Tumbi Umbi Retirement Village – SSD 63475709

Noise Environmental Impact Study

Mingara Leisure Group Pty Ltd

Report Reference: 250092 – Tumbi Umbi Retirement Village – SSD 63475709 – Noise Environmental Impact Study – R2
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1 INTRODUCTION

Pulse White Noise Acoustics Pty Ltd has been engaged by Mingara Leisure Group Pty Ltd under the care of Pariter to undertake an environmental impact study to provide further information for the SSDA submission of the Mingara Recreation Club Seniors Housing, Tumbi Umbi Project (SSD-63475709), of the potential noise impacts resulting from the operation of the nearby Mingara Recreation Club and the Mingara Regional Athletics Centre, on the occupants of the seniors housing project.

This assessment addresses the agency comments outlined in the Central Coast Council and Department of Planning, Housing and Infrastructure correspondence dated 9 January 2025.

1.1 Agency comments from Central Coast Council

Within the Central Coast Council agency advice, misdated 9th of January 2024 by Senior Planning Officer for Social and Affordable Assessments – Lucinda Craig. The following comment regarding the SSDA submission of the Mingara Recreation Club Seniors Housing, Tumbi Umbi Project (SSD-63475709) has been raised:

'Section 92 of SEPP (Housing) 2021 requires the consent authority to be satisfied that the development includes appropriate measures to separate the club from residential areas to avoid land use conflicts prior to granting consent. Insufficient information has been provided to assess the acoustic impacts and light spill from the registered club and the athletics track. In particular the athletics track is in close proximity to the seniors living development and likely to have light spill from flood lights and acoustic impacts from the use of PA systems and amplified music for events.'

Further, the Department of Planning Housing and Infrastructure RFI letter dated 29 January states in item 18

'Item 18.

Address the potential for amenity impacts (such as light spill, noise etc) from the operations of the athletics track to the future occupants of the proposed development, noting that the athletics track may operated until 10 pm '

1.2 Proposed Development

The proposed development comprises subdivision of land and the construction and operation of a seniors housing development. The proposal includes thirteen villa buildings, three multi storey independent living unit (ILU) buildings and one mixed high care and ILU building housing communal facilities together with car parking, open space and associated works including site preparation works and landscaping.

The proposed SSDA seeks approval to redevelop the site to accommodate a seniors living development inclusive of the following:

- Site establishment works, including minor excavation and tree removal and earthworks.
- Construction and operation of:
  - Thirteen (13) villa buildings, housing four (4) independent living units in each
  - Three (3) multi storey independent living unit (ILU) buildings of:
    - Building 1 - undercroft car parking, 5 levels of 2-bed and 3-bed ILUs
    - Building 3 - undercroft car parking, 6 levels of 2-bed and 3-bed ILUs
    - Building 4 - undercroft car parking, 5 levels of 2-bed and 3-bed ILUs
  - One (1) mixed high care and ILU building (Building 2) of:

