

13 June 2023

TM146-03F01 Peer Review Acoustic Advice - 2023 (r1)

City of Ryde

Att: Sohail Faridy

Dear Sir,

50-52 Buffalo Road, Gladesville - Peer Review of Acoustic Report for Metal Recycling Facility

Introduction

We have been engaged by City of Ryde Council to conduct a peer review of an acoustic report for a proposed metal recycling facility at 50-52 Buffalo Road, Gladesville.

The report reviewed is *Noise and Vibration Impact Assessment – 50-52 Buffalo Road, Gladesville* dated 20/1/2023 by Pulse White Noise Acoustics (Rev 0) – the PWNA Report.

The key issues that arise out of the peer review are:

- A number of nearby properties are not correctly identified making it potentially unclear what noise level is predicted at what location.
- Whether the PWNA Report and site Plan of Management have taken into account all operational activities and their noise/vibration impact. In particular it is not identified if unloading and processing/crushing car carcasses is proposed, which has been the subject of complaint from nearby land users during previous operation of the site due to its noise and vibration impact.
- Accuracy of some of the noise emissions predictions. This is of particular concern for noise predicted to 54 Buffalo Road (directly opposite the facility doors), where exceedances of EPA noise goals were predicted.
- There are no recommendations in the report with respect to the construction of the warehouse building shell nor any recommendations with respect to material handling and use of equipment in outdoor areas.

Identification of Nearby Properties.

There are errors in identification of nearby properties in the report. Most critically the directly adjoining neighbours are not correctly identified in table 1 of the PWNA report:

- CM02 is identified in table 1 as 43 Buffalo Road, when it is actually 54 Buffalo Road.
- CM03 is identified in table 1 as 45 Buffalo Road, when it is actually 48 Buffalo Road.

This error then creates ambiguity in noise prediction tables, in particular:

- Table 16 (construction noise predictions) identifies receivers without referring to their address (ie i they are just referred to as CM01, CM02 etc). If the receiver identification is wrong, it is impossible to verify if predicted noise levels are correct.
- Predicted operational noise (tables 20, 21, 22) refer to properties by street addresses, however is confusing when examined with reference to table 1 and the aerial photo in Figure 2 which identifies nearby development.

Recommendation. - Tables 1, 16, 20, 21, 22 and aerial photo in figure 2 should be corrected and self consistent.

Noise Emission Predictions

Noise levels in internal areas.

Section 5.1 of the PWNA report provides detail as to how internal noise levels within the facility were determined.

- Measurements were made at a similar facility in Blacktown.
- An average noise level of 80dB(A) was measured within the facility. However, the report is unclear if the measurement results in table 18 are of an excavator, a bailer or the combined noise level from both items.

Section 5.1 does not identify if unloading/dropping of car carcasses was measured. If the proposed new facility will involve unloading/dropping/crushing car carcasses, then the data gathered at the Blacktown facility may not be representative of the proposed operation at the Gladesville site. If dropping/processing/crushing cars is NOT proposed at the Gladesville site, this should be reflected in the PWNA Report, the Plan of Management and conditions of consent, if approved.

Section 6.8 of the PWNA report states that forklifts will be used, however does not indicate where this occurs (inside or outside). In Section 5.1 it does not state if a forklift was in operation when conducting the noise survey. If it was operating – this should be identified. If forklifts are proposed to be used in external areas, the noise emission predictions (tables 20, 21, 22) should be amended to address this.

Noise emitted via open doors

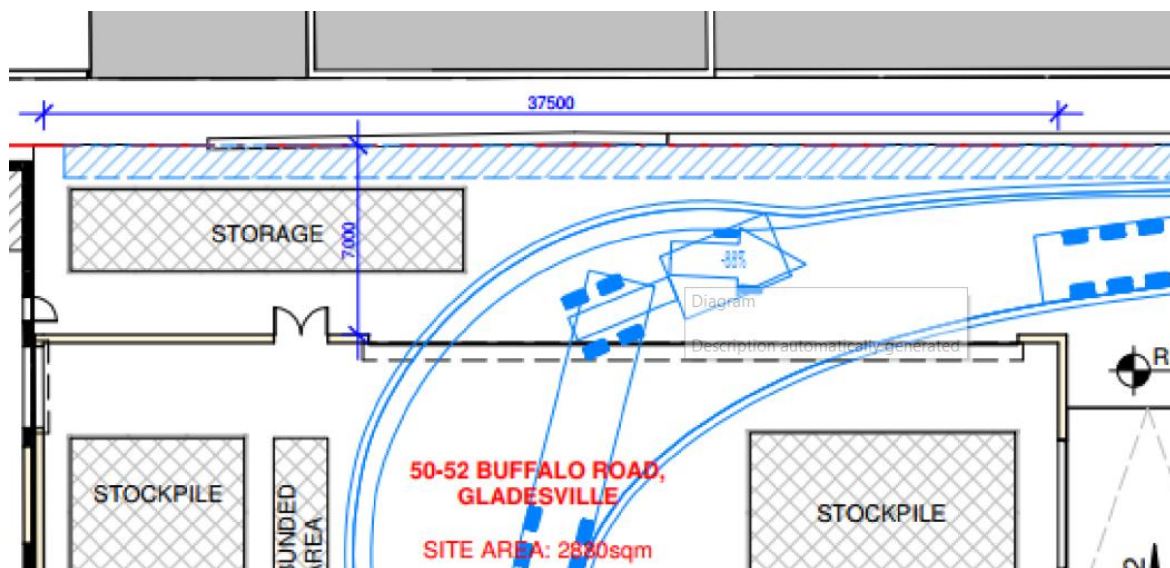
Noise emissions are predicted on the assumption that the doors to the facility are *open* (Section 5.3). We assume this is because it will be impossible to fit both a semi-trailer and excavator for unloading within the facility if the doors are closed.

