

14) Appendix M

**Acoustic Assessment
Prepared by
Norrebro Design**



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DURAL HEALTH HUB

ACOUSTIC ASSESSMENT FOR PLANNING PROPOSAL

7 Feb. 2022

Doc. Rev 1

Healing ONR Pty Ltd
679-685 Old Northern Road
Dural NSW 2158

To Whom It May Concern,

Re: Acoustic Assessment for Dural Health Hub Planning Proposal

Thank you for organising the acoustic data gathering, as well as the detailed site survey and analysis performed on site.

This report presents the acoustic measurements results, our acoustic assessment of the adjacent properties and existing noise levels, and the acoustic report to accompany the Dural Health Hub Planning Proposal.

Yours faithfully,



Claudiu Pop
Director Australasia
BEng (Struct), MSc (Acoustics), PhD Cand. (Architecture)

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1. Introduction

This report provides a review of the documentation and regulations pertaining to the planning proposal for a health services facility at 679-685 Old Northern Road, Dural (Lot 3 in DP 395437 and Lot 1 in DP 120004). The combined site area is 3,462m² with a frontage to Old Northern Road of approximately 50m.



Figure 1: Site location

For the purpose of this planning proposal acoustic assessment the following documents have been reviewed:

- a. “Dural Health Hub – Proposed Building Footprint, issued by Health Projects International, **Issued for Information**, drawing number IPD-SP-2, Issue 4, dated 17.01.2022.
- b. Pre-lodgement Planning Proposal Application – Additional Permitted Use and Increase in Permitted Maximum Building Height – 679-685 Old Northern Road, Dural, **Pre-Lodgement Planning Proposal Advice**, issued by Hornsby Shire Council, Application no. PLPP/3/2021, dated 24.12.2021.

2. Operator Attended Measurements Results

Operator attended measurements were performed at the site, as well as a detailed investigation of the existing sound conditions and propagation away from Old Northern Road.

The measured parameter, **Sound Pressure Level LA_{eq}** is the “equivalent noise level” and is the summation of noise events integrated over a selected period of time. This noise metric is commonly used to correlate noise exposure and human annoyance. LA_{eq} is measured in dB(A) (‘A’ weighted sound pressure level) due to the fact that the ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the “A” filter. A sound level measured with this filter switched in is denoted as dB(A). Practically all noise is measured using the A weighting.

The noise survey was conducted with the following instruments:

Equipment	Make	Model No.
Type 1 Sound Calibrator	Brüel & Kjaer - Denmark	4231
Hand Held Analyser	Brüel & Kjaer- Denmark	2250

Table 1: Equipment used in the noise survey

The equipment was calibrated before and after the measurements and no deviations were recorded.

The measurement locations are illustrated below.



Figure 2: Operator attended measurements showing the relative location to adjoining properties

In addition to the measurements directly in front of the proposed Health Hub footpath, a set of measurements were performed along Franlee Road to provide a clear overview of the sound levels encountered at equal distance from Old Northern Road. It is expected that levels very similar will propagate along the proposed development. For the purpose of this planning proposal the operator attended measurements provide valuable insight, however for a Development Application at a later stage, a full 7 days 24 hours noise logging will be provided and analysed to complement this preliminary data.

The following figures present the measurement set-up at all locations and a full 1/3 octave analysis of the measurements.



