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251-265 Lygon St and 1A Pitt St

Acoustics Town Planning Report

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TABLE OF CONTENTS

1	INTRODUCTION	4
2	REFERENCES	4
3	PROPOSED AMENDMENT	5
4	EXISTING ENDORSED ACOUSTIC REPORT	5
5	ACOUSTIC CRITERIA.....	5
5.1	External Noise Emissions – Commercial / Industrial / Trade Premises	6
5.2	Internal Apartment Amenity Criteria	7
5.3	Music Noise Criteria – Indoor Recreation Facility	8
5.4	NCC Acoustic Separation.....	9
5.5	Sleep Disturbance Transient Maximum Noise Criteria	10
6	DISCUSSION OF NOISE SOURCES	10
6.1	Internal Activity, Classes and Music.....	10
6.2	Patron Arrival and Departure.....	10
6.3	Mechanical Plant and Ventilation	11
6.4	Waste Collection	11
7	DESIGN DEVELOPMENT / TENANCY FITOUT REQUIREMENTS	12
8	CONCLUSION	12
	Appendix A Definitions	14

1 INTRODUCTION

Mainwave Consulting Pty Ltd has been engaged by Pace Development Group Pty Ltd to prepare this acoustic technical statement in relation to the Section 72 amendment for the approved development at 251-265 Lygon Street and 1A Pitt Street, Brunswick East.

The amendment relates to the proposed change of use of part of the ground floor non-residential use area to an indoor recreation facility.

This report therefore addresses the acoustic considerations associated with the proposed indoor recreation facility use.

Pace has advised Mainwave that a heads of agreement has been signed for the intended tenant to operate as a Pilates studio. This statement has therefore been prepared with reference to the acoustic sources expected for a Pilates / wellness use.

This approach is consistent with the endorsed acoustic town planning approach for the approved development, which established the relevant acoustic framework.

2 REFERENCES

This report has been prepared with reference to the following documents and information including the proposed Ground Floor Plan Drawing. Term definitions are provided in Appendix A.

- a) Pace Architects, Proposed Ground Plan, Drawing No. TP13C, Revision C, TP Secondary Consent, dated 10 April 2026.
- b) Ratio Consultants Pty Ltd, Waste Management Plan, 251-265 Lygon Street and 1A Pitt Street, Brunswick East VIC, Reference 22683W-R02F01, Secondary Consent - Final, dated 6 May 2026.
- c) Vipac Engineers and Scientists Ltd, Acoustic Town Planning, 251 Lygon and 1A Pitt Street, Brunswick East, Document Reference 30T-21-0338-DRP-24719-9, dated 22 May 2025.
- d) Pace Development Group, Section 72 Amendment Planning Submission Letter, dated 15 May 2026.
- e) Sustainable Development Consultants, Sustainability Management Plan, 251-265 Lygon Street & 1A Pitt Street, Brunswick East, May 2026.
- f) Ratio Consultants, Traffic and Parking Management Plan, dated 14 May 2026.
- g) Environment Protection Act 2017.
- h) Environment Protection Regulations 2021.
- i) Environmental Reference Standard, Victoria.
- j) EPA Victoria Publication 1826.5, Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues.
- k) EPA Victoria Publication 1997, Technical guide: Measuring and analysing industry noise and music noise.
- l) EPA Victoria Publication 1254.2, Noise Control Guidelines.
- m) EPA Victoria Publication 1856, Reasonably Practicable.
- n) EPA Victoria, Unreasonable noise guidelines.
- o) Apartment Design Guidelines for Victoria.
- p) NSW Road Noise Policy (Department of Environment, Climate Change and Water NSW, 2011)

3 PROPOSED AMENDMENT

The approved development is a mixed-use development comprising residential apartments with multiple ground-floor non-residential tenancies.

The current Section 72 amendment proposes to change part of the ground-floor land use to:

Table 1

Tenancy 1	Proposed Use
Tenancy 2	Indoor recreation facility

The submitted planning material identifies the indoor recreation facility as having the following operating parameters.

