Duffy Kennedy Constructions

1 Veno St, Heathcote

Acoustic DA Assessment

Author	Fu Siong Hie, B.Eng, MAAS Principal Consultant
Document Reference:	SYD2024-1073-R001B
Date	28/06/2024
Comments:	New drawings, traffic generation (Section 3.5), tavern operation (Section 3.6)

Table of Contents

Index of Figures

Index of Tables

1 Introduction

The following report has been prepared by Acouras Consultancy on behalf of Duffy Kennedy Constructions to assess the potential for noise impact associated with the 1 Veno St, Heathcote. The mixed-use development will include:

- Carpark on basement and lower ground level.
- Tavern and retail on ground level.
- Residential apartment on level 1 to level 5.

The proposed development is surrounded by existing residential, public park and commercial buildings. The site location is shown in Figure 1.

Figure 1 – Site Location, Nearest Residents and Noise Logger Position

2 Noise Criteria

The following standards and guidelines are applicable to this project:

- Sutherland Shire Council DCP.
- NCC/BCA Part F7.
- NSW EPA "Noise Guide for Local Government" (NGLG).
- NSW Department of Planning "Development Near Rail Corridors and Busy Roads".
- State Environmental Planning Policy (Transport and Infrastructure) 2021.
- Australian standard AS/NZS 2107-2016: Acoustics – Recommended design sound levels and reverberation times for building interiors.
- Australian standard AS 1055.1-1997: Acoustics – Description and measurement of environmental noise - General procedures.

2.1 Sutherland Shire Council DCP

For this residential development, the Sutherland Shire Council DCP Chapter 3 (Section 13.b.5) for residential development outlines the acceptable internal noise levels within occupied spaces in accordance with State Environmental Planning Policy (Transport and Infrastructure) 2021 and the Department of Planning's "Development near Rail Corridors and Busy Roads –Interim Guideline". The NSW Department of Planning and SEPP Clause 2.120 requires the following:

> ***2.120 Impact of road noise or vibration on non-road development***
>
> *(1) This section applies to development for any of the following purposes that is on land in or adjacent to the road corridor for a freeway, a tollway or a transitway or any other road with an annual average daily traffic volume of more than 20,000 vehicles (based on the traffic volume data published on the website of TfNSW) and that the consent authority considers is likely to be adversely affected by road noise or vibration—*
>
> *(a) residential accommodation,*
>
> *(b) a place of public worship,*
>
> *(c) a hospital,*
>
> *(d) an educational establishment or centre-based child care facility.*
>
> *(2) Before determining a development application for development to which this section applies, the consent authority must take into consideration any guidelines that are issued by the Planning Secretary for the purposes of this section and published in the Gazette.*

(3) If the development is for the purposes of residential accommodation, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded—

(a) in any bedroom in the residential accommodation—35 dB(A) at any time between 10 pm and 7 am,

(b) anywhere else in the residential accommodation (other than a garage, kitchen, bathroom or hallway)—40 dB(A) at any time.

(3A) Subsection (3) does not apply to a building to which State Environmental Planning Policy (Housing) 2021, Chapter 3, Part 7 applies.

(4) In this section, freeway, tollway and transitway have the same meanings as they have in the Roads Act 1993.

Mitigation measures are based on having windows and external doors closed. If internal noise levels with windows or doors open exceed the criteria by more than 10dBA, the design of the ventilation for these rooms should be such that occupants can leave windows closed, if they so desire, and also to meet the ventilation requirements of the Building Code of Australia.

For the control of mechanical noise emission from the development, Section 13.b.1 of the DCP states that:

All noise generating equipment such as mechanical plant or equipment, air conditioning units, swimming pool filters, fixed vacuum systems, mechanical ventilation from carparks, driveway entry shutters and garbage collection areas or similar must be designed to protect the acoustic privacy of residents and neighbours. All such noise generating equipment must be acoustically screened. The noise level generated by any equipment must not exceed an $L_{Aeq(15min)}$ *of 5dB(A) above background noise at the property boundary.*

The AS/NZS 2107–2016 outlines the acceptable internal noise levels such that a satisfactory acoustic environment within non-residential spaces in new and existing buildings can be achieved. Table 1 presents the recommended internal design noise levels.

Table 1— Recommended Internal Design Noise Levels (AS/NZS 2107)

Type of occupancy/activity	Design sound level ($L_{Aeq,t}$) range
Apartment common areas, corridors, lobbies (e.g. foyer, lift lobby)	45 to 50
Small retail stores (general)	< 50
Restaurant/Dining rooms, Coffee Shops, Cafeterias	40 to 50
Bars	< 50
Toilets	45 to 55
Foyer and recreation areas	45 to 50
Kitchen	< 55
General office	40 to 45
Enclosed Carparks	< 65

2.2 Railway Vibration Criteria

The proposed building is located more than 60m of the nearest railway corridor, therefore a railway vibration assessment in accordance with NSW Department of Planning is not required.

2.3 Sound Insulation Requirement (Part F7 NCC/BCA)

For sound transmission and insulation between sole occupancy units (SOU) within the same development, walls and floors to be constructed in accordance with requirements of Part F7 of the Building Code of Australia (BCA). Sound insulation requirements are summarised in Table 2.

