BHCS - Performing Arts & Senior Learning Centre

For

Smith + Tracey Architects

Acoustic Report

Report Ref. H617/R01

22 Nov 2023

hanson associates

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1 INTRODUCTION

Hanson Associates has been appointed by Smith + Tracey Architects to provide an acoustics town planning report for the proposed Performing Arts & Senior Learning Centre (PASLC) at 20 Wattle Valley Rd, Belgrave Heights, Victoria.

An assessment has been undertaken of noise emissions from the proposed development to nearby residential properties as well as the impact that existing environmental noise sources may have on the new facility.

The major new sources of noise that could potentially impact nearby residents are occupational noise from music practice and amplified performances and events in the Auditorium and Black Box, and building services noise emissions to the environment.

Noise limits controlling emissions to surrounding noise-sensitive receivers have been established in accordance with the Environment Protection Regulations.

A glossary of acoustic terms used within this report is provided in Appendix A.

2 NOISE EMISSIONS CRITERIA

2.1 Description of Operations

The PASLC will support a wide range of teaching activities and events throughout the school day. Operations in the Auditorium and Black Box space may extend into the evenings or weekend to host the occasional music and drama rehearsal, performance or parent information evening etc. These activities are expected to be infrequent and conclude by 10pm at night.

2.2 Site Description

The proposed building site is located at 20 Wattle Valley Rd, Belgrave and bounded by the following land uses:

- Residential properties on Mt Morton Rd to the east and west. This land is classified as General Residential Zone (LDRZ).
- Residential properties on Mt Morton Rd to the south. This land is classified as General Residential Zone (GWAZ1).

Other than school-generated noise from outdoor recreation and occasional car movements to and from the car parks, the local environmental noise is dominated by distant noise generated by vehicles travelling on local Mt Morton Rd.

2.3 Acoustic Issues

Environmental noise issues that require addressing by the project design include:

- Noise emissions from new building services plant
- Music and event noise egress from the PASLC

2.4 Noise Sensitive Receivers

The residential properties in closest proximity to the project site and, therefore, most likely to be impacted by noise emissions from the development are 250 Mt Morton Rd. Refer to the site plan in below.

Figure 1: Site plan showing the relationship of the new building development (yellow), the land boundary nearest to the development and associated with residential properties in Mt Morton Rd (purple) and the location of the unattended noise logger (position 1).

The residential property at 250 Mt Morton Rd is one of the closest to the project site and, therefore, most likely to be impacted by noise emissions from the development. If noise limits are met for this residential receiver, they are considered to be met for all other noise-sensitive receivers in the surrounding area.

2.5 Noise Survey

A noise survey was conducted at the site between 19 of October and 27 October 2023 to establish current environmental noise conditions at nearby noise sensitive residential properties.

Unattended external noise monitoring was performed with a Brüel and Kjær Type 2250 noise logging kit. The logger incorporates a Type 1 sound level meter that complies with relevant Australian and international standards. The logger was locked within a weatherproof case with the microphone mounted externally and protected by a windscreen for outdoor use.

The noise logger was set up on the development site adjacent to boundary with 250 Mt Morton Rd. The noise levels measured at this location are deemed to be representative of ambient noise conditions for all residential properties along the west boundary of the site.

The calibration of the equipment was checked before and after measurements were made using a Brüel & Kjaer Type 4230 calibrator. No significant data drift was found to have occurred.

Refer to the aerial photograph identifying the location of the noise logger (Position 1) in Figure 1 above.

Details of the noise survey results are included in Appendix B.

2.6 Mechanical Services Noise Emissions

The *Environment Protection Regulations 2021* (Part 5.3, Division 3) (referred to in this report as the "Regulations") and the *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues* (publication 1826) (referred to in this report as the "Noise Protocol"), control noise emissions from commercial, industrial and trade premises.

The objective of the Regulations is to protect residential areas from noise emitted as a result of the business operations conducted from commercial premises, but explicitly excludes contributions made from music, voices, noise from crowds and sporting events.

For the purposes of this assessment, the key noise source will be building services plant serving the new development.

Noise limits derived using the Noise Protocol are required to apply at any area within the apparent boundary of the property that is within a distance of 10m from the external walls of the residential building.

Under the requirements of the Noise Protocol, the noise limit at noise sensitive receiver positions is determined by establishing the zoning noise level derived on the basis of land use in the surrounding area and the ambient noise levels at the receiver. Details are included in Appendix B.

Furthermore, different criteria apply according to three time periods, namely, day, evening and night, which are defined as follows.

Criteria	Day of week	Time period
Day	Monday – Saturday	7 am-6 pm
Evening	Monday – Saturday	6 pm-10 pm
	Sunday, Public Holidays	7 am-10 pm
Night	Monday – Sunday	10 pm-7 am

Table 1: Time periods as defined in the Regulations

Using the measured data and the method specified by the Noise Protocol, noise limits were computed. Table 2 below shows the applicable noise limits for 250 Mt Morton Rd.