Table 2

Item	Proposed Parameter
Maximum patrons	50 patrons at any one time
Maximum staff	6 staff at any one time
Operating hours	5:00 am to 9:00 pm
Car parking	2 staff car parks, no visitor car parks

The broader amendment material identifies the recreation facility tenancy as approximately 338.1 m².

The planning use term “indoor recreation facility” can encompass a broader range of recreation activities. However, Pace has advised that the intended tenant operation is a Pilates studio. This statement has therefore been prepared on the basis of a Pilates / wellness tenant operation, including class music and amplified instructor voice where relevant.

High-impact commercial gym activities such as free weights, dropped weights, Olympic lifting, HIIT, spin, boxing, treadmills or similar high-impact activities have not been assessed as part of this statement because they do not form part of the tenant operation.

The ground-floor uses are located below residential apartments in the main tower and separate west tower within the mixed-use development. These on-site apartments should be treated as noise-sensitive receivers for internal amenity and mixed-use design purposes, in addition to nearby off-site residences.

4 EXISTING ENDORSED ACOUSTIC REPORT

The endorsed acoustic town planning report prepared by Vipac Engineers and Scientists Ltd dated 22 May 2025 established the acoustic framework for the approved development.

The endorsed report identified the ground-floor development as comprising apartments, gym, retail spaces and resident facilities. The report established external noise emission criteria for mechanical plant and other commercial noise sources with reference to EPA Victoria Publication 1826, Noise limit and Assessment Protocol for the control of noise from commercial, industrial and trade premises and entertainment venues.

5 ACOUSTIC CRITERIA

The acoustic assessment of the proposed indoor recreation facility should be considered within the current Victorian environment protection framework, including:

- EPA Victoria Publication 1826.5, Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues;

- EPA Victoria Publication 1856, Reasonably Practicable; and
- EPA Victoria guidance relating to unreasonable noise.

Activities associated with the operation of the indoor recreation facility may impact amenity at nearby off-site residences and apartments within the development.

EPA Publication 1856, Reasonably Practicable, provides guidance on determining what is reasonably practicable under the Environment Protection Act 2017. For commercial noise emissions from the proposed indoor recreation facility, the concept of “reasonably practicable” requires consideration of matters including:

- the likelihood of harm or loss of amenity occurring;
- the degree of harm or loss of amenity that may result;
- what is known, or ought reasonably to be known, about the noise or vibration risk;
- what is known, or ought reasonably to be known, about ways to eliminate or reduce the noise or vibration risk;
- the availability and suitability of those controls; and
- the cost of eliminating or reducing the risk, having regard to the risk and the expected benefit of the control.

For the proposed indoor recreation facility, the primary numerical criteria remain those set out in the relevant sections of this statement. However, the General Environmental Duty and reasonably practicable framework remain relevant to the detailed design, operation and management of the premises, particularly where noise sources have intrusive character, occur during sensitive periods, or are not fully represented by quantitative noise limits.

Compliance with the EPA Noise Protocol limits and other numerical criteria identified in this statement should therefore be treated as part of the overall acoustic design response.

5.1 EXTERNAL NOISE EMISSIONS – COMMERCIAL / INDUSTRIAL / TRADE PREMISES

Noise from commercial, industrial and trade premises is assessed in accordance with EPA Victoria Publication 1826.5, the Noise Protocol.

For commercial / industrial / trade premises noise, the relevant EPA Noise Protocol assessment periods are:

Table 3

Period	Time Period
Day	Monday–Saturday, 7:00 am–6:00 pm
Evening	Monday–Saturday, 6:00 pm–10:00 pm; Sunday / public holidays, 7:00 am–10:00 pm
Night	All days, 10:00 pm–7:00 am

These commercial / industrial / trade premises assessment periods differ from the indoor music-noise assessment periods. This is relevant to the proposed 5:00 am commencement time for the indoor recreation facility, because 5:00 am to 7:00 am falls within the commercial / industrial / trade premises night period.