Table 2 - NCC Part F7 Requirements (Class 2 or 3)

Building Element	Minimum NCC Part F7 Requirements
Sound Insulation Rating of Walls (Class 2 or 3)	
Walls between separate sole occupancy units.	Rw + Ctr 50 (airborne)
Walls between wet areas (bathrooms, sanitary compartment, laundry or kitchen) and a habitable room (other than kitchen) in adjoining apartments.	Rw + Ctr 50 (airborne) & of discontinuous construction
Walls between sole occupancy unit and stairway, public corridors, public lobby or the like or parts of a different classification.	Rw 50 (airborne)
Walls between a plant room or lift shaft and a sole occupancy unit.	Rw 50 (airborne) & of discontinuous construction
Sound Insulation Rating of Floors (Class 2 or 3)	
Floors between sole occupancy units or between a sole occupancy unit and plant room, lift shaft, stairway, public corridor, public lobby or the like.	Rw + Ctr 50 (airborne) & Ln,w + Cl < 62 (impact)
Apartment Entry Doors (Class 2 or 3)	
A door incorporated in a wall that separates a sole-occupancy unit from a stairway, public corridor, public lobby or the like.	Rw 30 (airborne)
Services (Class 2, 3 or 9c)	
If a storm water pipe, a duct, soil, waste or water supply pipe including a duct or pipe that is located in a wall or floor cavity serves or passes through more than one sole occupancy unit must be separated:	
if the adjacent room is a habitable room (other than a kitchen); or	Rw + Ctr 40
if the room is a kitchen or non-habitable room	Rw + Ctr 25

Construction Deemed to Satisfy

The forms of construction must be installed as follows:

(a) Masonry—Units must be laid with all joints filled solid, including those between the masonry and any adjoining construction.

(b) Concrete slabs—Joints between concrete slabs or panels and any adjoining construction must be filled solid.

(c) Sheeting materials—

(i) if one layer is required on both sides of a wall, it must be fastened to the studs with joints staggered on opposite sides; and

(ii) if two layers are required, the second layer must be fastened over the first layer so that the joints do not coincide with those of the first layer; and

(iii) joints between sheets or between sheets and any adjoining construction must be taped and filled solid.

(d) Timber or steel-framed construction—perimeter framing members must be securely fixed to the adjoining structure and—

(i) bedded in resilient compound; or

(ii) the joints must be caulked so that there are no voids between the framing members and the adjoining structure.

(e) Services—

(i) Services must not be chased into concrete or masonry elements.

(ii) A door or panel required to have a certain Rw + Ctr that provides access to a duct, pipe or other service must—

(A) not open into any habitable room (other than a kitchen); and

(B) be firmly fixed so as to overlap the frame or rebate of the frame by not less than 10 mm, be fitted with a sealing gasket along all edges and be constructed of—

(aa) wood, particleboard or blockboard not less than 33 mm thick; or

(bb) compressed fibre reinforced cement sheeting not less than 9Â mm thick; or

(cc) other suitable material with a mass per unit area not less than 24.4 kg/m^2

(iii) A water supply pipe must—

(A) only be installed in the cavity of discontinuous construction; and

(B) in the case of a pipe that serves only one sole-occupancy unit, not be fixed to the wall leaf on the side adjoining any other sole-occupancy unit and have a clearance not less than 10 mm to the other wall leaf.

(iv) Electrical outlets must be offset from each other—

(A) in masonry walling, not less than 100 mm; and

(B) in timber or steel framed walling, not less than 300 mm.

2.4 Noise Survey and Project Specific Limits

An unattended noise survey was carried out at the site to measure the background and ambient noise levels. Nose monitoring was conducted between Wednesday 29th May to Tuesday 4th June 2024. The monitor was positioned on top of the existing roof, as shown in Figure 1.

Measurements were conducted using the following equipment:

- SVAN 977C Type 1 Real time Analyser/Noise Logger. Serial No. 98078.
- SVAN SV30A Type 1 Sound Level Calibrator. Serial No. 31830.

Noise monitoring was conducted in general accordance with Australian standard AS 1055.1-1997: Acoustics-Description and measurement of environmental noise-General procedures.

The noise analyser was calibrated immediately before and after measurements were taken with no discernible differences between these two recorded levels. The sound analyser is Type 1 and complies with Australian standard AS1259.2: 1990.

During detailed design stage, the design and selection of the mechanical equipment required to service the proposed development will be required to achieve the EPA noise limits as presented in the table above.

During the monitoring period any adverse weather condition have been excluded. The noise logger results are presented in Appendix C.

2.4.1 Traffic Noise Levels

Error! Reference source not found. presents a summary of the measured ambient noise level and traffic and railway noise impacting the proposed development.

Table 3 – Measured Ambient and Traffic Noise and Levels, dBA

Location	Period	Average L_{eq}	Highest L_{eq} 1hr
Princes Hwy	Day (07:00-22:00)	65	72
	Night (22:00-07:00)	60	67

By analysing measured data, the impact of the surrounding traffic noise on Princes Highway have been calculated by applying the CRTN method for predicting noise traffic noise using CadnaA (version 4.5.149) noise modelling software.

2.4.2 DCP Project Noise Limits

Table 4 presents a summary of the measured background noise level and the allowable intrusive noise limit for this project in accordance with the DCP. For the purpose of the assessment, the background noise level has been determined using the RBL in accordance with the method given in the EPA INP.