Day Period (07:00 - 18:00)	
Measured background, L_{A90}	43
Zoning Level	50
Background level classification	neutral
Noise Limit, L_{Aeq}	**50**
Evening Period (18:00 - 22:00)	
Measured background, L_{A90}	37
Zoning Level	44
Background level classification	neutral
Noise Limit, L_{Aeq}	**44**
Sunday and Public Holidays (07:00 - 22:00)	
Measured background, L_{A90}	43
Zoning Level	44
Background level classification	high
Noise Limit, L_{Aeq}	**46**
Night Period (22:00 - 07:00)	
Measured background, L_{A90}	33
Zoning Level	39
Background level classification	neutral
Noise Limit, L_{Aeq}	**39**

Table 2: Measured background noise levels and noise limits prescribed by the Regulations.

As building operations are anticipated to conclude before 10pm, the day and evening period noise limit of 44dBL_{Aeq} will apply.

If noise limits are met for 250 Mt Morton Rd, then they are considered to be met at all other noise sensitive areas in the neighbourhood.

2.6.1 Standby Generators and Pumps

The Policy allows the above noise limits to be relaxed for standby generators or pumps that are provided for use in an emergency and require periodic testing as part of a maintenance regime. Should standby equipment form part of the new development, the noise limits applicable to this equipment can be increased by 10dB for the day period and 5dB at all other times.

2.7 Music Noise Emissions

The *Environment Protection Regulations 2021* (Part 5.3, Division 4) and the *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues* (publication 1826), control music noise emissions from indoor entertainment venues.

The objective of the Regulations is to protect residents from levels of music noise that may affect the beneficial uses of noise sensitive areas, while recognising the community benefits (educational needs) for musical entertainment (and education).

Criteria are defined for the day / evening period and night period as follows:

Criteria	Day of week	Time period
Day/Evening	Monday – Saturday	7 am - 11 pm
Day/Evening	Sunday, public holidays Sunday, public holidays - preceding a public holiday	9 am - 10 pm 9 am - 11 pm
Night	Monday – Friday	11 pm - 7 am
Night	Saturday or any day preceding a public holiday	11 pm - 9 am
Night	Sunday or a public holiday (if neither is preceding a public holiday	10 pm - 7 am

Table 3: Time periods as defined in the Regulations

The Noise Protocol defines the music noise limits as:

- measured background noise level during day / evening period, L_{A90} + 5 dB(A)
- measured background noise level at each octave band during the night period, L_{OCT90} + 8 dB

As music-generating activities and performances are not expected to continue beyond 10pm during weekday and Saturdays nor beyond 9pm on Sundays, the day / evening period noise limits will apply.

Using the measured data and the method specified by the Noise Protocol, the permissible noise limit during the day/evening period has been computed and is presented in Table 4, below.

Day / Evening Period	
Measured background, (late evening), L_{A90}	37
Noise Limit, L_{Aeq}	**42**

Table 4: Noise Limit for Control of Music Noise – day / evening period

Noise limits derived using the Protocol are required to apply at any area within the apparent boundary of the property that is within a distance of 10m from the external walls of the residential building.

If noise limits are met for 250 Mt Morton Rd, then they are considered to be met at all other noise sensitive areas in the neighbourhood.

3 BUILDING CONSTRUCTION

3.1 Mechanical Services Noise Control

A detailed design for building services noise control is not generally undertaken at planning stage as final locations and selections for plant normally occur later in the design process.

However, based on the potential types of equipment and the likely locations of plant zones identified during the preliminary design phase, it will be feasible to comply with the noise emission criteria using standard noise control measures such as attenuators, lined ductwork, acoustic louvres and acoustic screening using building constructions or dedicated noise barriers.

3.2 Music & Event Noise Egress Control

3.2.1 Internal Music Levels

Table 5 presents the octave-band L_{eq} design sound levels we have assumed for the music practice rooms and for amplified performances in the Auditorium or Black Box. The levels in practice rooms are representative of the louder solo instruments (including brass) and small ensembles. The design sound levels assumed for the main venues are representative of loud sound production levels typical of school concerts and West End musical theatre productions etc. Both design sound levels have been used as the basis for assessing the external sound insulating construction needs for the building.

As the main venues are predominately bounded by internal walls, the key external sound insulating constructions of interest are limited to the upper walls of the Auditorium stage house and the roof above the Black Box, the Auditorium and its stage house.

Noise emissions from the music practice rooms will be limited by the performance of the external windows. The rooms are currently planned to face north and east where music emissions to Mt Morton Rd residents will be significantly self-screened by the building.

	Octave band centre frequency (Hz)						
Design Sound Spectra	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**
Auditorium and Black Box Amplified, L_{eq} (dB) *(full production sound system generating levels of 95dBC)*	90	90	85	85	85	80	70
Music Practice Rooms (Brass), L_{eq} (dB)	60	70	85	85	85	75	70

Table 5: Design music levels used to determine façade and roof construction advice.