The endorsed acoustic report established the following Noise Protocol limits for the development and surrounding residences:

Table 4

Period	Time Period	Noise Limit
Day	Monday–Saturday, 7:00 am–6:00 pm	54 dB(A)

Evening	Monday–Saturday, 6:00 pm–10:00 pm; Sunday / public holidays, 7:00 am–10:00 pm	48 dB(A)
Night	All days, 10:00 pm–7:00 am	45 dB(A)

These limits are relevant to commercial / industrial / trade premises noise associated with the proposed indoor recreation facility, including mechanical plant and ventilation systems where such systems form part of the proposed use.

The above limits are cumulative limits. At detailed design / tenancy fitout stage, the assessment should consider the combined contribution other relevant commercial / trade sources affecting the same receivers.

Where multiple sources contribute to the same receiver, individual source design targets may need to be set below the overall Noise Protocol limit so that cumulative noise levels comply.

5.2 INTERNAL APARTMENT AMENITY CRITERIA

The endorsed acoustic report identified the following internal noise criteria for apartments, based on Clause 58.04-3 Standard D16 and AS/NZS 2107:2016:

Table 5

Apartment Space	Criterion
Bedrooms	Not greater than 35 dB(A) LAeq,8h, 10:00 pm–6:00 am
Living areas	Not greater than 40 dB(A) LAeq,16h, 6:00 am–10:00 pm

These criteria should be considered during design development / tenancy fitout where noise from the proposed indoor recreation facility has the potential to affect apartments within the development.

Relevant sources may include steady-state plant, ventilation systems, class music, amplified instructor voice, internal activity, and waste collection.

AS/NZS 2107:2016 also provides recommended internal design sound levels for different occupancy types. The endorsed acoustic report identified the following relevant design sound level ranges:

Table 6

Occupancy / Space Type	AS/NZS 2107 Recommended Design Sound Level
Small retail stores	< 50 dB(A) LAeq
General office areas	40–45 dB(A) LAeq
Work areas	35–45 dB(A) LAeq
Bars and lounges	< 50 dB(A) LAeq
Cafeterias	40–50 dB(A) LAeq
Apartment common areas, e.g. foyer / lift lobby	45–50 dB(A) LAeq
Apartment living areas	35–45 dB(A) LAeq
Apartment sleeping areas	35–40 dB(A) LAeq

For steady-state or quasi-steady noise sources from the indoor recreation facility, such as plant, and ventilation, the internal apartment criteria above provide relevant design benchmarks.

5.3 MUSIC NOISE CRITERIA – INDOOR RECREATION FACILITY

The proposed indoor recreation facility is not described as a live music or entertainment venue. However, the Environment Protection Regulations 2021 define indoor entertainment venue broadly for the purpose of music-noise assessment, and this can include premises such as a health and fitness centre where music is played. Accordingly, where music or amplified class sound is proposed, the EPA indoor entertainment venue music-noise provisions are relevant and should be considered where applicable.

For indoor venue music noise, the day/evening and night periods are defined differently from the commercial / industrial / trade premises periods.

For indoor venue music noise, the day/evening period is:

Table 7

Day / Event Type	Day / Evening Period
Monday to Saturday, other than a public holiday	7:00 am to 11:00 pm
Sunday or public holiday, where not preceding a public holiday	9:00 am to 10:00 pm
Sunday or public holiday, where preceding a public holiday	9:00 am to 11:00 pm

For indoor entertainment venue music noise, the night period is:

Table 8

Day / Event Type	Night Period
Monday to Friday, other than a public holiday or day preceding a public holiday	11:00 pm to 7:00 am the following day
Saturday or any day preceding a public holiday	11:00 pm to 9:00 am the following day
Sunday or public holiday, where neither is preceding a public holiday	10:00 pm to 7:00 am the following day

For indoor entertainment venue music noise, the relevant criteria differ between the day/evening period and the night period:

Table 9

Music Noise Period	Noise Limit	Effective Noise Level
Day / evening period	Background LA90 + 5 dB, subject to the regulation 125 base limit	LAeq, dB(A)
Night period	Background LOCT90 + 8 dB in octave bands, subject to the regulation 125 base limits	LOCT10, linear octave bands

The proposed indoor recreation facility operating hours are 5:00 am to 9:00 pm. Therefore, music or amplified class activity between 5:00 am and 7:00 am Monday to Saturday would fall within the night-period music-noise assessment framework where the EPA music-noise provisions apply. Music or amplified class activity between 5:00 am and 9:00 am on Sundays or public holidays also fall within the night-period music-noise assessment framework, depending on the relevant public holiday / preceding public holiday provisions.