Section 5.1 states for the purpose of calculation, a noise level of 85dB(A) was used for noise emission predictions. It is not stated if this is an $L_{eq(15min)}$ noise level – this should be made clear.

More importantly, it is not stated if the 85dB(A) is a sound *pressure* (ie – an average noise level within the internal space) or a sound *power* (the total sound energy at the door, taking into account the door size). This is very important when looking at the predicted noise emission through the open doors.

In short, if the typical noise level within the facility is 80dB(A), the sound energy at the opening (the door) will be:

$$\text{Sound Power at Door} = \text{Noise level (sound pressure) inside} + 10 \cdot \log(\text{area of door}) - 6.$$



In this case, the door appears to be over 20m long and I assume approx. 3-4m high. That being the case, the *sound power* at the opening would be approximately 93dB(A), not 85dB(A) as presented in table 19 of the PWNA report:

$$80\text{dB(A)} + 10 \cdot \log(80\text{m}^2) = 93\text{dB(A)}$$

Further, if the noise level inside the facility was intended to be 85dB(A), then the sound power at the door would be 98dB(A).

The noise level that should be used for predictions is potentially 8-13dB(A) higher than what is presented in table 19 of the PWNA report.

The above will have significant impact on predicted noise to 54 Buffalo Road. The noise level at 54dB(A) is already predicted to be 69dB(A) (tables 20 and 21), an exceedance of the 68dB(A) noise goal. If there are errors in the noise emission predictions, the noise level could be even higher.

Recommendation.

The PWNA Report should be revised to be clear on:

- What the sound pressure level is within the facility from the excavator, the bailer and the combined noise level.
- Confirm that the noise levels are inclusive of worst case activities (dropping/dragging car carcass) or to expressly exclude these activities from the site in management recommendations.
- What the door area has been used in calculations and the sound power at the door that has been used for noise predictions.
- Update the noise emission prediction tables, if necessary.

Noise Emission Prediction Tables 20, 21, 22 – Section 5.3

Three scenarios are examined in the report, being trucks of varying size entering or leaving. Section 5.3 indicates that these predictions are the *cumulative* noise from trucks *and* noise emitted via open doors from internal areas.

As noted above, further clarification of noise emitted through the open door is recommended.

In addition, if looking at table 19 (noise source data) and tables 20, 21, 22 (the noise impact on 54 Buffalo Road), the PWNA report shows:

Table 1: PWNA predicted operational Noise to 54 Buffalo Road

	Truck Sound Power Level – (table 19) dB(A)	Noise Level at 54 Buffalo Road dB(A) _{Leq(15min)}
Scenario 1 – Semi-trail + internal operations noise.	108	69
Scenario 2 – Heavy Rigid + internal operations noise.	88	69
Scenario 3 – Light vehicle + internal operations noise.	83	60

Looking at the table:

- The noise level at 54 Buffalo Road is the combined level from truck (externally) plus noise breakout noise via facility doors.

- For Scenario 1 (semi-trailer movement + noise breakout), a noise level of 69dB(A) is predicted at 54 Buffalo Road.
- Going from Scenario 1 to 2, the truck noise level drops by 20dB(A), yet the overall noise level at 54 Buffalo Road does not change. This indicates that the overall noise level at 54 Buffalo Road must be dominated by noise emitted via the open doors.
- However if this is the case, then the noise level for Scenario 3 would also be expected to be 69dB(A) (as the open door noise will still be the dominant noise source). It would only drop to 60dB(A) if the doors were closed (which is potentially possible for the small vehicles), however the report does not state this.

Assuming an open door, an internal noise level of 85dB(A) and a semi-trailer exit movement, I predict a noise level exceeding 70dB(A) at 54 Buffalo Road, directly opposite the door, which is higher than the levels in the PWNA Report and higher than EPA recommended noise goals. Further, there appears to be windows in 54 Buffalo Road that will face the warehouse doors and semi-trailer travel path.

Recommendation.

- Prediction tables 20, 21, 22 should be reviewed to ensure no error, and correctly take into account noise via the open warehouse doors.
- Presenting the contribution of noise from truck alone, from the internal space alone and the overall/combined noise level will assist in ensuring all calculations are correct.

Vibration

Section 5.1 of the PWNA notes that there was no appreciable vibration that caused regenerated noise in other internal areas of the development during their observation of the Blacktown facility.

As noted with respect to noise, it is unclear if dropping of car carcasses is anticipated and if the PWNA vibration measurements included this activity. If the activity *was* included in the measurement, the report should be amended to expressly state this and the measured vibration levels presented. It should also indicate drop heights.

The Plan of Management should include procedures for how these items are unloaded and handled on site, given the noise and vibration disturbance this activity caused to neighbours when this activity was conducted previously.

If dropping/crushing car carcasses is not proposed, this should be reflected in the acoustic report and site management plan.

PWNA Report Recommendations (Section 6.8)

There is no information in the PWNA Report about construction of the building shell of the facility, in particular on the south-east/south-west façade facades and roof (given there is no door in them), and they are directly adjacent to the neighbouring building.

If there are management procedures relating to dropping of items, crushing, processing car carcasses these should be identified (and also in the Plan of Management). If processing car carcasses is not proposed, this should be included in the recommendations to prohibit this.

If forklifts and excavators are proposed only in internal spaces, this should also be reflected in the recommendations.

Please contact us if you have any queries.

Regards,



Thomas Taylor
Principal Engineer