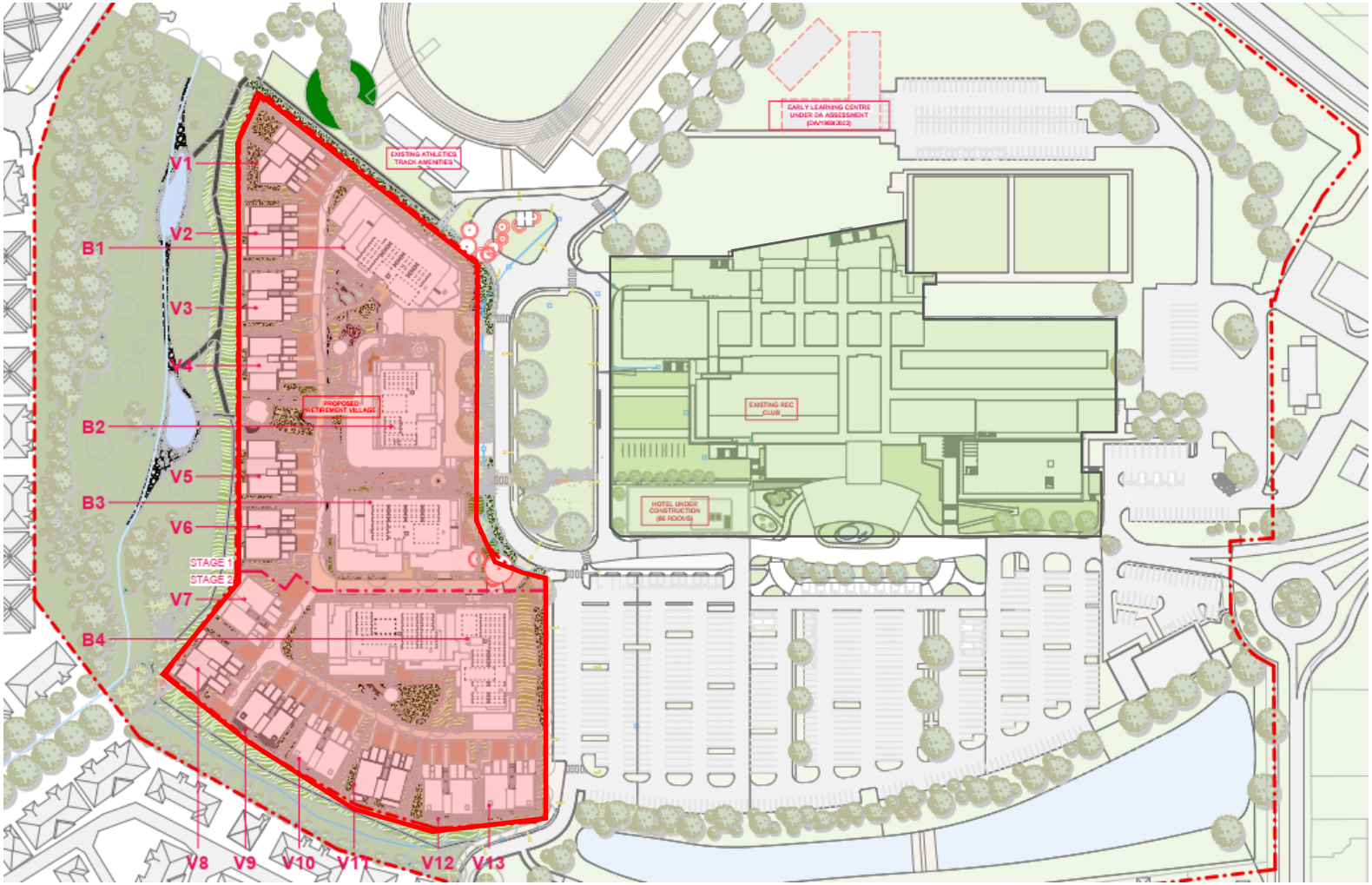
  - Part undercroft car parking, part communal/amenities level at ground with 3 levels of high care suites and 3 levels of ILUs
  - The building will include communal facilities including a café, residential lounge, multi-function spaces, consultation/therapy rooms, library and staff/admin areas.

- Provision of 219 x 2-bed and 3-bed independent living units and 39 high care suites
- Total site GFA of 31,798sqm comprising:
  - Townhouses: 7,223.4sqm GFA
  - Building 1: 4,595.6sqm GFA
  - Building 2: 5,315.7sqm GFA
  - Building 3: 5,520.0sqm GFA
  - Building 4: 9,085.1sqm GFA
- Vehicle access will be provided via the existing road access from Wyong Road and via Mingara Drive. The site also accommodates a north-south internal shared access road and dedicated port cochere in front of Building 2.
- Private, passive and communal open space, landscaping and perimeter and internal pedestrian pathways
- Subdivision of the land and two stage construction.

Table 1: Proposed Residential Development

	Retirement Living	High Care Apartments
Number of Dwellings	Approximately 219	Approximately 39
Number of Buildings	17	Integrated (into B2 from L1-3)
Rise in Storeys	7	3
Exclusive use facilities area	Approximately 900m^2	Generally shared with Retirement Living

Figure 1 Site Plan – Proposed Development and Surrounding Environment



1.3 Site Description

The proposed site has an area of approximately 29,000m^2, the proposed development site primarily fronts Wyong Road to its northern boundary with residential and industrial uses surrounding the east, south and western boundaries.

The precinct occupies 4 lots of land as:

- Lot 1 Deposited Plan 1010532 (Club building)
- Lot 2 Deposited Plan 1010532 (Club building)
- Lot 13 Deposited Plan 1204397 (Remaining land)
- Lot 71 Deposited Plan 1011971 (Athletics track)

A high-level summary of the site planning controls associated with the proposed development lot is provided below:

- Zone: RE2 Private Recreation
- FSR: No FSR
- Height: No Height Limit
- Flood affected: Yes (1:100 within the stormwater catchment, PMF only within the site
- Acid Sulphate: Class 4 & 5
- Bushfire Prone: Yes (Category 3 in the s/water catchment) & No (within the RV site)

The site constraints include but are not limited to:

- MRC and its associated uses and obligations
- MRC patrons
- Sensitive surrounding receivers (eg: residential properties to the west and south)
- Easements adjacent to the site, particularly to the West and South (stormwater easement)
- Flood affected (PMF)
- Class 'P' (problematic) founding material.