For indoor entertainment venue music-noise assessment, the Environment Protection Regulations 2021 require noise from human voices and activities within the venue that are associated with the music sources to be included in the assessment. Those activities may include instructor voice, participant responses, class activity and other internal activity associated with amplified class sound.

Based on the background levels adopted in the endorsed acoustic report, the indicative day/evening music-noise criteria measured externally at noise sensitive areas would be:

Table 10

Period	Adopted Background Level	Indicative Music Noise Limit
Day	42 dB(A) LA90	47 dB(A) LAeq
Evening	40 dB(A) LA90	45 dB(A) LAeq
Most stringent available day/evening value	40 dB(A) LA90	45 dB(A) LAeq

The above values are planning-stage criteria based on the available overall A-weighted background levels.

For night-period music noise, the criterion is octave-band based. The relevant octave-band centre frequencies and regulation 125 base noise limits are:

Table 11

Octave Band Centre Frequency	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz
Regulation 125 base noise limit, dB	40	30	20	20	15	10	10

The values above are base noise limits only. The project-specific night-period music criteria should be established during design development / tenancy fitout if music or amplified class activity is proposed during the night period. This should include measurement or justified determination of representative background LOCT90 levels at the relevant noise-sensitive receiver or alternative assessment location, with the resulting limits calculated as LOCT90 + 8 dB and compared with predicted or measured LOCT10 music noise levels.

The AAAC Licensed Premises Noise Assessment Technical Guideline identifies background music as generally not exceeding approximately 67-77 dB LAeq within the noise generating space. This may be used as a practical internal source-level screening for whether a music noise assessment against the EPA music noise limits is required.

The proposed indoor recreation facility is understood to be intended for a Pilates / wellness tenant operation. High-impact activities such as free weights, dropped weights, Olympic lifting, HIIT, spin, boxing, treadmills and similar impact-generating activities do not form part of the tenant operation described by Pace. Accordingly, no separate intermittent impact, AAAC gymnasium impulsive structure-borne noise criterion, or tactile vibration criterion is adopted in this town planning report.

If the indoor recreation facility were to be operated in the future in a materially different manner from the advised Pilates / wellness use, the acoustic considerations may differ from those addressed in this statement.

Where multiple amplified music venues contribute to the same receiver, individual source design targets may need to be set below the overall Noise Protocol limit so that cumulative noise levels comply.

5.4 NCC ACOUSTIC SEPARATION

NCC compliance is a minimum construction requirement only. It does not, of itself, demonstrate that operational noise from the indoor recreation facility will satisfy the internal apartment amenity, EPA Noise Protocol, music noise, patron noise, transient maximum noise, structure-borne noise or vibration criteria.

5.5 SLEEP DISTURBANCE TRANSIENT MAXIMUM NOISE CRITERIA

Transient noise events should be considered where short-duration events may affect apartments within the development or nearby dwellings.

The endorsed acoustic report identified the following maximum noise level criteria, which are relevant to sleep disturbance.

Table 12

Period	Internal Maximum Noise Criterion
Day, 6:00 am–10:00 pm	60 dB(A) LA _{max} in living rooms
Night, 10:00 pm–6:00 am	50–55 dB(A) LA _{max} in bedrooms

6 DISCUSSION OF NOISE SOURCES

6.1 INTERNAL ACTIVITY, CLASSES AND MUSIC

The indoor recreation facility is proposed to operate with up to 50 patrons and 6 staff at any one time, with operating hours of 5:00 am to 9:00 pm.

Pace has advised that a heads of agreement has been signed for the intended tenant to operate as a Pilates studio. The relevant internal activity noise sources for the proposed tenant operation are expected to be low-impact class activity, class music and amplified instructor voice.

High-impact commercial gym activities such as free weights, dropped weights, Olympic lifting, HIIT, spin, boxing, treadmills or similar uses do not form part of the tenant operation and have not been assessed in this statement.