Table 4—Noise Survey Summary and DCP Noise Limits, dBA

Time Period	Existing Noise Levels		DCP Noise Limits, Leq
	$L_{eq\ (period)}$	RBL	
Day	65	57	62
Evening	64	53	58
Night	60	42	47

2.4.3 Ambient Noise Levels and Project Noise Limits

We recommend that operational mechanical noise be assessed in accordance with the procedures as set out in the NSW NPfI.

Table 5 presents a summary of the measured background noise level and the allowable intrusive noise limit for this project. The amenity criteria for L1 is based on an industrial/urban receiver and the amenity criteria for L2 is based on a suburban receiver.

Table 5—EPA Noise Limits for Development, dBA

Receiver	Time Period	Existing Noise Levels		NSW EPA NPI			Project Noise Trigger Level $L_{eq(15min)}$
		$L_{eq\ (period)}$	RBL	Recommended ANL	Project ANL[1] $L_{eq(15min)}$	Intrusiveness Criteria, $L_{eq(15min)}$	
Residential (L1)	Day	65	57	55	53	62	**53**
	Evening	64	53	45	43	58	**43**
	Night	60	42	40	38	47	**38**
Commercial	All	-	-	-	-	-	**65**

[1] Project ANL is recommended ANL minus 5 dB(A) and plus 3 dB(A), to convert from a period level to a 15-minute level.

2.4.4 Noise Criteria for Licenced Premises

To assess the impact of noise emanating from the operation of the licenced bar to the adjacent residents, the NSW Governments Office of Liquor, Gaming and Racing (OLGR) provides the following noise guidelines:

> *The LA10* noise level emitted from the licensed premises shall not exceed the background noise level in any Octave Band Centre Frequency (31.5 Hz – 8k Hz inclusive) by more than 5 dB between 07:00 am 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 in any Octave Band Centre Frequency (31.5 Hz – 8k Hz inclusive) between 12:00 midnight and 07:00 am 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 07:00 am.*
>
> ** LA10 is the average maximum deflection of the noise emission from the licensed premises.*

The noise impact of the proposed function room, gaming room and outdoor terraces is to be assessed based on the existing background noise level, determining by the lowest repeatable L_{90} dB(A) during the respective periods. The background levels recorded at the location and the OLGR noise limit are shown in the following Table 6.

Table 6 — OLGR Noise Limit

7.00am to midnight	Octave Band, Hz Lin									Overall dBA
	31.5	63	125	250	500	1k	2k	4k	8k	
Background Noise Level Before Midnight, RBL	53	53	51	48	46	48	43	33	26	51
Noise Criteria Before Midnight, L_{10}	**58**	**58**	**56**	**53**	**51**	**53**	**48**	**38**	**31**	**56**
Background Noise Level After Midnight, RBL	50	48	43	39	37	38	30	20	16	41
Noise Criteria After Midnight, L_{10}	**50**	**48**	**43**	**39**	**37**	**38**	**30**	**20**	**16**	**41**

2.4.5 Sleep disturbance

To assess the potential of sleep disturbance, the EPA 'Noise Policy for Industry' applies the following criteria where premises night-time noise levels at a residential location exceed:

- $L_{Aeq,15min}$ 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or
- L_{AFmax} 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater,

Other factors that may be important in assessing the extent of impacts on sleep include:

- how often high noise events will occur.
- the distribution of likely events across the night-time period and the existing ambient maximum events in the absence of the subject development.
- whether there are times of day when there is a clear change in the noise environment (such as during early-morning shoulder periods).
- current scientific literature available at the time of the assessment regarding the impact of maximum noise level events at night.

The $L_{A1, (1\ minute)}$ descriptor is meant to represent a maximum noise level measured under 'fast' time response. The EPA will accept analysis based on either $L_{A1, (1\ minute)}$ or $L_{A, (Max)}$. Table 2 presents the limits for sleep disturbance.

Table 7 — Sleep Disturbance Limits, dBA

Location	Period	Night RBL	Sleep Disturbance Limits L_{AFmax}	Sleep Disturbance Limits $L_{Aeq,15min}$
L1	Night (10pm-7am)	42	57	47

2.5 Traffic Noise Generation

The development of the development has the potential to generate increased traffic noise will be assessed in accordance with the NSW EPA Road Noise Policy (RNP). Table 8 sets out the assessment criteria for residences to be applied to particular types of project, road category and land use.

Table 8— Road traffic noise assessment criteria for residential land uses

Road Category	Type of project/land use	Assessment Criteria - dBA	
		Day (7am-10pm)	Night (10pm-7am)
Local roads	Existing residences affected by additional traffic on existing local roads generated by land use developments	$L_{Aeq, (1\ hour)}$ 55 (external)	$L_{Aeq, (1\ hour)}$ 50 (external)

For existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding 'no build option'.

3 Assessment and Recommendations

3.1 Façade Glazing Requirements

Acoustic glazing for the apartments are given in Table 9 are required to reduce noise impact on the internal occupants and should result in noise levels within such units in accordance with the Department of Planning Noise Guidelines and AS/NZS 2107:2000.