3.2.2 Calculation Method

The residential property at 250 Mt Morton Rd was used to assess noise emissions from the new facility. If the noise criteria are achieved for this property, they are considered to be achieved for all residential properties in the area.

The level of music noise reaching 250 Mt Morton Rd was predicted by taking the following into account:

- Internal event design sound levels for an amplified event in the Auditorium or Black Box
- Distance loss of sound over 20 m from the Auditorium roof and exposed external walls to the boundary of the nearest noise sensitive receiver
- Music practice sound levels (for loud instruments, including brass) in up to four practice rooms at one time
- Distance loss of sound over 35 m from the practice room windows to the boundary of the nearest noise sensitive receiver
- Sound emitting façade, windows and roof elements treated as planar sources.
- Conservative assumption that the directivity of the roof is omnidirectional.
- Ground reflection of 3dB
- Transmission loss of example building elements sufficient to achieve the Regulation Day/Evening noise limit.

3.2.3 Required Sound Insulation Performances

To ensure the music noise limits are met, key external walls, glazing and roof constructions to music generating spaces are required to achieve the following minimum sound reduction indices (SRI):

	Minimum sound reduction indices (dB) Octave band centre frequency (Hz)						
Building Element	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**
Auditorium and Black Box:							
- External Wall	16	35	47	54	56	57	63
- Roof/Ceiling combination	13	29	38	43	49	54	53
Music Practice rooms:							
- External Glazing & Doors	25	25	20	37	40	41	43

Table 6: Minimum SRIs for key external building elements

3.3 Building Envelope Construction Advice

The following sub sections provide example constructions that meet the minimum performance requirements presented in Table 6, above.

3.3.1 Example Roof and Ceiling Construction to Auditorium and Black Box

- Colorbond metal deck roof (or similar)
- minimum 500mm ceiling void with 50mm insulation (min. density 22kg/m^3) laid on the ceiling
- 16mm solid fire-rated or sound-rated plasterboard ceiling (minimum surface mass of 12.5kg/m^2) with minimal penetrations.

(Beyond the requirements of the Regulations, the roof and ceiling combination will also be required to control rain impact noise to the Auditorium and Blackbox and may need to incorporate additional measures to damp the metal deck and provide the necessary airborne sound insulation).

3.3.2 Example External Wall Construction to Auditorium Stage House

- Colorbond wall cladding, fixed through
- 6mm compressed fibre cement sheet (min. surface mass 12kg/m^2)
- 250mm cavity with 50mm insulation (min. density 22kg/m^3) in the cavity
- 16mm Fyrchek lining

3.3.3 Example External Glazing Construction to Music Practice Rooms

Due to the screened location of the music practice room on the east façade, sound insulation requirements are expected to be met by standard glazing constructions and openable windows fitted with basic weather seals.

(Beyond the requirements of the Regulations, consideration should be given to controlling sound transmitted from music practice room windows to ensure it does not disturb other teaching spaces in the new development and other existing school buildings. This is addressed separately in Section 4).

3.3.4 Example External Doors

External doors leading directly from the performance and practice spaces are limited to just one double door from the Ground Level Music LA space. Sound insulation requirements are expected to be met by standard door constructions fitted with basic weather seals.

4 NOISE INTRUSION ASSESSMENT

Beyond the requirements of the Regulations, this section describes a separate assessment of the impact that external environmental noise may have on the PASLC and the potential implications for music emissions from the new development on other existing school buildings.

4.1 Noise Ingress Criteria

The Building Quality Standards Handbook issued by Victorian School Building Authority, Department of Education and Training covers, amongst other acoustic considerations, design requirements for external sound insulation (control of noise ingress from external noise such as transport).

The Handbook states that the school building façade should meet the recommended ambient noise levels within AS 2017: 2016 *Acoustics - Recommended design sound levels and reverberation times for building interiors,* with windows and doors closed. Furthermore, the school site should be positioned to mitigate the effect of noise associated with traffic, rail transport and adjacent commercial and industrial activities.

The applicable criteria controlling noise ingress into noise sensitive spaces from external noise are as follows:

Type of Occupancy / Activity	Design Sound Level Range, L_{Aeq}
Auditorium and Black Box	25 – 30
Teaching Spaces (secondary schools)	35 – 40
Music Practice Rooms	40 - 45

Table 7: Internal design sound levels used to control external noise ingress.

4.2 Measurement of External Environmental Noise

From the results of the noise survey, noise impacting the development site is dominated by local student recreational activities (typically during school break and lunchtime periods) with infrequent local traffic and car park activity forming a secondary source of noise. Noise from local traffic during morning drop-off and afternoon pick-up periods is excluded from the assessment as noise-sensitive learning activities are not expected to occur during these times.

Table 5 presents the octave-band L_{Aeq} design sound levels used as the basis for assessing the sound insulating constructions of external walls and glazing constructions. The spectrum is derived from measurements of school recreational activities made previously by Hanson Associates.