The relevant regulatory considerations are:

Table 13

Source/Receiver Type	Relevant Criteria / Framework
Music or amplified class sound	EPA music-noise provisions, where applicable, as outlined in Section 5.3
Amplified instructor voice associated with class sound	EPA music-noise provisions, where applicable, as outlined in Section 5.3
Mechanical plant / ventilation serving the tenancy	EPA commercial / industrial / trade premises noise limits in Section 5.1
Internal apartment amenity	Internal apartment criteria in Section 5.2

6.2 PATRON ARRIVAL AND DEPARTURE

The proposed indoor recreation facility is identified as having up to 50 patrons and 6 staff at any one time, with operating hours of 5:00 am to 9:00 pm. The submitted traffic material identifies two staff car spaces and no visitor car spaces for the indoor recreation facility.

A commonly referenced source for considering short-duration night-time noise is Section 5.4 of the NSW Road Noise Policy (Department of Environment, Climate Change and Water NSW, 2011). Although the policy was developed for the assessment of road traffic noise and does not constitute a statutory Victorian patron-noise criterion, it provides relevant supplementary guidance concerning the potential for maximum noise events to cause awakening or otherwise affect health and wellbeing.

The NSW Road Noise Policy indicates that:

- maximum internal noise levels below approximately 50–55 dB(A) are unlikely to awaken people from sleep; and
- one or two noise events per night with maximum internal noise levels of approximately 65–70 dB(A) are unlikely to significantly affect health and wellbeing.

This guidance forms the basis of the transient maximum-noise criteria contained in the endorsed acoustic report and reproduced in Section 5.5 of this report.

This approach has been considered in several Victorian Civil and Administrative Tribunal matters, including *Za Za's Pty v Yarra CC* [2014], *Central Pier Pty Ltd v Director of Liquor Licensing* [2009] and *Number 17 Pty Ltd v Director of Liquor Licensing* [2010].

Where a bedroom window is open, an external-to-internal noise reduction of approximately 10 dB(A) is commonly assumed. On this basis, a maximum external level of approximately 60–65 dB(A) at an open bedroom window would ordinarily correspond to an internal level of approximately 50–55 dB(A).

Patron noise can vary considerably depending on the number of people present, their behaviour and the duration of the activity. Relatively continuous crowd conversation may be appropriately assessed using an equivalent continuous noise level, such as LAeq. Short-duration events, including shouting, laughter, calling out or other raised voices, are commonly also be considered separately using the LMax sleep-disturbance criterion.

Victorian patron-noise assessments have also applied a background-plus approach, under which the patron-noise criterion was set relative to the measured background noise level. The approach applied the following adjustments:

Table 14

Assessment period	LAeq benchmark	Supplementary LMax benchmark
Day	Lower of the applicable statutory EPA noise limit and LA90 + 15 dB	Not generally applied
Evening	Lower of the applicable statutory EPA noise limit and LA90 + 10 dB	Not generally applied
Night	Lower of the applicable statutory EPA noise limit and LA90 + 5 dB	60–65 dB(A) externally

The above background-plus and maximum-level benchmarks are adopted as supplementary indicators for patron-noise and sleep-disturbance assessment.

6.3 MECHANICAL PLANT AND VENTILATION

Mechanical plant and ventilation systems associated with the proposed indoor recreation facility should comply with the EPA commercial / industrial / trade premises noise limits identified in Section 5.1.

6.4 WASTE COLLECTION

Waste collection noise should be managed with reference to EPA Victoria Publication 1254.2, Noise Control Guidelines, and the endorsed acoustic report.

The endorsed acoustic report identifies the following EPA Publication 1254.2 waste collection guidance for garbage trucks at shops:

Table 15

Collection Frequency	Recommended Collection Period
One collection per week	Monday to Saturday, 6:00 am–6:00 pm
Two or more collections per week	Monday to Saturday, 7:00 am–6:00 pm

The endorsed acoustic report also identifies the following waste collection noise controls:

- refuse bins should be located at sites that minimise annoyance to residential premises;
- compaction should be carried out while the vehicle is moving;
- bottles should not be broken up at the collection site; and
- noisy verbal communication between operators should be avoided where possible.

