REVERBERATE
CONSULTING

Tuesday, 24 June 2025
Reference: P191408LT1r2.docm

Eric Anderson
Senior Planning Officer
Shire of Murray
PO Box 21,
Pinjarra WA 6208

Dear Eric,

Reception Centre, Lot 9002 (1) Hasluck Circuit, North Dandalup – Acoustic Report Peer Review – Rev 1

I have undertaken a review and appraisal of the following two reports:

- *Acoustic Report For Proposed Wedding Venue,* by Acoustic Engineering Solutions, dated 13 January 2025, ref AES-890339-R01-1-13012025, [AES]
- *Proposed Reception Centre 1 Haluck Circuit, North Dandalup Traffic Impact Statement,* by Porter Consulting Engineers, dated 27 February 2025, Ref 25-01-009, R04.2

From the review I have the concerns regarding noise impact from the proposed development. These are summarised overleaf and covered by the following main points:

- Noise from patron activity within and around the function area
- Noise generated by loud music
- Low frequency noise generated by loud music
- Night-time noise generated by vehicles leaving the site

The summary overleaf shows exceedances of the Assigned levels of 4 dB for patron noise, and 7 dB for music. There are also obvious scenarios for which noise forecasts have not been presented.

These concerns are discussed in detail overleaf and it is for these reasons that I am of the opinion that Unreasonable Noise, as defined in the Environmental Protection Act 1986 is likely to be generated from the proposal.

Yours sincerely,

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Director

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1.0 Noisy music activity in and around the function area

A limit of 94 dB[1] has been imposed by AES on the maximum permissible music noise at the venue during functions. This limit is based on there being no *impulsiveness*[2] associated with the music.

No methods have been presented by AES to ensure impulsiveness is not introduced into the music. The AES has applied a 10 dB noise adjustment[3] to the music in the absence of impulsiveness. This must be increased to 15 dB as it is likely a DJ, or live band at the venue would play such music. The overall AES forecast noise levels will correspondingly increase by 5 dB.

Furthermore, I have undertaken an indicative $L_{A10\ adj}$ forecast of live music noise at resident R3. This forecast is based on

- SoundPLAN 9.0
- Concawe algorithms selected with
    - 15 deg C
    - 50 % RH
    - F-class stability
    - Wind 3 m/s (worst case direction)
- Ground absorption
    - General 0.65
    - Dam 0.0
- Music Sound Power 94 dB within the functions hall
- Plasterboard internal surfaces at the functions hall
- Venue western doors open
- Approx 170m separation between the function hall and R3
- music noise adjustment increased from 10 dB to 15 dB

The corresponding free-field $L_{A10,\ adj}$ music noise at the R3 dwelling was 47 dB. This exceeds the evening assigned level criterion of 40 dB by 7 dB.

The $L_{A10,adj}$ forecast music noise level is also shown in Figure 1 below. This figure shows that the music noise:

Exceeds the evening and Sunday criterion of 40 dB at the four nearest neighbours
Exceeds the night-time criterion of 35 dB at the eleven nearest neighbours

I have not conducted ambient noise monitoring in the area but I remain concerned that the music noise is likely audible at noise levels above 30 dB, especially during the evenings. This music audibility will is shown to result at all twenty neighbouring residences shown in Figure 1.

[1] AES Table 3-1 and Section 5.1
[2] Defined in the Environmental Protection (Noise) Regulations 1997 Regulation 9. (1)
[3] AES Section 5.1, p11