Further details of the proposed project site have been included in the below figure.

Figure 2: Site Map, Measurment Location and Surrounding Receivers - Site Map Sourced from SixMaps

2 ACOUSTIC SURVEY

2.1 Onsite Noise Measurements

Attended measurements were undertaken to the west of the Mingara Recreation Club to understand noise emitted from the operation of the Mingara Regional Athletics track and Mingara Club. The results of these measurements are outlined in the below section.

2.1.1 Attended Noise Measurements

Attended Noise Measurements were conducted in order to gain an understanding of the operational noise emissions produced by the operation of the Mingara Athletics Centre as well as the Mingara Recreation Club. Attended noise level measurements were undertaken of the following:

- General use of the PA System – Mingara Athletics Tack
- Operation of mechanical plant – Mingara Recreation Club

The results of these measurements have been included in the below table.

Table 2: Attended Noise Measurements

Measurment	Location	Noise Level dB(A) $L_{Aeq\ (Time)}$	Description
Measurment 1	Mingara Athletics Track	71 dB(A) $L_{Aeq\ (15min)}$	Noise measurment of PA System was undertaken at a distance of 10m from the speaker
Measurment 2	Mingara Recreation Club	55 dB(A) $L_{Aeq\ (15min)}$	Noise Measurment was undertaken of general mechanical noise at the site boundary with a clear view of the Mingara Recreation Club – The Mingara Recreation Club was operating under nominal operation during the time of measurment

3 APPLICABLE NOISE CRITERIA

Specifically, to address the comments raised by the Central Coast Council '*Insufficient information has been provided to assess the acoustic impacts and light spill from the registered club and the athletics track. In particular the athletics track is in close proximity to the seniors living development and likely to have light spill from flood lights and acoustic impacts from the use of PA systems and amplified music for events.*"- building envelope criteria (façade) will form the basis for this assessment.

Relevant noise criteria for this assessment is presented below.

3.1 Noise Intrusion Criteria

The relevant internal noise levels requirements for the project include those detailed in the following sections.

3.1.1 Central Coast Development Control Plan 2022

As part of the Central Coast Development Control Plan 2022 the proposed project site falls within the provisions outlined in Chapter 5.33 – Tumbi Valley Residential

3.1.1.1 Tumbi Valley Residential Development Control Plan

Acoustic requirements relevant to noise emitted from the proposed development are not provided in the Central Coast Development Control Plan 2022 document. Therefore, requirements from the Australian/New Zealand Standard AS/NZS 2107:2016 Acoustics - Recommended design sound levels and reverberation times for building interiors - (AS/NZS 2107:2016), see below.

3.1.2 Australian / New Zealand Standard AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors – (AS/NZS 2107:2016)

Recommended ambient noise levels and reverberation times for internal spaces are given in a number of publications including Table 1 of Australian / New Zealand Standard 2107:2016 "Acoustics - Recommended design sound levels and reverberation times for building interiors". Unlike the previous version of this Standard, this latest edition recommends a range with lower and upper levels (rather than "satisfactory" and "maximum" internal noise levels) for building interiors based on room designation and location of the development relative to external noise sources. This change has occurred due to the fact that sound levels below 'satisfactory' could be interpreted as desirable, but the opposite may in fact be the case. Levels below those which were listed as 'satisfactory' can lead to inadequate acoustic masking resulting in loss of acoustic isolation and speech privacy.

Internal noise levels due to the combined contributions of external noise intrusion and mechanical ventilation plant should not exceed the maximum levels recommended in this Standard. The levels for areas relevant to this development are given in below. The mid to maximum points of the internal noise level ranges are generally adopted as the internal design noise criteria for the combined effect of mechanical services and external noise intrusion. In this report we will confine our recommendations to dBA levels, however, where the background noise appears to be unbalanced, AS/NZS 2107:2016 provides direction in terms of suitable diagnostic tools that can be used to assess the spectrum distribution of the background noise.

Table 3: Recommended Design Sound Levels

Type of Occupancy/Activity	Design sound level range dBA ($L_{Aeq,t}$)	Project Design Noise Level [1] dBA ($L_{Aeq,t}$)
Residential Buildings—		
Houses and apartments in suburban areas or near minor roads —		
Sleeping areas (night-time)	30 to 35	35
Living areas (anytime)	30 to 40	40
Washrooms and toilets (anytime)	45 to 55	50

Note 1 Overall recommended level for mechanical services noise and intrusive noise, combined.