Figure 3: Measurement location 1

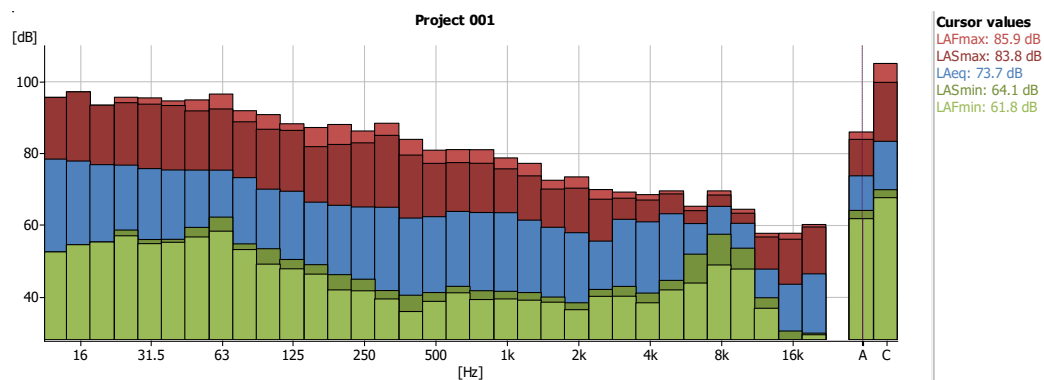


Figure 4: Measurement location 1 results



Figure 5: Measurement location 2

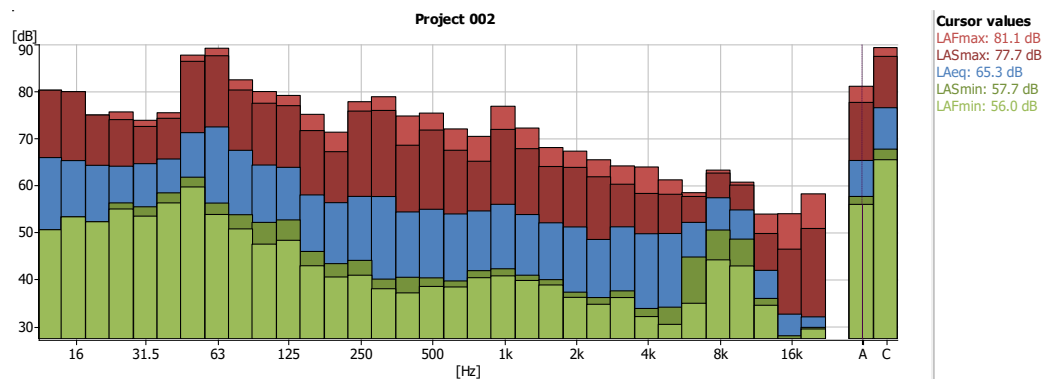


Figure 6: Measurement location 2 results



Figure 7: Measurement location 3

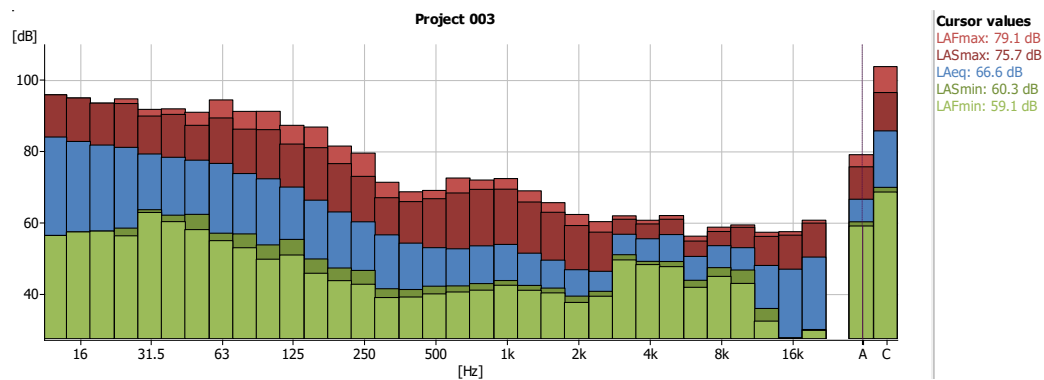


Figure 8: Measurement location 3 results



Figure 9: Measurement location 4

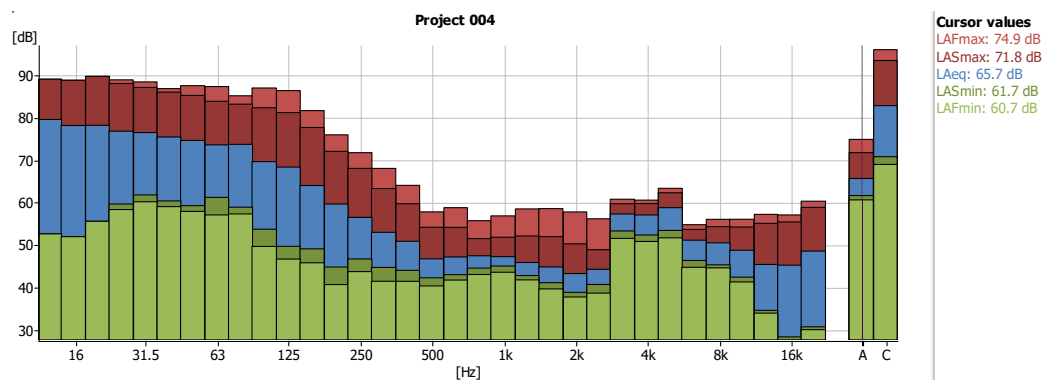


Figure 10: Measurement location 4 results



Figure 11: Measurement location 5

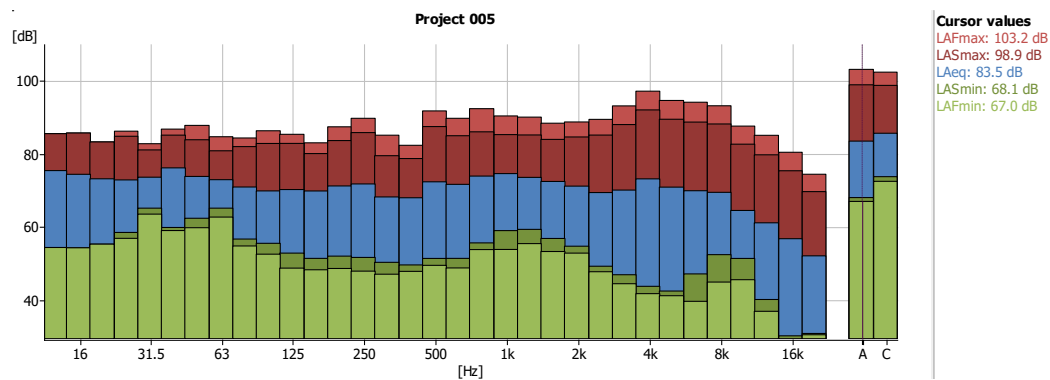


Figure 12: Measurement location 5 results



Figure 13: Measurement location 6

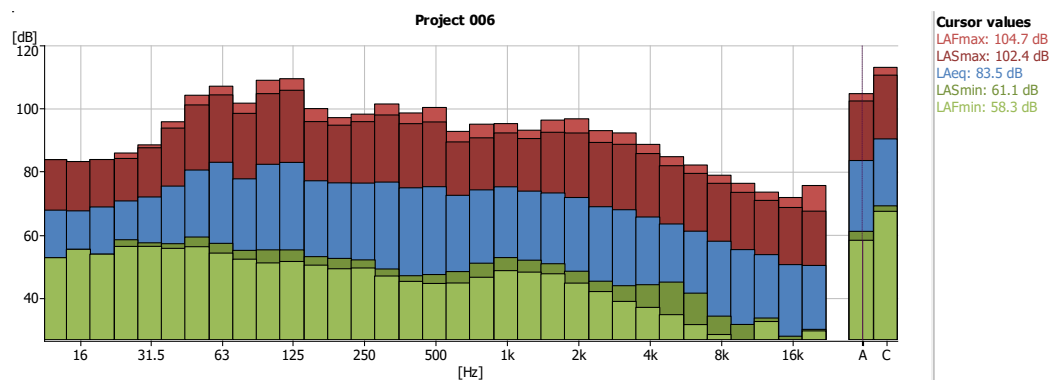