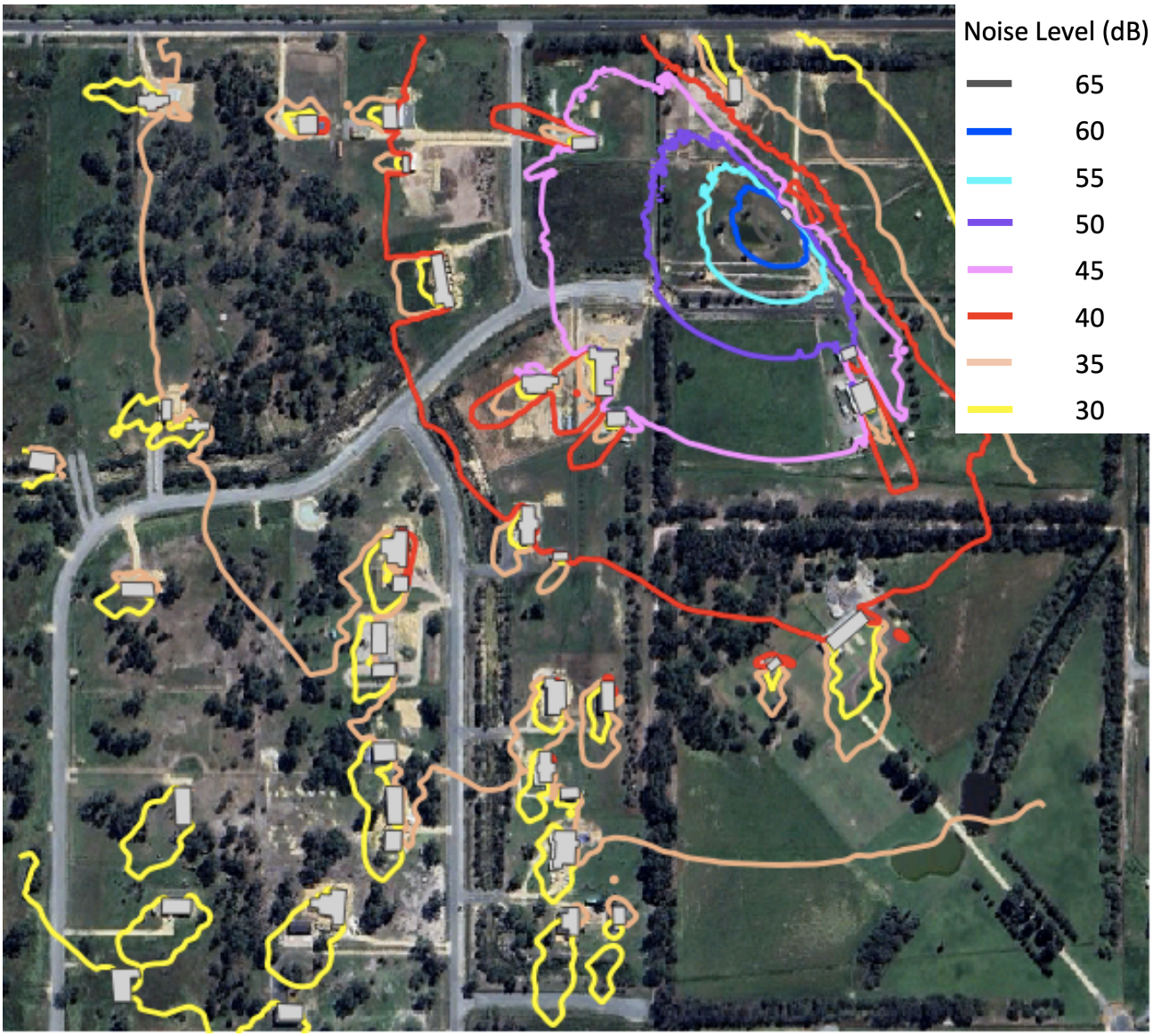

Figure 1 - Forecast $L_{A10,adj}$ music noise in surrounding area

2.0 Low Frequency Music Noise

There has been no discussion about low frequency music noise. This noise is generated by the 'bass' component in music. Speakers generating large amounts of bass are colloquially referred to as 'Woofers'.

Low frequency can easily penetrate through walls, ceilings and doors. The use of colorbond in the construction of the external walls and roof, combined with internal 10mm plaster lining means this venue is susceptible to transmitting low frequency noise, even when the glass access doors are closed.