Section 6.18 of AS/NZ 2107:2016 notes that the presence of discrete frequencies or narrow band signals may cause the sound level to vary spatially within a particular area and be a source of distraction for occupants. Where this occurs, the sound level shall be determined as the highest level measured in the occupied location(s).

If tonal components are significant characteristics of the sound within a measurement time interval, an adjustment shall be applied for that time interval to the measured A-weighted sound pressure level to allow for the additional annoyance. If the background sounds include spectral imbalance, then the RC (Mark II) levels indicated in the Standard should be referenced (see also Appendix D of AS/NZ 2107:2016 for additional guidance).

Generally, where the final noise levels are within +/- 2 dB of the specified level given above, the design criteria will be considered met. Both the upper and lower limits will need to be satisfied especially where privacy is important or where noise intrusion is to be avoided.

3.1.3 Project Internal Noise Requirements

The recommended levels for various areas of the project are detailed in the following table. The recommended noise levels for residential dwellings near major roadways detailed within AS2107:2016 has been used as the basis of this assessment.

Table 4: Recommended Design Internal Noise Levels

Room Type	Activity
Residential - Living areas	40 $L_{Aeq\ 24\ hour}$
Residential – Sleeping areas (all other times)	40 $L_{Aeq\ 15hour}$
Residential - Sleeping areas (nighttime)	35 $L_{Aeq\ 9\ hour}$[1]
Toilets	55 $L_{Aeq\ 24\ hour}$
Common Areas	50 $L_{Aeq\ 24\ hour}$

Note 1: The relevant time period for night-time periods included 10pm to 7am
Note 2: The relevant time for daytime periods includes 7am to 10pm

4 ACOUSTIC MODELLING -OPERATIONAL ACOUSTIC ASSESSMENT

Assessment of each of the noise element associated with the proposal is outlined below.

4.1 Source Noise Levels

4.1.1 Crowd Noise

Source noise levels have been adopted from the Typical Speech Levels as outlined by Klark Teknik for a male shouting and is as follows:

Table 5: Crowd Noise - Source Noise Levels, dB(A)

Source	63Hz	125Hz	250Hz	500Hz	1kHz	2 kHz	4 kHz	8 kHz	Overall
Male (Shouting) Voice	-	57	84	94	97	94	87	78	100

4.1.2 Public Address System / Amplified music

Measurements of the source noise levels of the Public Address System installed at the Mingara Athletics Centre were undertaken by this office, as such the noise levels measured have been implemented into the acoustic modelling for the operation of the Athletics Centre.

Table 6: Public Address - Source Noise Levels, dB(A)

Source	63Hz	125Hz	250Hz	500Hz	1kHz	2 kHz	4 kHz	8 kHz	Overall
Public Address System	-	69	65	70	64	63	61	52	71

The reverberant noise has been calculated within the space and then the breakout noise has been modelled using SoundPLAN and the ISO9613 noise propagation algorithm for downwind conditions.

4.1.2.1 Calculation Assumptions

The below calculations have taken the below assumptions into account when modelling the athletics track in use

- A source level of a male (Shouting) voice has been used with a sound pressure level of 85 dB(A) at 1 m,
- One in three people within the space are talking simultaneously,
- A maximum patronage of 1000 persons on the premises with a portion modelled around the athletics track and a full grandstand,
- 540 patrons in the grandstand with 1/3 talking,
- 100 patrons distributed around track with 1/3 talking,
- Public Address system in operation with source level as outlined in Table 6,
- Mechanical noise emissions from the operation of the Mingara Club.

Figure 3: Operational Noise from use of Athletics Centre and the operation of Mingara Club

