Sent:	22/04/2022 10:29:54 AM
Subject:	16 Bangaroo St Childcare Acoustics Report Peer Review
Attachments:	nss23446 Peer Review Child Care.pdf;

Hi Max,

As per our conversation today please find the current revision of the Acoustics Report Peer Review conducted by Noise and Sound Services for REV2022/0004 to be Referred to the Environmental Response team. Penny and the council team failed to have this done in the last DA Application even after numerous email requests, so I would appreciate a confirmation that this has been sent and reviewed by the appropriate people within council.

Kind Regards,

Adam iezzi
0408 225 186

Noise and Sound Services

Peer Review – Wilkinson Murray Pty Ltd Report – '*Child Care Centre – 16 Bangaroo Street, North Balgowlah - DA Noise Assessment*'

April 2022

Report No. nss23446 – Final – Rev A

Prepared at the Request of:-

Adam Iezzi
2/2 Worrobil Street,
North Balgowlah, NSW 2093

Prepared by:-

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C O N T E N T S

1. INTRODUCTION

Noise and Sound Services was requested by Adam Iezzi of 2/2 Worrobil Street, North Balgowlah, NSW 2093, to carry out a peer review of two acoustical reports prepared by Wilkinson Murray Pty Ltd of Level 4, 227, Pacific Highway, Crows Nest, NSW 2065. A noise impact assessment and report has been commissioned by Kellie Gielis for the Development Application to Northern Beaches Council. This is for a childcare centre proposed to be located at 16 Bangaroo Street, North Balgowlah (the site). The site is currently occupied by a double storey residential dwelling and is surrounded by residential properties including six unit apartments over three-storeys at 2 Worrobil Street, North Balgowlah.

Wilkinson Murray Pty Ltd produced three reports entitled, *'Child Care Centre – 16 Bangaroo Street, North Balgowlah - DA Noise Assessment'*. The report numbers are 20194 Version A, dated 02 July 2020, Version B dated 27 July 2020 and Version C dated 17 May 2021. This report peer reviews Version B and Version C.

In Version B it is stated that *"The proposed child care centre will accommodate a total of 24 children between the ages of 3 and 6 years old. The centre will operate from 8.30am-4.00pm, Monday to Friday. The client has advised the outdoor play time will be divided amongst the children and have proposed to permit a maximum of 8 children outside at one time"*. In Version C the total number is reduced from 24 to 20 children. Note: Other documents suggest an 8:00 am start time.

After preliminary readings, the two reports appear to be contradictory for the noise from the outdoor play areas. This may be due to a lack of a full explanation regarding the predicted noise levels at sensitive receivers. Nevertheless, it is our view that the proposed site is unsuitable for a childcare centre due to the many surrounding residential properties.

In the statements of environmental effects produced by Boston Blyth Fleming Pty Limited dated 19 February 2022 it is noted that a new proposal is to reduce the child numbers to 12. However, no new acoustic report has been submitted to our knowledge. Therefore, this peer review still applies.

2. COMMENTS

2.1 Site Selection

It is our view that site selection for a childcare centre is especially important to the success of the acoustical aspects of the development application.

A paper presented at the Australian Acoustical Society - Proceedings of ACOUSTICS 2006, 20 - 22 November 2006, Christchurch, New Zealand, entitled *'Carrying Out Noise Assessments for Proposed Childcare Facilities'* states:-

"The selection of a site. The ideal location for a childcare centre is one where there are large amounts of open space on all sides of the proposed outdoor play area. This is not always practical, and some compromise is required. A site with one or more boundaries facing bushland, a reserve, a public school, or a commercial area has an improved chance of meeting noise goals……. From an acoustical point of view, the worst-case scenario for a childcare centre is therefore one situated on a small plot where there are five neighbouring boundaries, a very quiet residential street and the requirement for a large number of children."

The site at 16 Bangaroo Street, North Balgowlah has a boundary with nine close neighbouring properties (including the six residential apartment block at 2 Worrobil Street, North Balgowlah as shown in Figure 1 below) and two other residences marginally affected. On this basis it is clear that the site at 16 Bangaroo Street, North Balgowlah is not a preferred site for a childcare centre. This limits the noise control advice that is available to the acoustical consultant.

Figure 1. Site Plan. Source: Metromap.

2.2 Noise Sensitive Receivers

In each of Wilkinson Murray's reports only five noise sensitive receivers (R01 to R05) have been identified and these are listed in Table 1 (page 6) of both reports. However, the sensitive receiver R03 at 2 Worrobil Street, is, in fact, six sensitive

receivers. Therefore, instead of five noise sensitive receivers, as identified by Wilkinson Murray, there are **nine noise sensitive receivers** or eleven if the marginally affected receivers are included.

2.3 Background Noise Monitoring

Background noise monitoring has been carried out at three locations within the subject site, rather than the neighbouring premises. These were:

- L01 the front yard, (from Monday 15th June to Wednesday 24th June 2020);
- L02 the backyard ground floor (from Monday 15th June to Wednesday 24th June 2020 and again from 5:00 pm Friday 26th June to 7:30 am Monday 29th June 2020) and
- L03 the rear balcony (from 5:00 pm Friday 26th June to 7:30 am Monday 29th June 2020).

Of these, the most useful would have been the rear balcony as this is the closest to one of the most noise sensitive receivers at unit 4/2 Worrobil Street. Unfortunately, Wilkinson Murray reported that *"Technical issues from the rear balcony noise logger (L03) occurred during monitoring on site. Monitoring was undertaken again between the 26 and 29 June 2020"*. However, the time period of the background noise monitoring from 5:00 pm Friday 26th June to 7:30 am Monday 29th June 2020 is not relevant as this does not cover the time of the proposed childcare at all**.** The centre is only proposed to operate from 8.30 am-4.00 pm, Monday to Friday.