Table 9 – Schedule of Window and Glazing (R_w)

Level	Apartment	Space	Glazing Thickness	Minimum R_w (Glazing+Frame)
		Lot 1: Building A		
All	All	Living & Bedroom	6.38mm laminated	30
		Lot 2: Building B		
G	G01-G07	Living & Bedroom	6.38mm laminated	30
1-5	X01-X07, X08 & X12	Living & Bedroom	6.38mm laminated	30
	X09 & X11	Living & Bedroom	10.38mm laminated	32
		Lot 2: Building C		
G-5	X01, X02, X09 & X10	Living & Bedroom	6.38mm laminated	30
	X03-X08	Living	12.5mm laminated (Viridian)	37
		Bed	12.5mm laminated (Viridian)	37
		Tavern & Retail		
G	-	All	10.38mm laminated	32

All other non-habitable spaces, such as bathrooms and laundries require minimum 6mm monolithic glass (Rw 28).

All Windows/doors should be well sealed (air tight) when closed with good acoustic seals around the top and bottom sliders. Mohair seals are not considered to be acoustic seals.

3.2 Building Façade Construction

To provide sufficient acoustic attention of noise, the general external construction of the proposed building would need to be constructed as detailed in Table 10.

Table 10 – External Façade Construction (R_w)

Building Element	Proposed Construction	Minimum R_w
External Wall	Masonry or cavity brick	45
Roof and ceiling	Concrete with a plasterboard cavity ceiling	45

3.3 Mechanical Services

At the DA stage, the design and selection of mechanical equipment has not been finalised. Following the DA approval of the proposed development, during the Construction Certification Stage a detail assessment of all mechanical plant and equipment will be conducted to ensure compliance with the EPA and DCP noise criteria. Typical acoustic measures may include the construction of acoustic barriers, enclosures, attenuators and/or acoustic louvres.

3.4 Separation Between Commercial and Residential

The wall partition and floor slab separating the retail/commercial space and the residential apartment is to be of solid masonry/concrete construction with a minimum sound insulation performance of Rw + Ctr 50 for airborne noise.

Any operation of the retail/commercial space that may have the potential to create noise is to comply with the EPA noise policies and the any other relevant Council consent conditions related to the use.

Following approval, a separate assessment would be submitted prior to occupation detailing proposed use and to ensure that any potential noise impacting the amenity of the adjoining residence is protected.

3.5 Assessment of Traffic Noise Generation

This section details a review of the expected future traffic noise generated from the new residential and tavern development. The report prepared by McLaren Traffic Engineering & Road Safety Consultants (ref: 240281.02DA, Issue A), dated 26 June 2024 estimates result in a net increase in the traffic generation of approximately:

- AM Peak Trip Generation – Net 39 vehicle trips, 10 vehicle trips per hour in, 29 vehicle trips per hour out.
- PM Peak Trip Generation – Net 52 vehicle trips, 33 vehicle trips per hour in, 19 vehicle trips per hour out.

Based on the current traffic flows along Veno Street, the following Table 11 summaries the predicted change in traffic noise levels.

Table 11 – Predicted Change Traffic Noise Levels during Peak Periods

Road	Period	Existing Peak Traffic Flow	Total Increase Peak Traffic Flow	Change in Traffic Noise, dBA
Veno St	AM Peak	241	280	+0.7
	PM Peak	121	173	+1.6

The predicted increase in generated traffic noise we be would not exceed 2dB increase and therefore comply the EPA RNP guidelines.

3.6 Assessment of Tavern Operation

The proposed tavern, located on ground, would have internal and external seating areas, bar, dining and lounge area. The proposed tavern's operating hours would be:

- Monday to Saturday 05:00 AM - 12:00 midnight.
- Sunday 10:00 AM - 10:00 PM.
- Operating times during special events:
    - Good Friday 12:00 noon - 10:00 PM
    - Christmas Day 12:00 noon - 10:00 PM (liquor can only be served with or ancillary to a meal in a dining area).
    - December 31st Normal opening time until normal closing time or 2:00 AM on New Year's Day, whichever is the later.

A separate acoustic assessment would be submitted for the operation of the tavern tenancy detailing proposed use and to ensure that any potential noise impacting the amenity of nearby residence is protected.

All operational noise is to be assessed and comply with the EPA NPfI limits (Table 5), OLGR (Table 6) and the Sleep Disturbance limits (Table 7).

In assessing the potential impact, the acoustic assessment is to consider the following:

- Maximum patrons and staff within the hotel are two-hundred (200) people.
- Live or prerecorded music is played during hotel is operating times. The tavern closes at midnight.
- No live or prerecorded music is played outside the tavern.
- At all times., windows and doors are closed and mechanical ventilation is to be provided to the tavern.
- The outdoor seating area would only be open until 10pm every night.
- Between 10pm and midnight the outdoor area will only be used:
    - For smoking only. No food and drink are permitted to be taken outside;
    - Access restricted to under the awning areas only.
- Implement an appropriate noise management strategy, but not limited to those outlined in Section 3.6.1 .