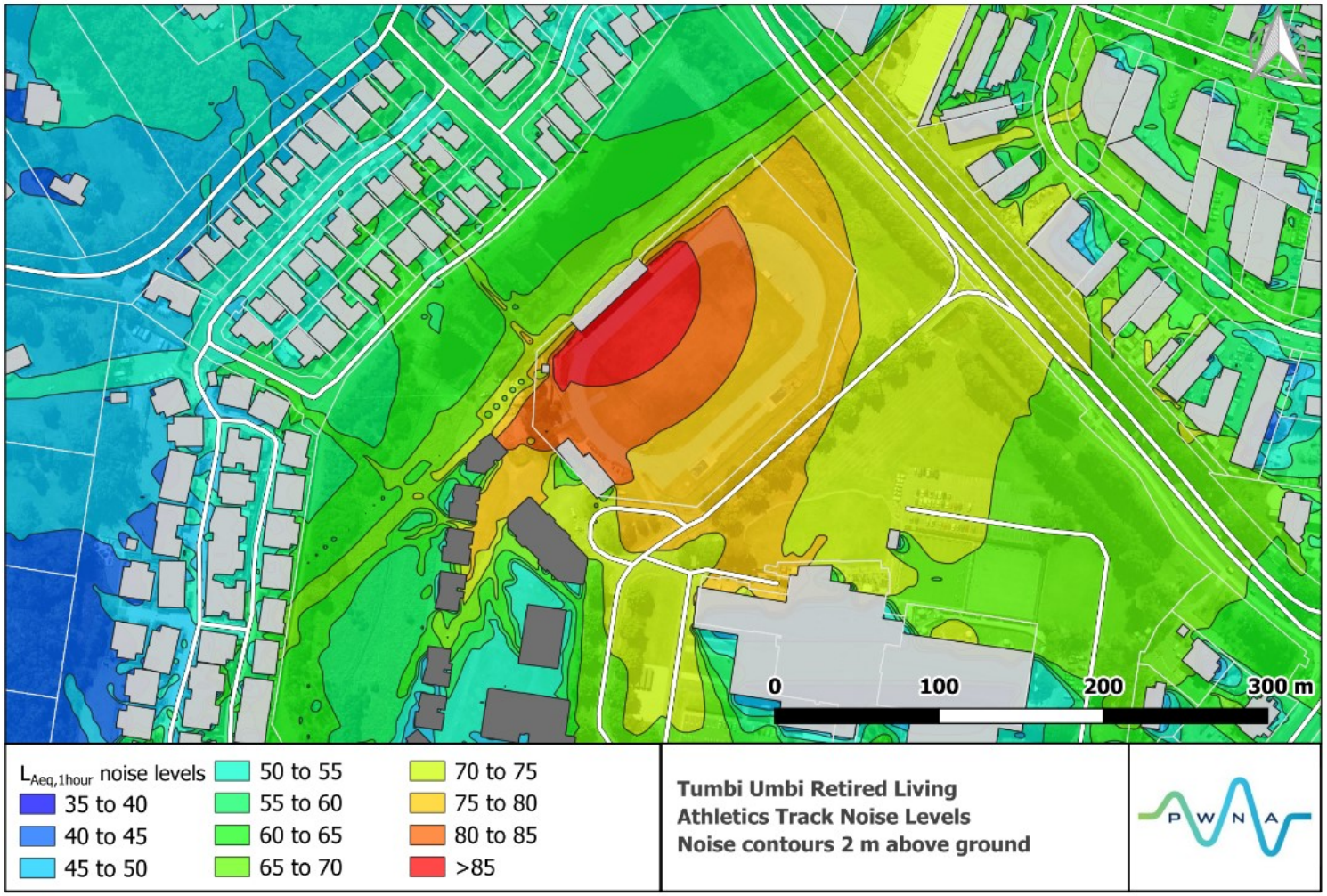
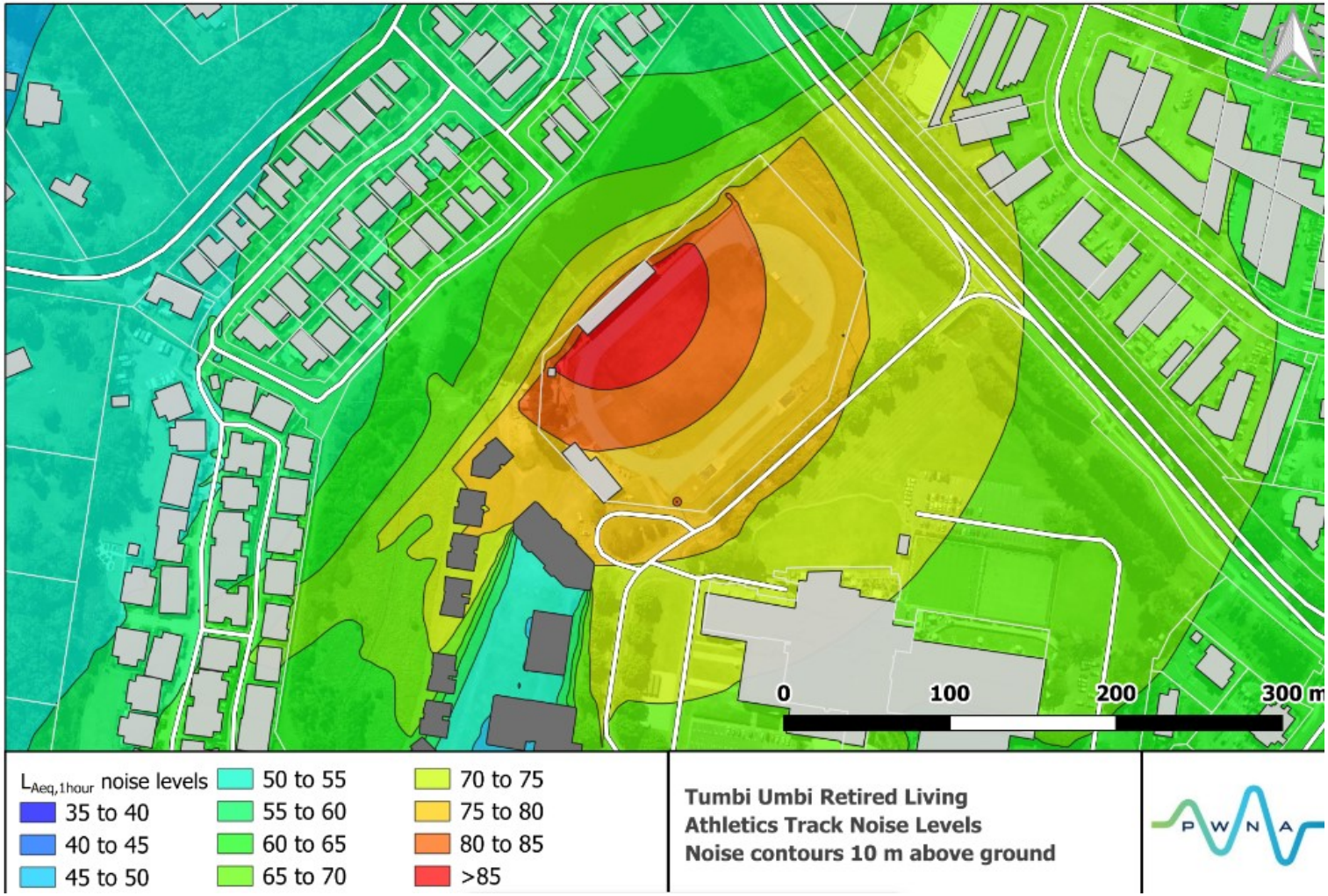