Hence the existing background noise at units 4/2 and 5/2 Worrobil Street has not been assessed. Due to the location of units 4 and 5 which are acoustically shielded from most road traffic noise, the best estimated would be for a level similar to the ground floor measurements made by Wilkinson Murray i.e., 39 dBA ($L_{AF90,RBL}$) giving a noise goal ($L_{Aeq,15\ minute}$) of 44 dBA. The 5 dB correction that Wilkinson Murray added to the initial ground floor backyard background noise measurement to establish the upper level rated background level (RBL) is not justified.

2.4 Predicted Noise Levels at Sensitive Receivers

Table 5-2 in the Wilkinson Murray report Version B provides an operational scenario for 24 children playing indoors with all glazing closed. Table 4-4 in the Wilkinson Murray report Version C provides much higher predicted noise levels, however, this is for an operational scenario operating for 20 children playing

indoors with all glazing closed together with mechanical plant operating and on-site parking.
Table 5-3 in the Wilkinson Murray report Version B provides an operational scenario for 8 children playing outdoors. Table 4-5 in the Wilkinson Murray report Version C provides much lower predicted noise levels without any explanation of why the predictions have been reduced. For 14 B Bangaroo Street, ground floor, for example a 1 dB exceedance is predicted in Version B whereas in Version C the noise criterion is just met. Only two levels are considered for 2 Worrobil Street whereas there are three levels plus a ground floor garage area. Hence there are three levels and unit 4 is effectively at a height of a fourth level. Wilkinson Murray failed to take this into account at all.

The elevation of the outdoor play area is 60 metres, whereas the elevation on the ground below Unit 4/2 Worrobil Street is 62 metres. Units 4 and 5 are built at an elevation equivalent to four-storeys (or more) above the ground. Due to the high elevation of the neighbouring properties to the north and west (particularly Unit 4/2 Worrobil Street - over 8 metres) there is a direct line-of-sight to the proposed outdoor play area, even if a 3 metre high barrier is constructed at the rear of the proposed outdoor play area. These elevations appear to have not be taken into account in the Wilkinson Murray noise model.

Based on a distance of 18 metres (hypotenuse) from the outdoor area of Unit 4/2 Worrobil Street to the centre of the play area the predicted noise level ($L_{Aeq,15\ minute}$) is **53 dBA** from ($53 = 86 - 20 \log_{10} (18) - 10 \log_{10} (2\pi)$). Where the 86 dBA is the sound power level stated by Wilkinson Murray for 10 children (it is noted that the Association of Australasian Acoustical Consultants (AAAC) give 87 dBA for 10 children in the 3 to 5 age group. Hence, Wilkinson Murray is correct using 86 dBA for the 8 children (from $86 = 87 - 10 \log_{10} (10/8)$). The $10 \log_{10} (2\pi)$ is the conversion of sound power level to sound pressure level. This exceeds the 44 dBA noise goal by **9 dB**. Even if the background level at Unit 4/2 Worrobil Street is the 44 dBA and goal is 49 dBA (as assumed by Wilkinson Murray) there is still an exceedance of 4 dB.

Due to the high elevation of Unit 2/2 Worrobil Street (over 6 metres) there is a partial direct line-of-sight to the proposed outdoor play area, even if a 3 metre high barrier is constructed at the rear of the proposed outdoor play area. Based on a distance of 22 metres (hypotenuse) from the outdoor area of Unit 2/2 Worrobil Street to the centre of the play area the predicted noise level ($L_{Aeq,15\ minute}$) is **46 dBA** from ($46 = 86 - 20 \log_{10} (22) - 10 \log_{10} (2\pi) - 5$). Where the 5 dB is the limited barrier reduction. This exceeds the 44 dBA by **2 dB**.

The 2.4 metre barrier, as recommended by Wilkinson Murray, between the site and the northern neighbour - 18 Bangaroo Street will not total exclude the line-of-sight to the boundary position due to the 2 metre difference in elevations. The

predicted noise level ($L_{Aeq,15\ minute}$) here is **55 dBA** from ($55 = 86 - 20 \log_{10}(8) - 10 \log_{10}(2\pi) - 5$) where the 5 dB is the limited barrier reduction.

Wilkinson Murray have not suggested sound absorbing panels and hence all sides of the outdoor play area will be sound reflecting. This is not an issue if, at least, one boundaries of the outdoor play area faces a non-sensitive area such as bushland or a reserve where the noise can be projected. In this case the reflected noise will be directed upwards towards the neighbouring apartment premises at 2 Worrobil Street.

3. SUMMARY AND CONCLUSIONS

We have reviewed two environmental noise assessment reports prepared by Wilkinson Murray Pty Ltd produced three reports entitled, 'Child Care Centre – 16 Bangaroo Street, North Balgowlah - DA Noise Assessment'. The report numbers are 20194 Version A, dated 02 July 2020, Version B dated 27 July 2020 and Version C dated 17 May 2021. This report peer reviews Version B and Version C.

After peer reviewing the two reports, we find that the reports have not fully taken into account the noise from the outdoor play areas, particularly the residential receivers, in the elevated six units at 2 Worrobil Street.

The proposed noise barriers up to 3 metres high in residential gardens would not generally be acceptable to neighbours. Even so, it is our view that the barriers are not high enough to meet the noise goals of background noise plus 5 dB. Hence, we conclude that the proposed site is totally unsuitable for use as a childcare centre.

Date	Prepared by:	Status
3rd July 2021	Ken Scannell MSc MAAS	Draft
Date	**Prepared by:**	**Status**
5th July 2021	Ken Scannell MSc MAAS	Final
Date	**Prepared by:**	**Status**
21st April 2022	Ken Scannell MSc MAAS	Final – Rev A