3.6.1 Operational Noise Management

The following strategies are to be implemented to ensure compliance with the acoustic report and the noise criteria:

- Noise Management Strategies:
    - Managers and supervisors are to remind patrons on the outdoor seating areas to be considerate of the neighbours and minimise any excessive noise.
    - Management is to set appropriate times for the collection and removal of rubbish. The staff are not to dispose of rubbish outside the building after 10pm or before 7am.
    - All Back-of-House doors and windows are to remain closed at all times.
    - All staff are made aware of the contents of this acoustic report and Operational Management Plan.
- Complaints Register:
    - Implement strategies for the community to contact the management staff if they have queries, concerns or complaints. This may include a phone line during operating hours, email address and website.
    - The compliance register should include, time/date of complaint, source of the complaint (i.e. music noise, patron noise etc.) and action undertaken in response.

3.6.2 Noise from Waste Collection Vehicles

For all privately operated waste collection vehicles and delivery vehicles for the tavern, Part 4.3.3 of EPA Noise Guide for Local Government it is recommends the following time restrictions:

- Before 8.00 am or after 8.00 pm on any Saturday, Sunday or public holiday.
- Before 8.00 am or after 8.00 pm on any Saturday, Sunday or public holiday.

This excludes motor vehicles (related to residents or patrons) entering of existing the premises.

Additional management controls of the rubbish collection vehicles to minimise noise impact to the units on ground floor could include:

- Using up-to-date equipment that uses ‘quieter’ technology such as low-noise bin lifters.
- Maintaining rubbish trucks and braking materials to minimise or eliminate noise such as squeaky brakes.
- Educating drivers and collectors to be careful and to implement quiet work practices.
- Setting more appropriate times for the rubbish collection.

Truck vehicle noise and loading activity will be controlled within the loading dock on ground level and this would provide an improved acoustic amenity to the nearby residents.

4 Conclusion

An acoustic assessment of the proposed development has been carried out in accordance with the requirements of Sutherland Shire Council DCP, Department of Planning (SEPP) and for and the BCA Part F7.

An environmental noise survey of the site has been conducted and the noise limiting criteria for mechanical plant/equipment noise emission has been determined based on the EPA noise guidelines. The limits are presented in Table 4.

Construction for glazing, external walls and the roof/ceiling systems have been provided to achieve the internal noise criteria and are detailed in Section 3.1 and Section 3.2 based on the impact of road and railway noise.

The expected future traffic noise generated from the new residential and tavern development is based on the McLaren Traffic Engineering & Road Safety Consultants (ref: 240281.02DA, Issue A), dated 26 June 2024. The predicted increase in generated traffic noise we be would not exceed 2dB increase and therefore comply the EPA RNP guidelines.

For the operation of the proposed tavern, a separate detailed acoustic assessment would be submitted detailing proposed use and to ensure that any potential noise impacting the amenity of nearby residence is protected. All operational noise is to be assessed and comply with the EPA NPfI limits (Table 5), OLGR (Table 6) and the Sleep Disturbance limits (Table 7).

Providing the recommendations in this report are implemented, the noise from the proposed development is predicted to comply with acoustic requirements of the Sutherland Shire Council DCP, Department of Planning (SEPP) EPA guidelines, BCA Part F7 and relevant Australian standards.

Appendix A – Acoustic Terminology

Decibel, dB: A dimensionless unit which denotes the ratio between two quantities that are proportional to power, energy or intensity. One of these quantities is a designated reference by which all other quantities of identical units are divided. The sound pressure level in decibels is equal to 10 times the logarithm (to the base 10) of the ratio between the pressure squared divided by the reference pressure squared. The reference pressure used in acoustics is 20 micro Pascals.

A-WEIGHTING: A measure of sound pressure level designed to reflect the response of the human ear, which does not respond equally to all frequencies. To describe sound in a manner representative of the human ear's response it is necessary to reduce the effects of the low and high frequencies with respect to medium frequencies. The resultant sound level is said to be A-weighted, and the units are in decibels (dBA). The A-weighted sound level is also called the noise level.

Sound Pressure Level, L p (dB), of a sound: 20 times the logarithm to the base 10 of the ratio of the r.m.s. sound pressure to the reference sound pressure of 20 micro Pascals. Sound pressure level is measured using a microphone and a sound level meter, and varies with distance from the source and the environment.

Ambient Noise/Sound: All noise level present in a given environment, usually being a composite of sounds from many sources far and near. Traffic, HVAC, masking sound or even low-level background music can contribute to ambient level of noise or sound.

Percentile Level - L 90 , L 10 , etc: A statistical measurement giving the sound pressure level which is exceeded for the given percentile of an observation period, e.g. L 90 is the level which is exceeded for 90% of a measurement period. L 90 is commonly referred to as the "background" sound level.

Background Noise (L 90): The sum total of all unwanted residual noise generated from all direct and reflected sound sources in a space that can represent an interface to, or interfere with good listening and speech intelligibility.

Rating Background Level – RBL: Method for determining the existing background noise level which involves calculating the tenth percentile from the L A90 measurements. This value gives the Assessment Background Noise Level (ABL). Rating Background Level is the median of the overall ABL.

