉₀					Calculated RBL			
			L _{A90}	31.5 Hz	63 Hz	125 Hz	250 Hz	Day	Eve	Early Night	Late Night
Central Sydney	80-82A Pitt St	Wynyard	60	63	62	59	57	46	53	48	36
Central Sydney	The Fullerton, 1 Martin Pl	Wynyard	63	63	63	61	60	50	57	52	40
Central Sydney	280-288 George St	Wynyard	64	61	70	65	61	51	58	53	41
Central Sydney	43 York St	Wynyard	62	66	67	63	60	49	56	51	39
Central Sydney	50-60 Margaret St	Wynyard	56	61	63	58	55	41	48	43	31
Central Sydney	165 Clarence St (Arc by Skye Suites)	Wynyard	59	63	65	60	58	44	51	46	34
Central Sydney	3/6 Dixon St	Town Hall	62	66	65	66	62	63	61	60	55
Central Sydney	190 Clarence St	Town Hall	59	65	65	61	59	60	58	57	52
Central Sydney	281 Sussex St	Town Hall	62	69	68	65	61	63	61	60	55
Central Sydney	90/95 Liverpool St	Town Hall	66	72	68	65	64	67	65	64	59
Central Sydney	Sydney Wharf Apartments	King St Wharf	57	63	65	61	57	74	74	70	66
Central Sydney	Ballaarat Park	King St Wharf	57	67	63	60	55	55	55	51	47
Central Sydney	82-108 Sussex St	King St Wharf	65	72	70	65	64	63	63	59	55
Central Sydney	Murray St opposite Pyrmont Bay	King St Wharf	59	63	66	61	57	57	57	53	49
Central Sydney	201 Sussex St, next to Market St	King St Wharf	64	66	67	68	64	62	62	58	54
Chippendale	8 Park Ln	Chippendale	58	63	61	57	55	55	54	52	50
Chippendale	The Steps Central Park	Chippendale	62	65	62	61	59	58	57	55	53
Chippendale	One Central Park	Chippendale	64	70	67	62	62	61	60	58	56
Darlinghurst	25 Pelican St	Darlinghurst	51	59	56	55	52	52	51	50	49
Darlinghurst	30 Denham St	Darlinghurst	44	52	50	47	44	44	43	42	41

Darlinghurst	27 Bloomfield St	Darlinghurst	48	52	52	50	46	48	47	46	45
Darlinghurst	433 Bourke St	Darlinghurst	49	60	55	53	48	49	48	47	46
Darlinghurst	310 Palmer St	Darlinghurst	55	63	62	57	53	56	55	54	53
Darlinghurst	2 Sturt St, Darlinghurst	Darlinghurst	59	59	60	60	60	59	58	57	56
Kings Cross	Becky Minty, 81 Macleay Street Ikon Building	Kings Cross	48	54	54	51	46	48	44	40	36
Kings Cross	229 Kirketon Rd	Kings Cross	47	54	53	49	47	48	44	40	36
Kings Cross	Corner of Bourke St/ St Peter St	Kings Cross	50	54	59	53	50	51	47	43	39
Kings Cross	198 Victoria St	Kings Cross	55	59	60	53	50	54	50	46	42
Kings Cross	Original Backpackers Hostel Sydney Australia	Kings Cross	55	55	56	53	50	53	49	45	41
Newtown	1 Fitzroy St	King St north	44	53	50	47	44	42	44	40	38
Newtown	23 Campbell St	King St north	47	55	49	48	45	45	47	43	41
Newtown	18-20 Wilson St	King St north	46	54	53	49	46	44	46	42	40
Newtown	2-8 Newman St	King St south	46	55	56	51	45	43	44	39	33
Newtown	553 King Ln	King St south	43	51	51	47	42	40	41	36	30
Redfern	Near 5 William Ln	Redfern	48	55	52	49	47	46	45	43	42
Redfern	63 Cope St	Redfern	50	56	56	52	51	49	48	46	45
Redfern	209 Cope St	Redfern	52	60	57	52	49	50	49	47	46
Surry Hills	553 Crown St	Crown St	58	61	60	60	55	56	56	54	48
Surry Hills	638 Crown St	Crown St	60	58	57	58	56	59	59	57	51
Surry Hills	20 Norton St	Crown St	48	54	53	51	49	48	48	46	40
Surry Hills	23 Richards Ave	Crown St	51	58	59	55	50	51	51	49	43
Surry Hills	Elanda Partners Real Estate	Hollywood Quarter	61	68	65	62	60	59	57	55	52