Figure 14: Measurement location 6 results



Figure 15: Measurement location 7

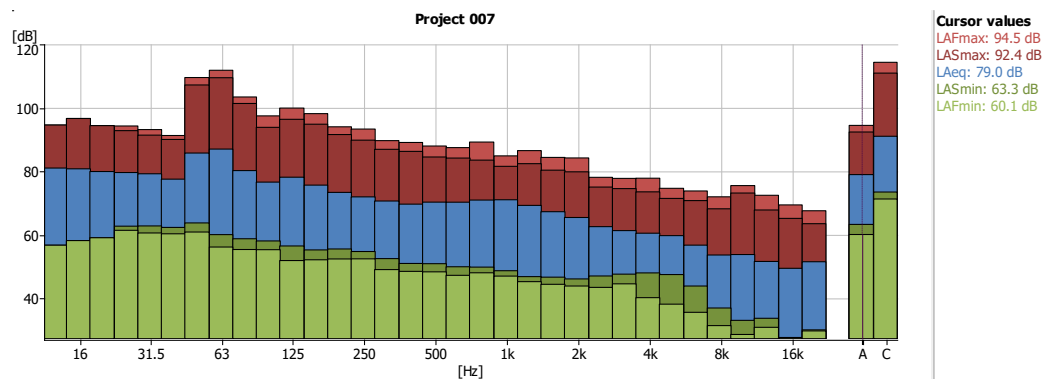


Figure 16: Measurement location 7 results

The results of the measurements are tabulated below:

Location no.	LAeq (dBA)	L90 (dBA)	Remarks
1	73.7	68.4	Noise dominated by traffic.
2	65.3	60.1	Noise dominated by traffic.
3	66.6	61.2	Noise dominated by traffic. Some ambient noise.
4	65.7	62.7	Noise dominated by general ambient noise, some traffic noise.
5	83.5	70.3	Noise dominated by traffic.
6	83.5	68.3	Noise dominated by traffic. Buses and traffic occurring. Some occasional pedestrian conversations.
7	79.0	67.4	Noise dominated by traffic. Buses and traffic occurring.