Figure 4: Operational Noise from use of Athletics Centre and the operation of Mingara Club (Cont.)



5 DISCUSSION

Based on both attended and unattended noise measurements captured onsite, as well as detailed acoustic modelling, the anticipated noise emissions from the Mingara Regional Athletics Centre including PA system and crowd noise and the ongoing operations of the Mingara Recreation Club are expected to have minimal impact on the acoustic amenity of residents within the proposed seniors housing development.

This assessment supplements the recommendations outlined in the *Tumbi Umbi Retirement Village Noise Impact Assessment for SSDA* (Report Reference No. 230560 – Tumbi Umbi Retirement Village – Noise impact Assessment for SSDA – R4), includes specifications for the architectural composition of the building envelope. In conjunction with the predicted noise emissions from crowd activity, events, and PA usage at the Athletics Centre, as well as mechanical plant operations at the Recreation Club, the assessment confirms that the proposed development will achieve compliance with the internal noise level targets set out in AS/NZS 2107:2016 – Acoustics: *Recommended design sound levels and reverberation times for building interiors.*

Unattended noise monitoring was conducted by Pulse White Noise Acoustics Pty Ltd over a five-day period, with the objective of capturing representative noise levels associated with the operation of the Athletics Centre. During this period, two school athletics carnivals were held, with attendances under 300 people. Observed noise levels during these events remained within acceptable limits; however, they did not reflect the potential peak operational conditions allowed under the approved development application for the athletics centre. During nominal operations, noise levels were recorded to be between 55 – 65 dB(A) $L_{Aeq\ 1\ hour}$ which is more than 20dB less than the predicted noise level during a worst-case scenario. In this instance, operating under nominal operations the proposed building envelope will easily comply with the requirements set out in AS/NZS 2107:2016 – Acoustics: *Recommended design sound levels and reverberation times for building interiors.*

In the case of a worst-case scenario or maximum capacity event, acoustic modelling was undertaken based on peak attendance scenarios, as permitted by the approved use of the site. The results of these predictive calculations are detailed in Section 4 of this report.

In addition, Pulse White Noise Acoustics conducted attended measurements of mechanical noise emissions from the Mingara Recreation Club while onsite. These measured levels are presented in Table 2 and have been incorporated into the overall modelling. It should be noted that noise from the Club's mechanical systems is relatively minor and has a negligible effect on the overall predicted noise impact. Nonetheless, these emissions were included in the modelling to ensure a comprehensive and worst-case assessment.