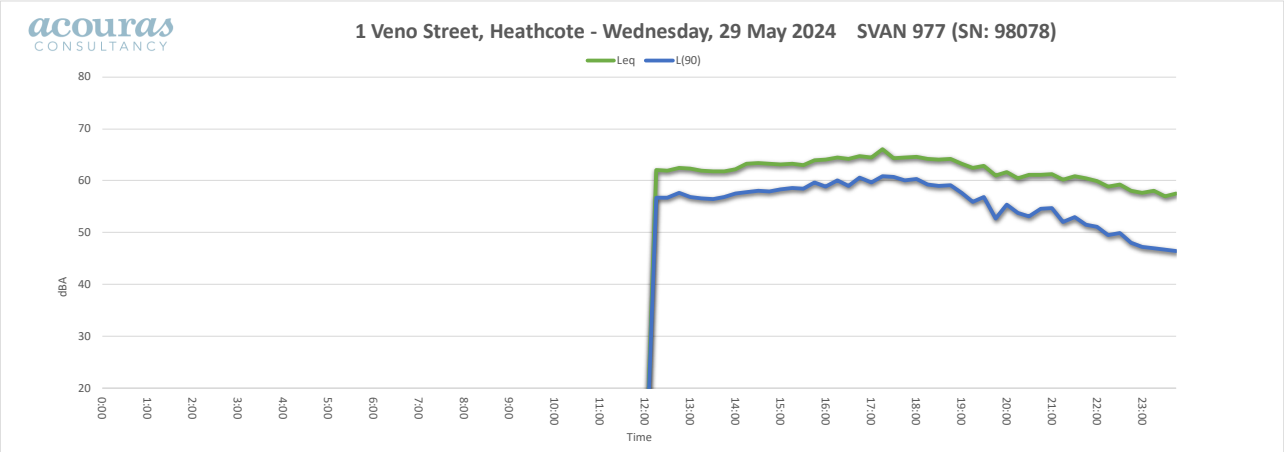
L AEQ,T : Equivalent continuous A-weighted sound pressure level. The value of the A-weighted sound pressure level of a continuous steady sound that, within a measurement time interval T, has the same A-weighted sound energy as the actual time-varying sound.

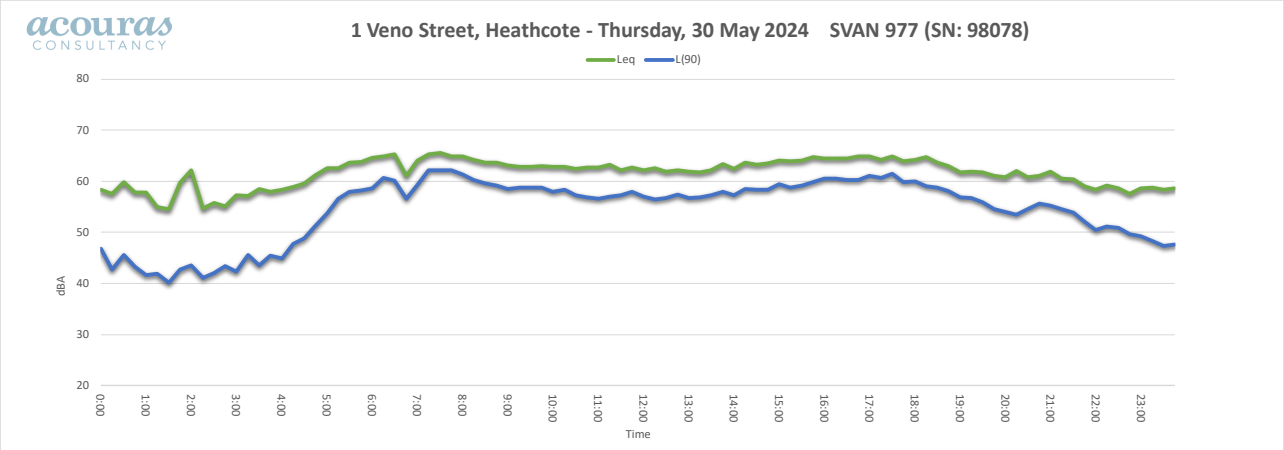
Appendix B – Architectural Drawings

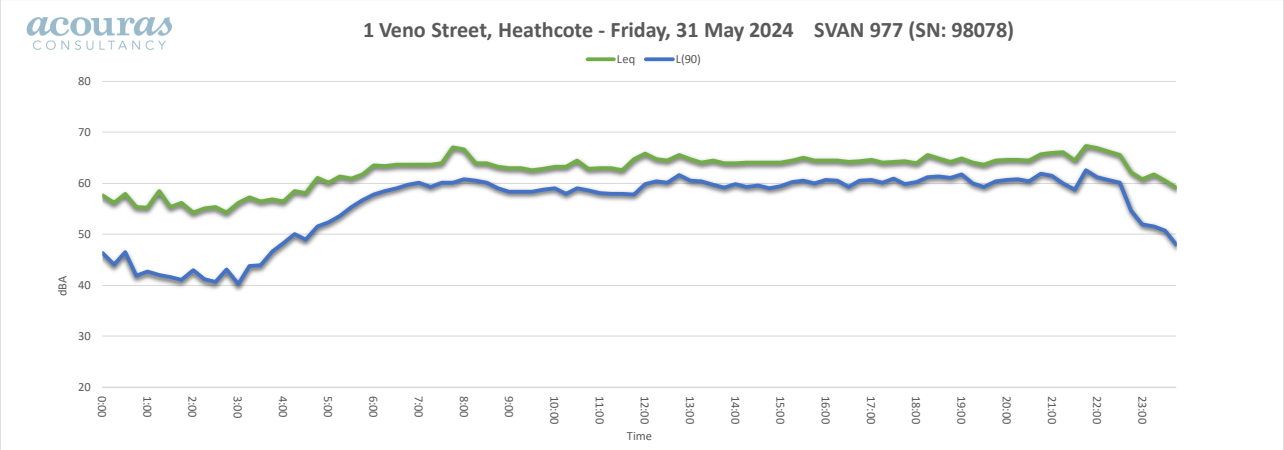
This assessment was based on the following architectural drawings provided by D.R. Design (NSW) Pty. Ltd.

