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ATTN: MARK DAVIES

25-27 Bushlands Ave, Gordon - Proposed Aged Care Facility – Review of Amended RSA Report (Revision 3)

We have been engaged by Mark Davie to comment on the revised acoustic report by Rodney Stevens Acoustics (RSA) in relation to the proposed Residential Aged Care Facility at 25, 25A and 27 Bushlands Ave, Gordon (Revision 3, dated July 2017).

In short, our comments relate to:

- A need for clarification of external noise emission goals that are proposed for the development.
- Commentary about the analysis in relation to mechanical services noise associated with the development.
- Commentary about the analysis in relation to vehicular noise associated with the development.

These comments are substantially the same as comments regarding earlier revisions of that report as for the most part the comments raised about those reports have not been addressed.

Noise Emission Criteria.

Noise emission goals for the site have been determined with reference to the EPA Industrial Noise Policy and Sleep Disturbance Guidelines and background noise logging conducted at the site.

The tables on pages 7 and 12 of the report present the results of measured background noise levels which have been determined following long term noise logging at the site (at the front and rear yards of 25 Bushland Ave.

The tables on pages 7 and 12 purport to present the measured background levels for the day/evening and night time periods however on review of the L_{90} data in the logging graphs, those tables appear to be incorrect.

It appears likely that there are typical graphical errors in those tables, as the summary of background noise levels (and the resulting noise emission criteria) on page 16 appear to be correct (although are inconsistent with the tables on pages 7 and 12.

In addition, there is no reference to Sleep Disturbance guidelines in the criteria section of the report, even though sleep disturbance analysis is then introduced in the vehicular noise assessment on page 18.

For completeness, noise emission goals that should be adopted for the site are as follows:

Table 1 – Noise Emission Criteria

Time of Day	**Background noise Level - dB(A)L_{90}**	**Intrusiveness Noise Objective dB(A)$L_{eq(15min)}$ (Background + 5dB)**	**Amenity Noise Objective dB(A)$L_{eq(15min)}$**	**Sleep Disturbance Objective dB(A)$L_{1(1min)}$ (Background + 15dB)**
Day/Evening (7am - 10pm)	39	43	45	N/A
Night (10pm - 7am)	30	35	40	45

Mechanical Plant Noise.

It is not typically feasible for a detailed acoustic analysis to be conducted at DA stage, as typically plant selections, locations and duct layouts are not finalised (all of which are critical when considering noise propagation).

We note that there has been some degree of analysis of plant noise provided in the RSA report. With respect to this we note:

- The report is based on fan selections and noise levels set on out table 1 (page 17) of the RSA report.

- The table indicates that the capacity of the proposed car park exhaust fan is 60l/s, and for the car park supply fan is 13,160l/s. While not impossible, it is unusual for a car park to be ventilated having effectively a supply fan only.

- In the plant noise predictions (table 2, page 18) exceedances of noise emission criteria are predicted.

- Despite this, the report has come to the conclusion that no acoustic treatment of plant and equipment is needed.

In the event that approval for the development is granted, reliance on the RSA acoustic report raises a risk there will be exceedances of noise emission criteria. A detailed review of plant items (once final selection of equipment/locations and layout is made) must be conducted at CC stage.

There should be a condition of consent requiring this assessment to demonstrate that compliance with the EPA Industrial Noise Policy (as per table 1 of this report) is achieved.

The RSA acoustic report as it is presently written in fact predicts a non-compliance, and reliance on the recommendations in the report creates risk of a future problem with respect to plant noise.

Car Park Noise

The RSA acoustic report identifies 29, 30 and 32 Bushlands Ave as the nearest effected residence, which is on the opposite side of the road, and further away.

The report presents noise emission from the use of cars, buses and trucks, While it presents sound power levels of each of these vehicles, there is no comment about how many vehicle movements have been assumed to occur (obviously the more vehicle movements, the louder the noise level).

No 29 and 30-22 Bushlands Ave are differing distances from the driveway, yet almost identical noise impacts are presented at each property. Unless there is noise screening to 29 Bushland that is making the noise level at 29 the same as 30/32 (despite being much closer), the predictions appear to be incorrect. There is no mention of noise screening in the report.

Page 18 of the RSA report notes that the noise attenuation of the building façade and 6.38mm laminated glazing has been taken into account in noise emission predictions, however this would not appear to be relevant to noise generated on the driveway (an external area).

With respect to passenger and community bus noise, the noise emissions predicted appear incorrect:

- Passenger vehicle sound power levels are assumed to be between 83-93dB(A) (depending on whether the case is accelerating or not).

- Assuming a distance of approximately 28m to the façade of the residences at 30-32 Bushlands Road, this would make the noise level at the façade 46-56dB(A) (with the 56dB(A) noise level being more likely given the car will need to accelerate up the driveway). This would be an exceedance of the 45dB(A) sleep disturbance noise limit.

- Similarly, the report predicts a noise level of 44dB(A)$L_{1(1min)}$ at the front façade of the 30-32 Bushlands Ave residences for a community bus leaving the site. For a bus of sound power of 90dB(A), at a distance 30m from the site boundary to the 30-32 Building façade, the noise level is 53dB(A)$L_{1(1min)}$, not 44dB(A). This is also an exceedance of the 45dB(A) sleep disturbance noise limit.

- Noise attenuation with distance (assuming no noise screening) is performed using the equation:

  *Noise level at receiver = Sound power level (at source) – 20*log$_{10}$(Distance)-8.*

  - This equation is in fact presented on page 17 of the RSA report.

- For the community bus, the sound power level is 90 (table on page 19), and the distance from the edge of the site to the façade of the residences at 30-32 Bushlands Ave is 30m (this being the closest unobstructed distance between bus and façade of the noise receiver).

- On applying the formula, the noise level at the 30-32 Bushlands Ave façade is 53dB(A), an exceedance of the 45dB(A)$L_{1(1min)}$ target.

- Given that the bus would be at street level as it exits the site, it seems unlikely that there would be any noise screening between the bus and the building façade at 30/32 Bushlands Ave that would result in the noise level being less than 53dB(A).

- If the acoustic benefit of barrier screening has been relied on for the predictions to 29, 30 and 32 Bushlands Ave, the height and location of the screening should be made clear.

- It appears that an exceedanace of sleep disturbance guidelines is likely, and no justification for this presented. This prevents Council making any accurate assessment of noise impacts.

Closure:

In short:

- Noise emission goals for the site should be set as per table 1 of this letter.

- The issue of car park noise should be assessed accurately at 29, 30 and 32 Bushlands Ave. The noise levels for sleep disturbance impacts appear incorrect. It is likely that there will be an exceedance of the Background+15 sleep disturbance test. As there is no accurate prediction of noise levels and as a consequence no justification of the noise impact (given there will be an exceedance of the BG+15 test). This prevents Council from being able to accurately assess the impact when deciding whether to approve the proposal.

- Detailed acoustic review of plant items should be conducted once equipment is selected. The recommendation in the RSA report that there is no treatment required should not be adopted.

- No exceedance of noise emission goals for mechanical plant noise should be permitted. The report as it is written creates a risk of there being plant noise issues in the future as it expressly states that there is no acoustic treatment of plant required, yet this conclusion is based on no meaningful assessment, and a prediction that there will in fact be exceedances of the Industrial Noise Policy.

- There should also be a recommendation that any truck or van delivery to the site must be between 7am and 10pm.

Please contact us should you have any further queries.

Yours faithfully,

Acoustic Logic Consultancy Pty Ltd
Thomas Taylor