Surry Hills	22 Buckingham St	Hollywood Quarter	50	57	56	54	50	48	46	44	41
Surry Hills	201 Commonwealth St	Hollywood Quarter	52	57	56	54	50	50	48	46	43
The Rocks	Nurses walk near Harrington & Argyle St	The Rocks	57	62	62	59	57	55	54	53	53
The Rocks	Gloucester & Essex St	The Rocks	60	65	65	62	58	58	57	56	56
The Rocks	14-22 Loftus St	The Rocks	60	64	64	61	58	58	57	56	56
The Rocks	97 Macquarie St	The Rocks	59	66	64	62	57	57	56	55	55
Walsh Bay	Windmill St	Walsh Bay	50	56	55	52	48	48	47	43	39
Walsh Bay	Towns Place	Walsh Bay	59	63	63	59	59	56	55	51	47
Walsh Bay	23 Hickson Rd	Walsh Bay	50	58	56	53	48	48	47	43	39
Woolloomooloo	68 Nicholson St	Woolloomooloo	59	57	61	56	53	56	54	50	46
Woolloomooloo	25-11 Plunkett St	Woolloomooloo	47	52	56	51	47	45	43	39	35

Appendix F Attended noise monitoring – entertainment sound detailed results

Precinct	Date and Time	L _{Aeq}	Octave-band L _{eq}				Summary
			31.5Hz	63Hz	125Hz	250Hz	
Central Sydney	24/10/2025 11:03pm	78	82	87	78	74	Laneway behind a CBD night club near multiple restaurants with outdoor seating. Dominated by music from the night club and patron noise from outdoor seating.
Central Sydney	7/11/2025 8:30pm	64	63	70	69	63	Measured on Pyrmont Bridge, facing the Cockle Bay Wharf restaurants (~100 m away). Patron noise and ambient music were the dominant background sources, attenuated over the water, with some less-dominant road noise from the Western Distributor (mainly trucks). The restaurants were located below bridge level.
Chippendale	16/1/2026 7:55pm	67	66	68	65	65	Laneway at door of a pub. Patron noise plus plant noise. Some traffic noise from nearby main road just audible but not dominant.
Chippendale	16/1/2026 8:01pm	62	65	66	62	62	Laneway at rear of nearest house to the pub. Patron noise. Plant noise more noticeable - roof mounted so clear line of sight from this location.
Chippendale	16/1/2026 8:20pm	64	73	71	67	64	Main road outside a pub with acoustic live music. Band playing but approx. same level as traffic noise. Approx. 61-63 dB from music, 65 dB with patron noise, 67-68 dB with traffic noise.
Chippendale	16/1/2026 8:59pm	63	65	65	60	57	Local street in front of a residence next to a pub. Patron noise from outdoor dining. Cars occasionally. Approx. low 70s when cars pass, high 60s from patron noise. No music.
Chippendale	16/1/2026 9:29pm	75	65	73	78	79	A small lane at the rear of a pub on a main road. Dance music and patron noise. Not audible from the main road.
Chippendale	16/1/2026 9:47pm	59	71	74	63	56	Laneway on the side of a small bar on a local street. Music and patron noise audible but not loud. Some yelling patrons somewhere else. Traffic noise from the street is louder than bar, especially trucks.
Chippendale	16/1/2026 9:52pm	68	77	80	76	65	Street in front of the bar. Music, patrons, traffic. Approx. 65 dB without traffic, low 70s with traffic.

Precinct	Date and Time	L _{Aeq}	Octave-band L _{eq}				Summary
			31.5Hz	63Hz	125Hz	250Hz	
Chippendale	16/1/2026 9:58pm	63	66	67	61	60	Laneway behind a pub on the same street and adjacent to facade of closest neighbour (commercial). Music from pub but not live, patron noise, pretty unobtrusive. Approx. 65-66 dB, occasionally up to 70 dB.
Chippendale	16/1/2026 10:19pm	73	79	86	80	73	Main road outside a pub. Music inside the pub audible but mixed with loud traffic noise.
Darlinghurst	9/11/2025 12:27am	51	61	70	57	51	Residents at the end of a laneway behind a night club. Low-frequency noise dominated by music from the night club, pump noise from a restaurant clearly audible and dominating A-weighted noise levels.
Kings Cross	8/11/2025 9:56pm	69	63	69	69	67	Local street directly in front of a restaurant. Dominant source is music and patron noise from nearest restaurants.
Kings Cross	8/11/2025 9:39pm	73	67	69	68	64	Local street directly in front of a small bar. Dominant sources are patron noise from restaurants and music from the bar.
Kings Cross	8/11/2025 9:30pm	66	68	76	68	65	In front of residents on a local street, across the street from restaurants and bars. Patron noise from restaurants dominates although there is significant contribution from intermittent traffic on the street.
Kings Cross	9/11/2025 12:03am	61	68	65	60	56	In front of a closed restaurant on a local street. Patron noise from pub across the street dominates, with some contribution from intermittent traffic (including buses).
Newtown	23/01/2026 7:12pm	66	74	72	70	66	Local street outside a small bar with live music inside. Steady traffic noise with some kitchen fan noise from nearby restaurants, barely audible hint of music at façade doors, slightly more audible when façade doors open.
Newtown	23/01/2026 7:31pm	62	66	62	63	59	Small laneway behind a pub on King St with live music inside. Some amplified music and a lot of patron noise from nearby restaurants. Live music bass barely audible at certain periods.
Newtown	23/01/2026 7:47pm	74	78	78	72	71	King St in front of the pub. Music more audible but traffic and pedestrian noise dominant.