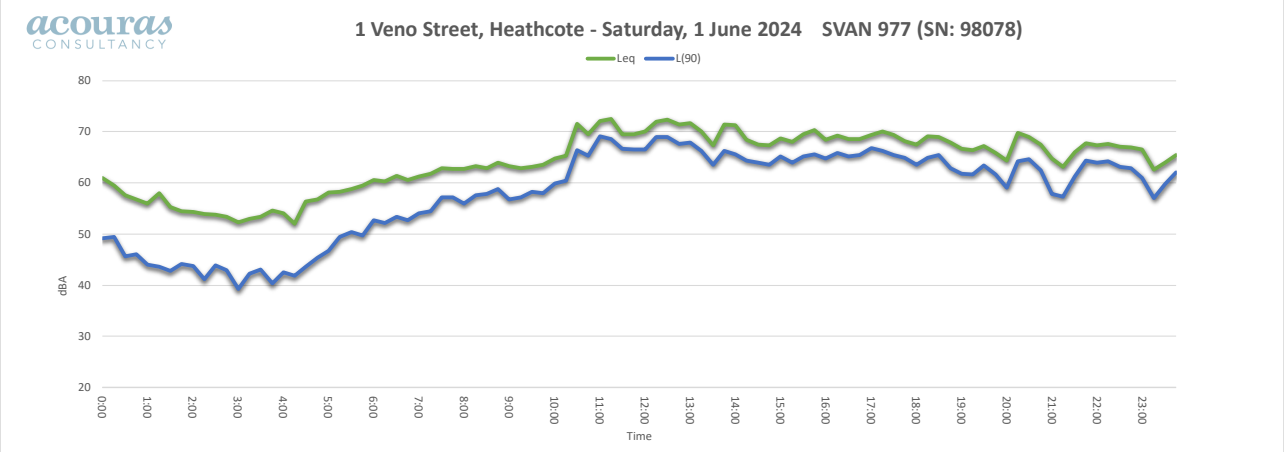
Drawing	Issue	Date	Description
DA-0-001	J	10/05/2024	Cover Sheet
DA-0-0209	A	14/06/2024	(S2) Basement 2
DA-0-0210	A	14/06/2024	(S2) Basement 1
DA-0-0211	A	14/06/2024	(S2) Lower Ground
DA-0-0212	K	14/06/2024	(S2) Ground
DA-0-0213	K	14/06/2024	(S2) Level 1 Building B & C
DA-0-0213a	K	14/06/2024	(S2) Level 2-3 Building B & C
DA-0-0214	K	14/06/2024	(S2) Level 4 Building B & C
DA-0-0215	K	14/06/2024	(S2) Level 5 Building B & C
DA-0-0220	A	14/06/2024	(A) Basement Building A
DA-0-0221	A	14/06/2024	(A) Ground Level Building A
DA-0-0222	D	14/06/2024	(A) Level 1
DA-0-0223	D	14/06/2024	(A) Level 2-4
DA-0-0224	E	14/06/2024	(A) Level 5
DA-0-0301	A	25/08/2023	Elevation Sheet 1 – Building A
DA-0-0302	A	25/08/2023	Elevation Sheet 2 – Building A
DA-0-0303	A	25/08/2023	Elevation Sheet 1 – Building B
DA-0-0304	A	25/08/2023	Elevation Sheet 2 – Building B
DA-0-0305	A	25/08/2023	Elevation Sheet 1 – Building C
DA-0-0306	A	25/08/2023	Elevation Sheet 2 – Building C