	Octave band centre frequency (Hz)						
Design Sound Spectra	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**
Recreation activity + local road traffic [66dBA], L_{eq} (dB)	63	58	56	59	64	58	54

Table 8: Design external environmental noise spectrum used to determine construction advice

4.3 Additional Construction Advice

The internal design sound level ranges stated in Table 7 are generally met by the example constructions recommended to control music noise egress (as described in Section 3.3).

Target internal sound levels for all other teaching spaces are achievable with standard sheet metal roof constructions, standard wall constructions such as masonry or framed walls filled with insulation, and standard thermal glazing and doors.

To ensure self-generated noise emissions from music practice rooms around the Arrival Forecourt on the east side of the building do not disturb other teaching spaces that overlook the forecourt (from the new building or adjacent existing school buildings), we recommend that an allowance for deep double glazing (with up to 100mm air gap) is made for the following rooms:

- Music 01, 02, 03, 04
- Band Room / Virtual Media
- Music LA

5 CONCLUSIONS

The following conclusions arise from this assessment.

a) The *Environment Protection Regulations 2021* has been used to guide noise control requirements for this project.

b) The Regulations are appropriate for the assessment of steady state industrial noise sources and has been used to derive noise limits to guide the design of the mechanical services systems in the next stage of work.

c) The Regulations have been used to assess the impact of music and events noise emitted from the facility.

d) Sound insulation performance requirements are presented for the façade and roof elements associated with the main sources of music, namely, the Auditorium, Black Box and music practice rooms.

e) Examples of compliant sound insulating constructions are presented to demonstrate that music noise limits can be achieved at the nearest affected residents at 250 Mt Morton Rd.

f) The use of standard constructions for other element of the building are expected to be sufficient to control noise egress to nearby residents and to reduce the ingress of local external noise to internal sound level ranges recommended by the Victorian School Building Authority and Australian Standards.

g) This assessment concludes that the proposed Performing Arts and Senior Learning Centre is acoustically acceptable and will not negatively impact the amenity of surrounding land.

Appendix A

Acoustic Terminology

SOUND

Sound is an instantaneous fluctuation in air pressure over the static ambient pressure, and is transmitted as a wave through air or solid structures.

SOUND PRESSURE LEVEL

Commonly known as "sound level", the sound pressure level in air is the sound pressure relative to a standard reference pressure of 20µPa (20x10-6 Pascals) when converted to a decibel scale.

DECIBEL (dB)

A scale for comparing the ratios of two quantities, including sound pressure and sound power.

The ratio of sound pressures which we can hear is a ratio of 106:1 (one million to one). To measure this huge range in pressure, a logarithmic measurement scale is used with the associated unit being the decibel (dB).

An increase or decrease of approximately 10 dB corresponds to an approximate subjective doubling or halving of the loudness of a sound. A change of 2 to 3 dB is subjectively a small change and may sometimes be difficult to perceive.

As the decibel is a logarithmic ratio, the laws of logarithmic addition and subtraction apply to dB values.

The difference in level between two sounds s1 and s2 is given by 20 log10 (s1 / s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20µPa.

FREQUENCY

Frequency is the rate of repetition of a sound wave. The subjective equivalent of frequency in music is pitch. The unit of frequency is the Hertz (Hz), which is identical to the number of cycles per second. A thousand hertz is often denoted kiloHertz (kHz), e.g. 2 kHz = 2000 Hz.

Human hearing ranges from approximately 20 Hz to 20 kHz.

OCTAVE BAND

The most commonly used frequency bands are octave bands, in which the mid frequency of each band is twice that of the octave band below it. In subjective terms, it corresponds to a doubling of pitch.

For design purposes, the octave bands ranging from 31.5 Hz to 8 kHz are generally used. For more detailed analysis, each octave band may be split into three one-third octave bands or, in some cases, narrow frequency bands.

A-WEIGHTED SOUND LEVEL dBA

The unit of sound level, weighted according to the A scale, which takes into account the increased sensitivity of the human ear at some frequencies. The unit is generally used for measuring environmental, traffic or industrial noise is the A weighted sound pressure level in decibels, denoted dBA.

A weighting is based on the frequency response of the human ear at moderate and low sound levels and has been found to correlate well with human subjective reactions to various sounds.

Sound level meters usually have an A-weighting filter network to allow direct measurement of A-weighted levels.

C-WEIGHTED SOUND LEVEL dBC

As the sound level increases, the ear is better able to hear low frequency sounds, The C-weighting filter allow low frequencies to contribute to the measurement much more than the A weighting filter.

Z-WEIGHTING dBZ

The Zero-weighting is equivalent of non-frequency shaping or weighting the measured sound level, and as no filter is applied to the sound before measurement, it is sometimes referred to as "linear" weighting.

SOUND LEVEL INDICES

Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.