Given that AES state that the music in the function hall is assumed to have "… *higher low-frequency components compared with other types of live music*"[4], This needs to be assessed and managed.

3.0 Keeping Doors Closed at night

AES requires the access doors to the hall to be kept closed after 10pm, when live music plays[5].

The method by which doors are to be kept closed has not been outlined. This is a significant flaw in the proposal as high music noise emissions occur when the doors are opened. Given the connectivity between the indoor and outdoor areas of the venue, significant patron movements between these two spaces would be expected throughout the night. The continual passage of patrons through the West facing doors would hinder any noise shielding produced by the closing of these doors. Again, higher noise would result at the nearby neighbours, than forecast in the AES report[6].

Furthermore, the report implies that doors will be kept open where no music is playing. In this instance the patron noise will reach the nearest neighbours at the same unattenuated level as during the day/evening. These levels would exceed the Assigned Level and are discussed in more detail below in Section 4.0.

4.0 Noisy patron activity in and around the function area

The noise generated by patrons within the function area, as modelled by AES appears low. This is because they appear to not have accounted increases in the modelled noise generated by patrons due to the combined impacts of the 'Lombard' effect, of alcohol consumption, and of the celebratory nature of the event. The AAAC[7] have endorsed the Rindel method to use in this scenario.

Other researchers[8] state that an analysis that accounts for the Lombard Effect, "*… provides a substantial increase in accuracy over the commonly-used prediction method which assumes raised voices and 10*log(number of talkers)*" [Note – this latter method was used by AES].

The Rindel method accounting for the Lombard effect increases the forecast noise generated by the patrons by approx. 10 dB, compared to that by AES

This means that the forecast noise at, for example, Location R3 could increase in the 'S2' scenario from 29 dB to 39 dB during the day, evening and night (refer Tables 5-2 to 5-4)

[4] AES Section 3.4, p8
[5] AES Section 3.4, bullet point 4, p7
[6] AES Section 5 throughout, for scenario S4A
[7] Association of Australasian Acoustical Consultants, *Licensed Premises Noise Assessment Technical Guideline* Version 2.0, dated November 2020, Table 1, p7,
[8] Glenn Leembruggen, *Predicting patron noise levels in restaurants and bars - An extension to Rindel's Method,* Acoustics Australia Conference 2021

This represents compliance during the day/evening but a 4 dB exceedance at night. This noise level needs to be reduced.

Lastly, the AES report outlines a scenario where 100 people are all outside and cheering[9]. They do not then cover the following obvious scenarios:

- Amplified speech preceding and following each cheering event
- The 100 patrons remaining outdoors and in close proximity, while engaged in lively conversation with each other

5.0 Night-time Vehicular activity

The venue is proposed to operate two to three times per week, between 2pm and midnight[10]. I am concerned about the impact of 35 to 45 vehicles leaving the site during the midnight peak departure hour onto Hasluck Circuit as outlined in the TIS[11].

The TIS also estimates the current traffic flow on Hasluck Circuit (East of Hardman Entrance) to be 16 vehicle trips per day[12] I would conclude that the addition of 35 to 45 vehicles trips per hour, especially during the midnight peak hour period to be a substantial increase in the current traffic flow. The noise generated by these vehicles will be especially noticeable at the two houses already in this area. I am of the opinion that this impact is worsened where it regularly happens two to three times per week.

I suggest you contact a town planner to discuss the extent of any reduction in amenity, especially to the two adjoining residences caused by these potential night-time vehicle movements.

[9] AES Section 3.4, Scenario 3, p7
[10] AES Executive Summary, p iii
[11] *Proposed Reception Centre 1 Haluck Circuit, North Dandalup Traffic Impact Statement,* by Porter Consulting Engineers, 27/02/25 Section 5.1, p 15
[12] Table in Section 5.3, p16