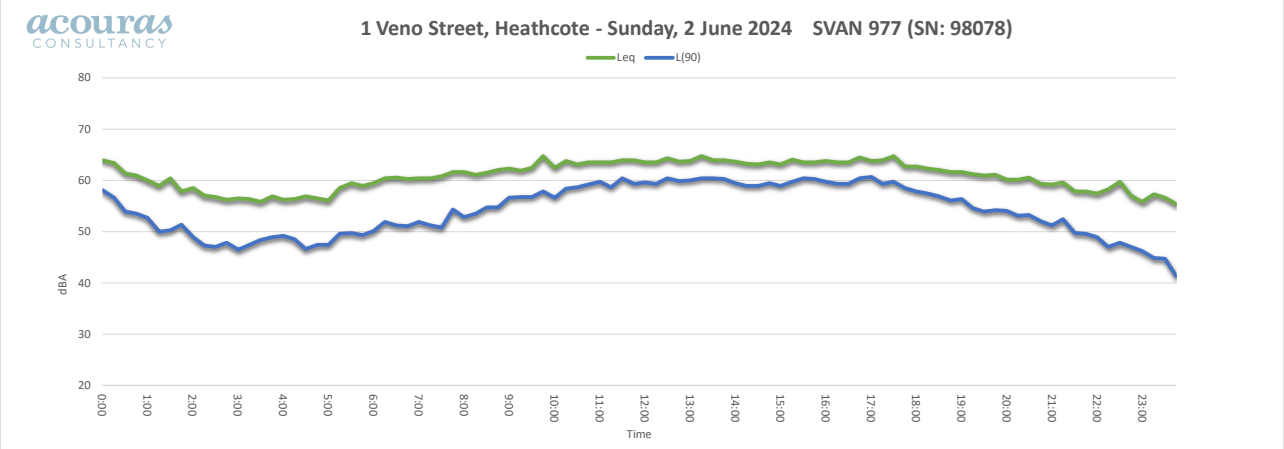
Appendix C – Noise Logger Results

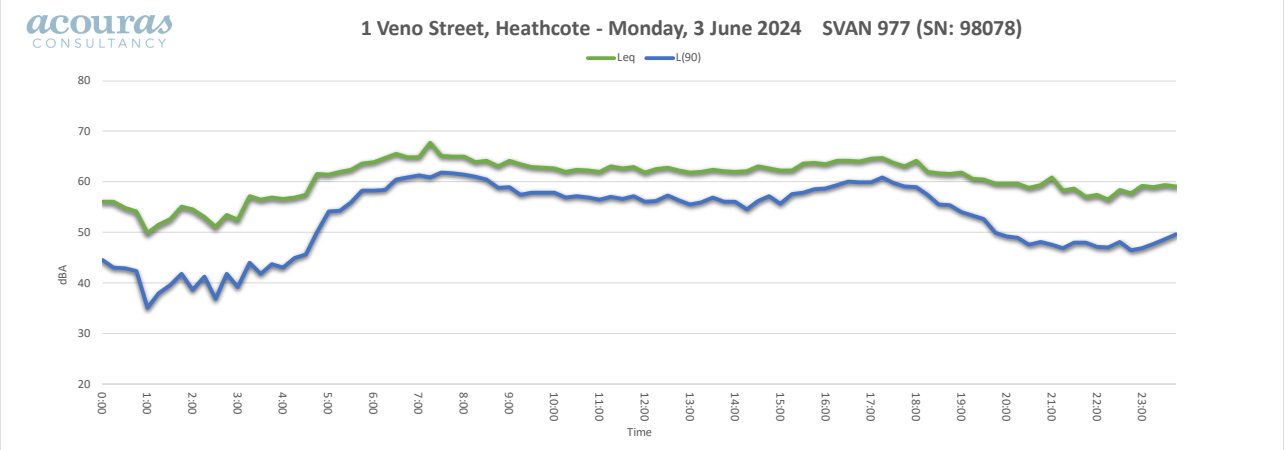


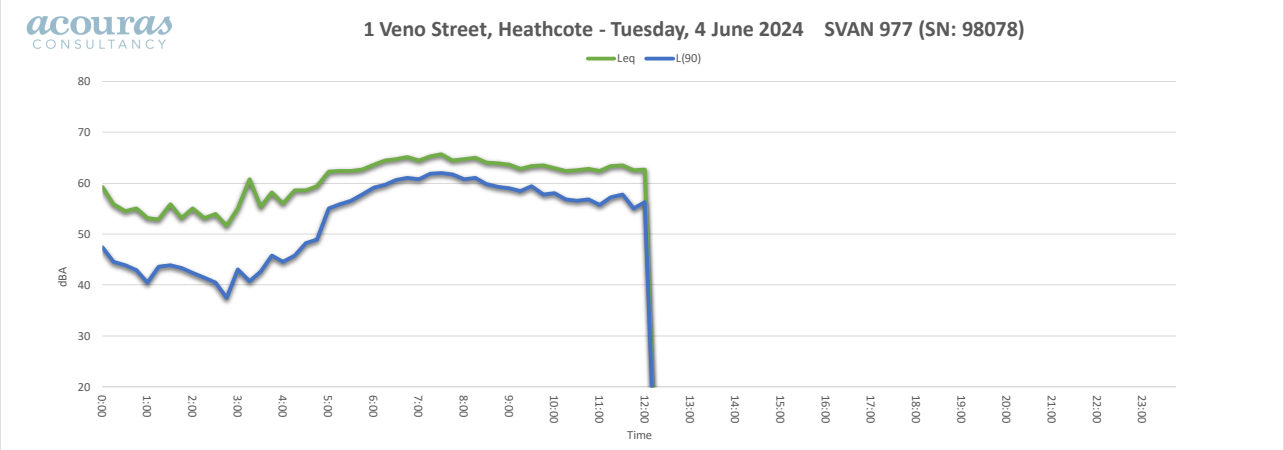





1 Veno Street, Heathcote - Saturday, 1 June 2024 SVAN 977 (SN: 98078)
Leq
L(90)
dBA
Time


1 Veno Street, Heathcote - Sunday, 2 June 2024 SVAN 977 (SN: 98078)
Leq
L(90)
dBA
Time


1 Veno Street, Heathcote - Monday, 3 June 2024 SVAN 977 (SN: 98078)
Leq
L(90)
dBA
Time


1 Veno Street, Heathcote - Tuesday, 4 June 2024 SVAN 977 (SN: 98078)
Leq
L(90)
dBA
Time