Acoustic modelling predicted noise levels at the proposed development's façade at two representative locations corresponding to a ground-level apartment (being lowest) and level five (being the highest). Under worst-case operating conditions, the predicted façade noise levels are as follows:

- 75 to 85 dB(A) $L_{Aeq(1hour)}$ on ground level.
- 80 to 85 dB(A) $L_{Aeq(1hour)}$ on level five (5).

The model also accounts for shielding effects provided by existing structures south of the athletics track (i.e. canteen, toilet block etc).

To achieve full compliance with the internal noise level criteria as listed in AS/NZS 2107:2016, the following façade performances/constructions are recommended:
(**Note:** current design complies with the requirements of AS/NZS 2107:2016)

- Any external solid wall construction must achieve a rating of Rw 40 for all solid elements (including masonry or lightweight construction)
- Installation of the following glazing systems:

- Building 1:
  - Northern facade: All habitable spaces, 10.38mm Laminate with minimum Rw 35.
  - Remaining Facades: No additional requirements, refer to original SSDA submission.
- Villa 1:
  - Northern facade: All habitable spaces, 10.38mm Laminate with minimum Rw 35.
  - Remaining Facades: No additional requirements, refer to original SSDA submission.
- Villa 2:
  - Northern facade: All habitable spaces, 10.38mm Laminate with minimum Rw 35.
  - Remaining Facades: No additional requirements, refer to original SSDA submission.
- Building 2:
  - Eastern façade: All habitable spaces, 10.38mm Laminate with minimum Rw 35.
  - Remaining Facades: no additional requirements, refer to original SSDA submission.
- Building 3:
  - Eastern façade: All habitable spaces, 10.38mm Laminate with minimum Rw 35.
  - Remaining Facades: no additional requirements, refer to original SSDA submission.
- Building 4:
  - Eastern façade: All habitable spaces: 10.38mm Laminate with minimum Rw 35.
  - Northeastern Façade with line of sight view to Mingara Club: 10.38mm laminate with minimum Rw 35
  - Remaining Facades: no additional requirements, refer to original SSDA submission.

The combination of onsite measurements, worst-case scenario modelling, and recommended architectural treatments confirms that the proposed seniors housing development will provide a comfortable and acoustically compliant living environment. The design appropriately mitigates external noise sources and upholds a high standard of residential amenity.

Furthermore, it is noted that prospective buyers will be fully informed to ensure that an understanding of the operational hours and potential noise impacts associated with the Mingara Regional Athletics Centre. Ensuring that all future residents are aware of the proximity to the athletics centre to and the associated noise levels particularly during evening hours, that may be experienced. This will allow buyers and all future occupants the opportunity to make an informed decision prior to purchasing, with an understanding of the surrounding environment.

6 CONCLUSION

Pulse White Noise Acoustics Pty Ltd has been engaged by Mingara Leisure Group Pty Ltd under the care of Pariter to undertake a noise environmental impact study to provide further information for the SSDA submission of the Mingara Recreation Club Seniors Housing, Tumbi Umbi Project (SSD-63475709), of potential noise impacts resulting from the operation of the nearby Mingara Recreation Club and the Mingara Regional Athletics Centre.

Detailed acoustic modelling indicates that the project site with the inclusion of the building elements as addressed in section 4 of this report will effectively mitigate noise from the operation of the nearby Mingara Recreation Club and the Mingara Regional Athletics Centre and be compliant with the recommended noise levels outlined in section 3.1.2 of this report.

For any additional information please do not hesitate to contact the undersigned.