Examples of sound level indices are $L_{eq,T}$ L_{max}, L_{90}, L_{10} and L_{1}, which are described below. The reference time period (T) is normally included, e.g. $dBL_{A10,\ 5min}$ or $dBL_{A90,\ 8hr}$.

EQUIVALENT CONTINUOUS SOUND LEVEL (Leq)

Another index for assessment for overall noise level is the equivalent continuous sound level, L_{eq}. This is a notional steady level, which would, over a given period of time, deliver the same sound energy as the actual time-varying sound over the same period. This allows fluctuating sound levels to be described as a single figure level, which assists description, design and analysis.

The L_{eq} is often A-weighted to remove the contribution of low frequencies, which may be less audible and is written as L_{Aeq}. It can also have no weighting as L_{Zeq} or C-weighting as L_{Ceq}.

$L_{max,T}$ - MAXIMUM SOUND LEVEL

A noise level index defined as the maximum noise level during the measurement period duration T. Lmax is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.

$L_{A90,(T)}$

A noise level index. The LA90 is the sound pressure level measured in dBA that is exceeded for 90% of the time over the measurement period T. In other words, the measured noise levels during the period were greater than this value for 90% of the measurement time period.

L90 can be considered to be the "average minimum" noise level and in its A weighted form is often used to describe the background noise a LA90.

$L_{A10(T)}$

A noise level index. The LA10 is the sound pressure level measured in dBA that is exceeded for 10% of the time interval (T). In other words, the measured noise levels during the period were only greater than this value for 10% of the measurement time period.

This is often referred to as the average maximum noise level.

$L_{A1(T)}$

Refers to the sound pressure level measured in dBA, exceeded for 1% of the time interval (T). This is often used to represent the maximum noise level from a period of measurement (sometimes referred to as L_{Amax}.

SOUND POWER

The sound power level (L_w) of a source is a measure of the total acoustic power radiated by a source. The sound pressure level (L_p) varies as a function of distance from a source or other factors such as shielding. However, the sound power level is an intrinsic characteristic of a source.

VIBRATION

Vibration may be expressed in terms of displacement, velocity and acceleration. Velocity and acceleration are most commonly used when assessing structure borne noise or human comfort issues respectively. Vibration amplitude may be quantified as a peak value, or as a root mean squared (rms) value.

Vibration amplitude can be expressed as an engineering unit value e.g. $1mms^{-1}$ or as a ratio on a logarithmic scale in decibels:

Vibration velocity level, LV (dB) = 20 log (V/V_{ref}),

(where the preferred reference level, V_{ref}, for vibration velocity = 10^{-9} m/s).

The decibel approach has advantages for manipulation and comparison of data.

SOUND ABSORPTION

This is the removal of sound energy from a room or area by conversion into heat.

SOUND ABSORPTION CO-EFFICIENT

Sound absorption co-efficient indicate the extent to which the material absorbs sound power at a specific frequency, and is expressed on a scale of 0 to 1, with a value of 1 representing the maximum possible absorption.

SOUND INSULATION

The sound insulation is the capacity of a structure such as a wall or floor to prevent sound from reaching a receiving location.

SOUND REDUCTION INDEX

This parameter is used to describe the sound insulation properties of a partition, and is the decibel ratio of the airborne sound power incident on the partition to the sound power transmitted by the partition and radiated on the other side. It is usually measured in specific frequency bands, such as octave or one-third octave.

$D_{nT,w}$

The single number quantity that characterises sound insulation between rooms over a range of frequencies with airborne sound.

R_w

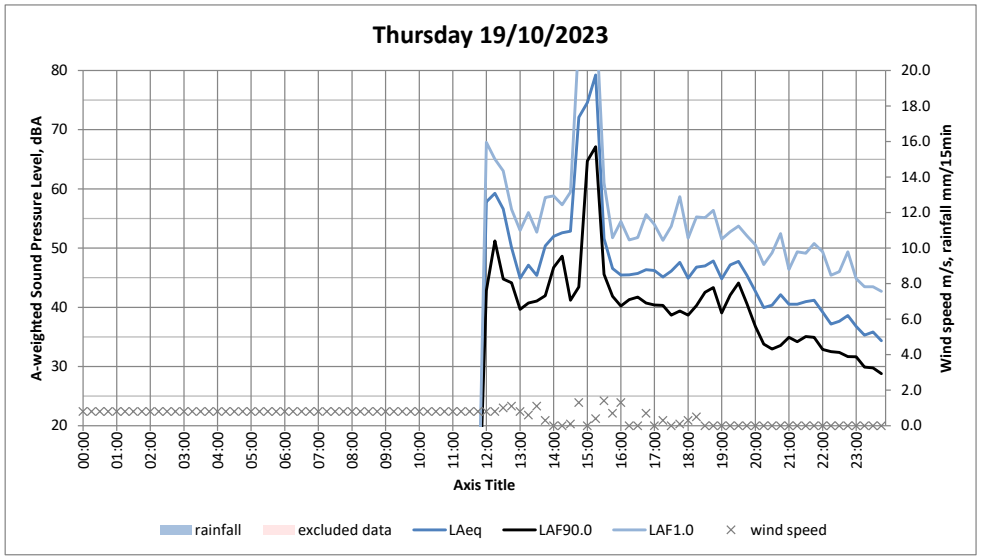
Single number quantity that characterises the sound-insulating properties of a material or construction element over a range of frequencies with airborne sound.