The submitted Waste Management Plan identifies that residential and commercial waste will be collected by a private contractor from the ground-level waste collection bay using a mini rear loader. Residential and commercial waste collection is proposed to occur simultaneously via the same contractor / vehicle to minimise waste collection vehicle movements. The collection procedure, including transfer and emptying of bins, is expected to take no longer than 10 minutes.

Waste collection associated with the indoor recreation facility should be scheduled and managed in accordance with the EPA Publication 1254.2 guidance identified above, the endorsed acoustic report and the endorsed Waste Management Plan.

Where commercial waste collection occurs more than once per week, the EPA Publication 1254.2 guidance identified in the endorsed acoustic report indicates that collection should occur between 7:00 am and 6:00 pm Monday to Saturday.

7 DESIGN DEVELOPMENT / TENANCY FITOUT REQUIREMENTS

The following acoustic matters should be addressed during design development / tenancy fitout once sufficient information is available:

- final ventilation and air-conditioning plant selections for the indoor recreation facility;
- final loading / delivery arrangements, including vehicle types, frequency and hours;
- final waste collection arrangement and collection timing;
- final indoor recreation activity types and class schedules;
- final sound system design, speaker locations, subwoofer use and proposed music / instructor voice levels;
- Night period music noise criteria and assessment locations, including representative octave-band background measurements if night-period music above background levels is proposed;
- patron voice and arrival / departure noise, based on the proposed maximum 50 patrons and 6 staff;
- airborne sound insulation requirements for walls, floors, ceilings and doors;
- NCC acoustic separation requirements;
- patron entry and exit arrangements;
- noise from plant, commercial operations and music sources;
- reasonably practicable noise controls to minimise risk of harm and unreasonable noise;
- acoustic treatments, operational controls and sound limiters where required;

This report identifies the relevant criteria and design pathway. It does not confirm that compliance or likely compliance is achievable for the final tenancy fitout.

8 CONCLUSION

This acoustic technical statement has been prepared in relation to the proposed Section 72 amendment for the ground-floor of the mixed-use development.

Pace has advised that the supermarket is already a permitted use and is outside the scope of this statement. The planning application seeks approval for an indoor recreation facility on the ground floor; and Pace has advised that the intended tenant operation is a Pilates/Wellness studio.

This statement addresses the proposed indoor recreation facility on the basis of the Pilates / wellness tenant operation described by Pace. High-impact commercial gym activities such as free weights, dropped weights, Olympic lifting, HIIT, spin, boxing, treadmills or similar uses have not been assessed because they do not form part of the tenant operation.

The proposed indoor recreation facility should be designed in accordance with the:

- EPA Noise Protocol limits for commercial / industrial / trade premises, where relevant to mechanical plant and ventilation systems;
- internal apartment amenity criteria;
- NCC acoustic separation requirements;
- EPA music-noise provisions where music, amplified instructor voice or amplified class sound is proposed and where those provisions are applicable;
- EPA Publication 1254.2 waste collection guidance; and
- broader unreasonable noise duties under the Environment Protection Act 2017 and EPA Victoria's Unreasonable noise guidelines.
- Transient maximum noise criteria in the endorsed acoustic report.

This statement establishes the acoustic criteria and planning-stage assessment framework for the amended ground-floor indoor recreation facility use. It does not provide detailed compliance calculations or confirm final compliance for a specific tenant fitout.