Kind Regards,

George Kinezos
Acoustic Engineer
Pulse White Noise Acoustics

APPENDIX A. ACOUSTIC TERMINOLOGY

Sound power level	The total sound emitted by a source
Sound pressure level	The amount of sound at a specified point
Decibel [dB]	The measurement unit of sound
A Weighted decibels [dB(A])	The A weighting is a frequency filter applied to measured noise levels to represent how humans hear sounds. The A-weighting filter emphasises frequencies in the speech range (between 1kHz and 4 kHz) which the human ear is most sensitive to, and places less emphasis on low frequencies at which the human ear is not so sensitive. When an overall sound level is A-weighted it is expressed in units of dB(A).
Decibel scale	The decibel scale is logarithmic in order to produce a better representation of the response of the human ear. A 3 dB increase in the sound pressure level corresponds to a doubling in the sound energy. A 10 dB increase in the sound pressure level corresponds to a perceived doubling in volume. Examples of decibel levels of common sounds are as follows:
	0dB(A) Threshold of human hearing 30dB(A) A quiet country park 40dB(A) Whisper in a library 50dB(A) Open office space 70dB(A) Inside a car on a freeway 80dB(A) Outboard motor 90dB(A) Heavy truck pass-by 100dB(A) Jackhammer/Subway train 110 dB(A) Rock Concert 115dB(A) Limit of sound permitted in industry 120dB(A) 747 take off at 250 metres
Frequency [f]	The repetition rate of the cycle measured in Hertz (Hz). The frequency corresponds to the pitch of the sound. A high frequency corresponds to a high pitched sound and a low frequency to a low pitched sound.
Ambient sound	The all-encompassing sound at a point composed of sound from all sources near and far.
Equivalent continuous sound level [L_{eq}]	The constant sound level which, when occurring over the same period of time, would result in the receiver experiencing the same amount of sound energy.
Reverberation	The persistence of sound in a space after the source of that sound has been stopped (the reverberation time is the time taken for a reverberant sound field to decrease by 60 dB)
Air-borne sound	The sound emitted directly from a source into the surrounding air, such as speech, television or music
Impact sound	The sound emitted from force of one object hitting another such as footfalls and slamming cupboards.
Air-borne sound isolation	The reduction of airborne sound between two rooms.
Sound Reduction Index [R] *(Sound Transmission Loss)*	The ratio the sound incident on a partition to the sound transmitted by the partition.
Weighted sound reduction index [R_w]	A single figure representation of the air-borne sound insulation of a partition based upon the R values for each frequency measured in a laboratory environment.
Level difference [D]	The difference in sound pressure level between two rooms.
Normalised level difference [D_n]	The difference in sound pressure level between two rooms normalised for the absorption area of the receiving room.
Standardised level difference [D_{nT}]	The difference in sound pressure level between two rooms normalised for the reverberation time of the receiving room.
Weighted standardised level difference [$D_{nT,w}$]	A single figure representation of the air-borne sound insulation of a partition based upon the level difference. Generally used to present the performance of a partition when measured in situ on site.
C_{tr}	A value added to an R_w or $D_{nT,w}$ value to account for variations in the spectrum.

Impact sound isolation	The resistance of a floor or wall to transmit impact sound.
Impact sound pressure level [L_i]	The sound pressure level in the receiving room produced by impacts subjected to the adjacent floor or wall by a tapping machine.
Normalised impact sound pressure level [L_n]	The impact sound pressure level normalised for the absorption area of the receiving room.
Weighted normalised impact sound pressure level [$L_{n,w}$]	A single figure representation of the impact sound insulation of a floor or wall based upon the impact sound pressure level measured in a laboratory.
Weighted standardised impact sound pressure level [$L'_{nT,w}$]	A single figure representation of the impact sound insulation of a floor or wall based upon the impact sound pressure level measured in situ on site.
C_I	A value added to an L_{nW} or $L'_{nT,w}$ value to account for variations in the spectrum.
Energy Equivalent Sound Pressure Level [$L_{A,eq,T}$]	'A' weighted, energy averaged sound pressure level over the measurement period T.
Percentile Sound Pressure Level [$L_{Ax,T}$]	'A' weighted, sound pressure that is exceeded for percentile x of the measurement period T.
Speech Privacy	A non-technical term but one of common usage. Speech privacy and speech intelligibility are opposites and a high level of speech privacy means a low level of speech intelligibility. It should be recognised that acceptable levels of speech privacy do not require that speech from an adjacent room is inaudible.
Sound Pressure Level, LP dB	A measurement obtained directly using a microphone and sound level meter. Sound pressure level varies with distance from a source and with changes to the measuring environment. Sound pressure level equals 20 times the logarithm to the base 10 of the ratio of the rms sound pressure to the reference sound pressure of 20 micro Pascals.
Sound Power Level, Lw dB	Sound power level is a measure of the sound energy emitted by a source, does not change with distance, and cannot be directly measured. Sound power level of a machine may vary depending on the actual operating load and is calculated from sound pressure level measurements with appropriate corrections for distance and/or environmental conditions. Sound power levels is equal to 10 times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 picoWatt
Noise Reduction	The difference in sound pressure level between any two areas. The term "noise reduction" does not specify any grade or performance quality unless accompanied by a specification of the units and conditions under which the units shall apply
Audible Range	The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20 Hz to 20 kHz, although it is possible for some people to detect frequencies outside these limits.
Background Sound Low	The average of the lowest levels of the sound levels measured in an affected area in the absence of noise from occupants and from unwanted, external ambient noise sources. Usually taken to mean the LA90 value
Character, acoustic	The total of the qualities making up the individuality of the noise. The pitch or shape of a sound's frequency content (spectrum) dictate a sound's character.
Loudness	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on
LMax	The maximum sound pressure level measured over a given period.
LMin	The minimum sound pressure level measured over a given period.
L1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L10	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L90	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).
Leq	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.