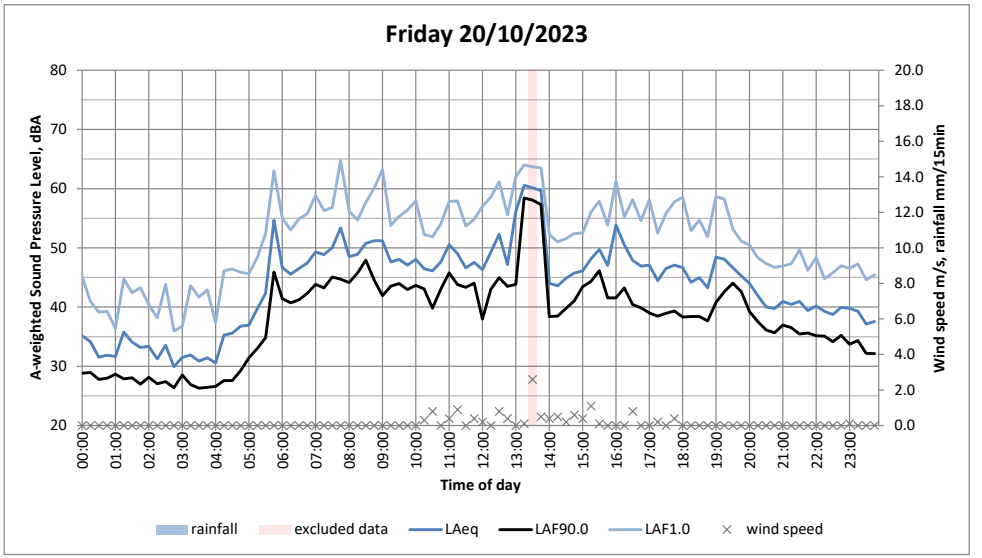
REVERBERATION TIME

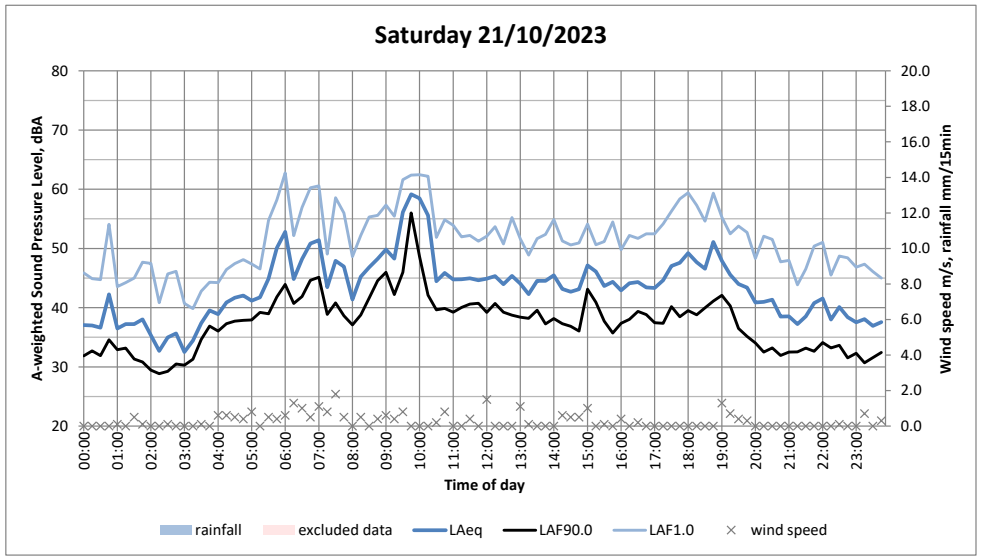
The time in seconds required for the sound at a given frequency to decay away (or reduce to) to one-thousandth of its initial steady-state value after the sound source has been stopped. This degree of reduction is equivalent to 60 decibels.