Precinct	Date and Time	L _{Aeq}	Octave-band L _{eq}				Summary
			31.5Hz	63Hz	125Hz	250Hz	
Newtown	23/01/2026 8:40pm	75	75	80	79	76	King St in front of a pub with live music inside. Music audible but traffic and pedestrian noise dominant.
Newtown	23/01/2026 8:48pm	59	70	67	62	58	Rear of the pub. Plant noise, voice from pedestrians on King St, live music bass barely audible.
Newtown	23/01/2026 8:58pm	60	69	67	64	58	Outside restaurant with outdoor dining on one side street. Quiet patron noise without music, some kitchen noise.
Newtown	23/01/2026 9:07pm	60	65	70	62	59	Rear of a live music venue on King St, apartments across the laneway. Music mostly inaudible apart from faint bass. Mostly road traffic noise, and people standing outside talking.
Newtown	23/01/2026 9:31pm	69	74	79	74	69	King St in front of the live music venue with closed door. Music audible but not dominant except for bass. Traffic and pedestrian noise.
Surry Hills – Crown St	22/10/2025 7:08pm	66	72	71	64	64	Residence south of a bar on Crown St with live music (2 guitars + 2 vocal). Music audible via open window, but dominated by traffic (cars and buses).
Surry Hills – Hollywood Quarter	23/01/2026 8:44pm	66	68	73	70	65	Opposite a restaurant. Occasional car noise and people talking are audible. A constant low hum is present, likely from HVAC or trains. Cricket noise is prominent and louder than the restaurant noise.
Surry Hills – Hollywood Quarter	23/01/2026 9:09pm	58	65	62	58	57	Nearest residential location to a pub. Noise can be heard from nearby pubs and bars.
Surry Hills – Hollywood Quarter	23/01/2026 9:16pm	57	61	60	62	57	End of a laneway behind pubs and bars. Can barely hear the bass of the noises from the pub between 63 – 250 Hz. Ventilation fan noises dominate in this region.
Surry Hills – Hollywood Quarter	23/01/2026 9:25pm	66	69	66	63	61	Opposite a restaurant. Outdoor seating is open. Patron noise and music are audible. Steady 60 dBA $\pm$ 3.
Surry Hills – Hollywood Quarter	23/01/2026 9:35pm	72	73	73	81	74	In front of residences opposite a pub. Very noisy due to traffic and rail noise, pedestrian beepers, and patron noise from outdoor hotel seating.

Precinct	Date and Time	L _{Aeq}	Octave-band L _{eq}				Summary
			31.5Hz	63Hz	125Hz	250Hz	
Surry Hills – Hollywood Quarter	23/01/2026 9:48pm	62	64	64	62	59	Opposite a cocktail bar. Noise is dominated by patrons from the bar. No noticeable noise from a nearby restaurant. Some light music may be present, and hotel noise around the corner may contribute.
Surry Hills – Hollywood Quarter	23/01/2026 10:22pm	67	64	72	76	63	Near window of the cocktail bar. Noise levels are higher here. People talking and movement noise (possibly dancing) are audible.
Surry Hills – Hollywood Quarter	23/01/2026 10:28pm	61	67	64	62	57	Opposite a restaurant. Outdoor seating is closed, but the bar is open. Windows are open, so internal noise is audible. Patron noise and music are audible, with music dominating.
Walsh Bay	18/10/2025 8:33pm	59	59	61	64	63	Outside Walsh Bay restaurants with shoptop residents. Dominated by patron noise at outdoor seating, with contribution from passing cars on Hickson Road and distant traffic on Sydney Harbour Bridge
Woolloomooloo	8/11/2025 6:54pm	65	64	66	63	61	Outside Woolloomooloo wharf restaurants. Dominated by patron noise and music. Very little traffic noise overheard.
Woolloomooloo	8/11/2025 7:14pm	59	63	66	62	59	Residents west of the Woolloomooloo restaurants. Music and patron noise overheard, mainly dominated by patron noise from a pub. Traffic flow more audible.
Woolloomooloo	8/11/2025 7:35pm	67	70	71	68	65	Across the road from a pub, dominated by music, patron noise and traffic flow (cars and buses).
Woolloomooloo	8/11/2025 7:54pm	63	66	66	65	62	Residents west of the pub across the road, dominated by music and patron noise. Traffic flow less audible.



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