Appendix A DEFINITIONS

Term	Definition
A-weighting	A frequency weighting applied to measured sound levels to approximate the relative sensitivity of human hearing. A-weighted levels are expressed as dB(A).
dB	Decibel. A logarithmic unit used to describe sound pressure level, sound power level or vibration-related levels.
dB(A)	A-weighted decibel. A sound level adjusted using the A-weighting frequency response.
Hz	Hertz. A unit of frequency equal to one cycle per second.
Octave band	A frequency band where the upper band-edge frequency is twice the lower band-edge frequency. Octave-band data is commonly used for music noise, low-frequency noise and acoustic treatment design.
LAeq,T	The equivalent continuous A-weighted sound pressure level over time period T. It represents the steady sound level containing the same acoustic energy as the varying sound over the assessment period.
LA90,T	The A-weighted sound pressure level exceeded for 90% of the measurement period T. It is commonly used to describe the background noise level.
LA10,T	The A-weighted sound pressure level exceeded for 10% of the measurement period T. It is sometimes used to describe intrusive or higher-level noise events within a measurement period.
LAmix	The maximum A-weighted sound pressure level measured during an event or assessment period.
LAFmax	The maximum A-weighted sound pressure level measured using the Fast time-weighting setting of a sound level meter.
Leff	Effective noise level. The assessed noise level of a source after applying the relevant assessment method and any required adjustments under the applicable EPA Noise Protocol procedure.
LOCT10	The linear octave-band sound pressure level exceeded for 10% of the measurement period. This descriptor is used for night-period indoor entertainment venue music-noise assessment.
LOCT90	The linear octave-band sound pressure level exceeded for 90% of the measurement period. This descriptor is used to determine night-period background levels for indoor entertainment venue music-noise assessment.
Background noise level	The underlying noise level in the absence of the source being assessed. Depending on the assessment method, this may be represented by LA90 or LOCT90.
Ambient noise	The total noise environment at a location, including all noise sources present at the time of measurement.
Noise-sensitive receiver	A residential or other sensitive use potentially affected by noise. For this project, relevant receivers include nearby off-site residences and residential apartments within the development.

Term	Definition
Sensitive room	A room where acoustic amenity is relevant, such as an apartment bedroom or living area.
Airborne noise	Sound that travels through the air and may transmit through façades, walls, floors, ceilings, doors, ducts, louvres or openings.
Structure-borne noise	Audible noise within a room caused by vibration travelling through the building structure and being re-radiated as sound from floors, walls or ceilings.
Impact noise	Noise generated by physical impacts, such as footsteps, dropped weights, trolley impacts, pallet jack impacts, roll-cage impacts, bin impacts or loading impacts.
Low-frequency noise	Noise with significant energy at low frequencies. Low-frequency noise may be more difficult to control than mid- or high-frequency noise and may be associated with music bass, plant, impacts or structure-borne transmission.
Tactile vibration	Vibration that can be felt by occupants within a building.
RMS acceleration	Root-mean-square acceleration. A vibration descriptor used to represent the effective vibration level over a measurement period. For human comfort assessment, RMS acceleration may be frequency-weighted and assessed in m/s^2 .
z-axis vibration	Vertical vibration, typically measured perpendicular to the floor surface. This is often relevant for assessing human comfort from floor vibration.
VDV	Vibration Dose Value. A descriptor used to assess cumulative exposure to intermittent or repeated vibration events over a defined assessment period. VDV is expressed in $\text{m/s}^{1.75}$.
PPV	Peak Particle Velocity. The maximum instantaneous vibration velocity measured at a point, usually expressed in mm/s . PPV is commonly used for structural vibration or as a screening descriptor for transient vibration, but it does not directly represent human comfort from repeated vibration events.
Rw	Weighted sound reduction index. A single-number laboratory rating used to describe the airborne sound insulation performance of a building element.
Ctr	Spectrum adaptation term applied to Rw to account for noise sources with greater low-frequency content.
Rw + Ctr	A single-number airborne sound insulation rating incorporating the Ctr spectrum adaptation term. It is commonly used for façade, floor and wall separation requirements where low-frequency performance is relevant.
Flanking transmission	Sound or vibration transmission via indirect paths, such as through structural elements, façades, services, ceilings, columns, walls or penetrations, rather than only through the primary separating construction.
Sound limiter	A device or system used to limit the maximum output of amplified sound equipment. A sound limiter may be calibrated to assist in achieving nominated receiver criteria.
Façade correction	An adjustment applied to a sound level measured close to a reflective façade to estimate the corresponding free-field level.

Term	Definition
Free-field level	A sound level measured or calculated without significant influence from nearby reflecting surfaces, other than the ground.
Unreasonable noise	Noise that may be considered unreasonable having regard to factors such as volume, intensity, duration, character, time, place, circumstances, frequency of occurrence and relevant prescribed factors.