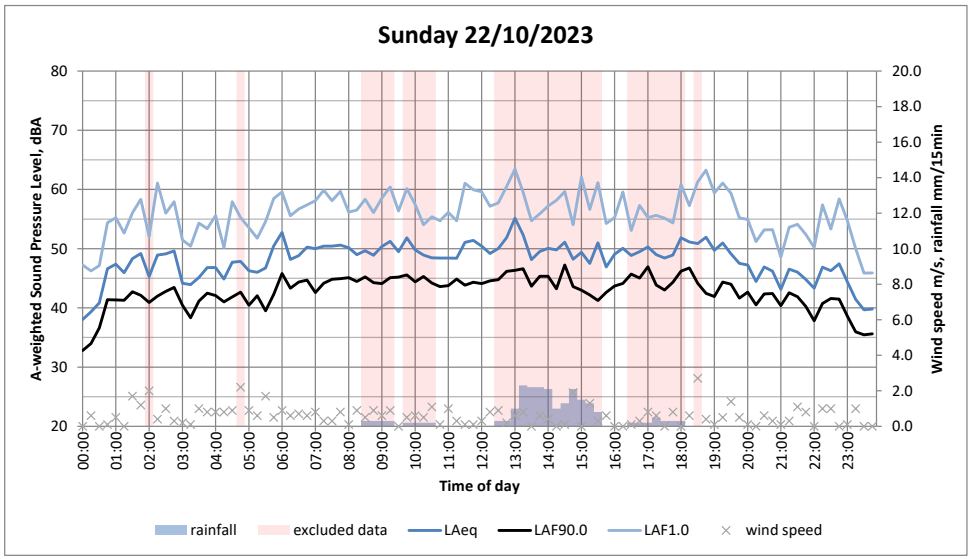
Appendix B

Noise Survey Results

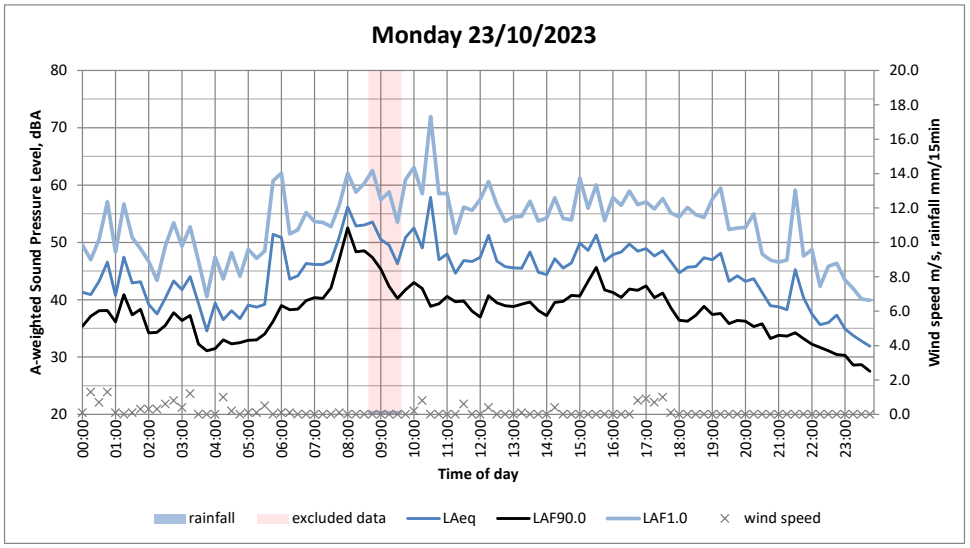


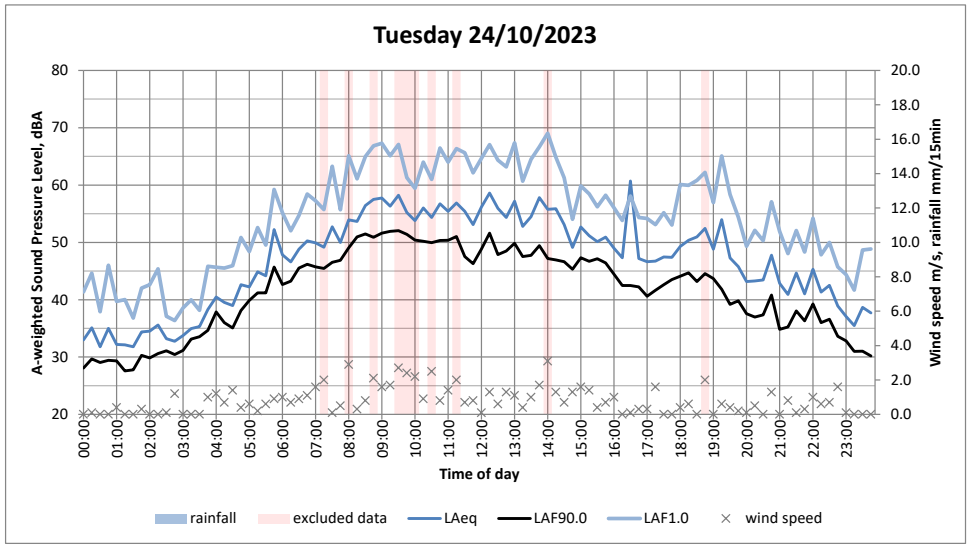


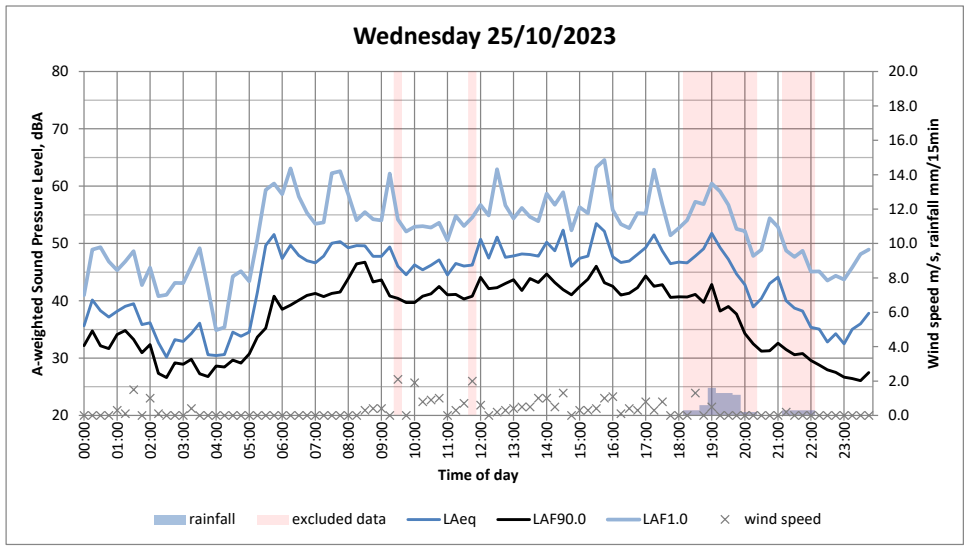


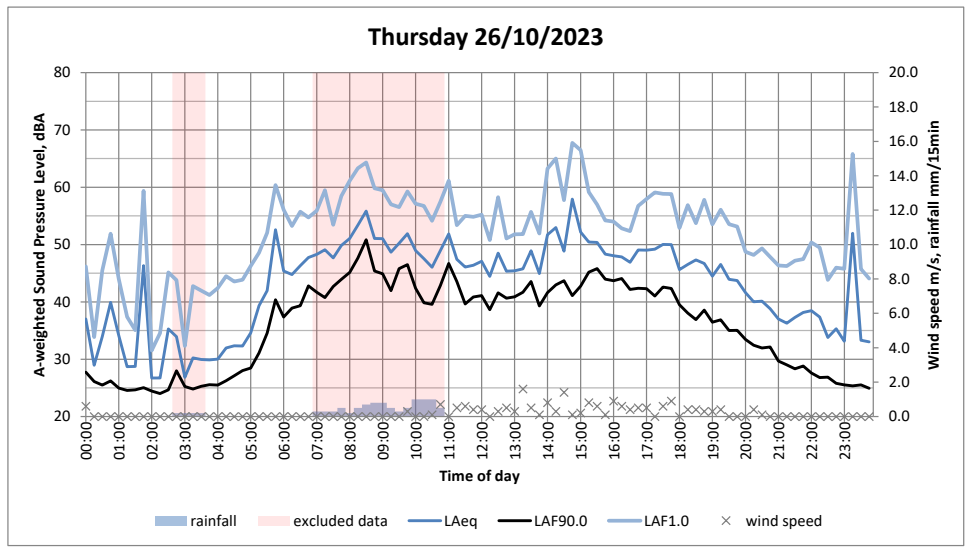


Project	BHCS Performance Centre
Period	19/10/2023 - 26/10/2023
Kit	2250 Enviro
Logger Position	Pos 1
By	SL









Project	BHCS Performance Centre
Period	19/10/2023 - 26/10/2023
Kit	2250 Enviro
Logger Position	Pos 1
By	SL

Calculation of commercial noise limits in accordance with the Environment Protection Regulations 2021 and the Noise Protocol

Project	Belgrave Heights Christian School, 20 Wattle Valley Rc	**Date**	25/10/2023
		By	SL

Calculate Influencing Factor

	Loc 1
Type 2 % (140m dia circle)	0%
Type 3 % (140m dia circle)	0%
Type 2 % (400m dia circle)	7%
Type 3 % (400m dia circle)	0%
IF	0.01839632

Calcuation of Noise Limits for each Period

Day Period (07:00 - 18:00) - Mon to Sat

Measurement Position	Loc 1
L_{A90}	43
Zoning Level	50
Background level classification	neutral
Noise Limit	50

Evening Period (18:00 - 22:00) - Mon to Sat

Measurement Position	Loc 1
L_{A90}	37
Zoning Level	44
Background level classification	neutral
Noise Limit	44

Night Period (22:00 - 07:00) - All days

Measurement Position	Loc 1
L_{A90}	33
Zoning Level	39
Background level classification	neutral
Noise Limit	39

Sunday & Public Holiday (07:00 - 22:00) - Evening criterion applies

Measurement Position	Loc 1
L_{A90}	43
Zoning Level	44
Background level classification	high
Noise Limit	46

Description of measurement location

Loc 1:	250 MT MORTON ROAD BELGRAVE 3160
Loc 2:	
Loc 3:	

Insert Planning Scheme showing Influencing Factor circles