Table 2: Hand held survey results

3. The Hornsby Shire Council Noise Requirements for the Pre-lodgement Planning Proposal Application

The following are the Hornsby Shire Council Pre-Lodgement Planning Proposal Application requirements pertaining to acoustic and noise issues for No. 679-685 Old Northern Road, Dural as outlined in the Council's correspondence dated 24 December 2021.

3.10. Acoustic Impacts

The proposal would need to address all noise generated and associated with the operation of the development, including key impacts on sensitive receivers adjoining or in close vicinity such as residential premises. The proposal should provide an Acoustic Report which assessed the noise impacts associated with the proposed development on all sensitive receivers.

The proposed development is located on Old Northern Road which is a classified road of the Main Road Class. Given the proposed sensitive land use, it is recommended the Acoustic Report also assess the noise impacts associated with the classified road on the proposed development in accordance with State Environmental Planning Policy (Infrastructure) 2007 and Department of Planning's Development Near Rail Corridors and Busy Roads – Interim Guideline.

Acoustic Report

A report detailing the predicted noise levels to be emitted from the proposed development and proposed noise attenuation measures to be implemented when measured at any sensitive receiver locations.

4. Noise Criteria for the Proposed Development Site

NSW STATE ENVIRONMENTAL PLANNING POLICY (INFRASTRUCTURE) 2007

Clause 102 of the NSW State Environmental Planning Policy (Infrastructure) 2007 (the 'Infrastructure SEPP') states the following:

Clause 102: Development for any of the following purposes that is on land in or adjacent to a road corridor for a freeway, a tollway or a transit way or any other road with an annual average daily traffic volume of more than 40,000 vehicles (based on the traffic volume data available on the website of the RTA) and that the consent authority considers is likely to be adversely affected by road noise or vibration:

- building for residential use
- a place of public worship
- a hospital
- an educational establishment or childcare centre

The requirements of Clause 102 will be addressed, in detail, in the acoustic report for the Development Application stage.

NSW DEPT OF PLANNING - DEVELOPMENT NEAR RAIL CORRIDORS AND BUSY ROADS INTERIM GUIDELINE -CRITERIA

The NSW State Environmental Planning Policy (Infrastructure) 2007 (the 'Infrastructure SEPP') referred to in the NSW Department of Planning Development Near Rail Corridors and Busy Roads – Interim Guideline (2008) requires that all developments facing busy roads and roads with large traffic volumes and heavy vehicle traffic (as defined below) comply with the interim guideline.

Busy road: defined as Roads specified in Clause 102 of the Infrastructure SEPP: a freeway, tollway or a transitway or any other road with an average annual traffic (AADT) volume of more than 40,000 vehicles (based on the traffic volume data provided on the website of the RTA).

Any other road – with an average annual daily traffic (AADT) volume of more than 20,000 vehicles (based on the traffic volume data published on the website of the RTA)

Any other road – with a high level of truck movements or bus traffic.

The requirements of NSW Department of Planning - DEVELOPMENT NEAR RAIL CORRIDORS AND BUSY ROADS INTERIM GUIDELINE will be addressed, in detail, in the acoustic report for the Development Application stage.

NSW NOISE POLICY FOR INDUSTRY (NSW NPFI) 2017 - CRITERIA

The NSW NPFI (2017) provides assessment methodologies, criteria and detailed information on the assessment of environmental noise emissions in NSW.

The NSW NPFI criteria for noise sources consider two (2) components:

- Controlling **intrusive** noise impacts for residential receivers. Assessing intrusiveness generally requires noise measurements to quantify background (L_{A90}) noise levels at a location considered representative of the most potentially affected residential receiver(s). The intrusiveness criterion essentially means that the equivalent continuous noise level (L_{Aeq}) of the source(s) under consideration should be controlled to not exceed background noise levels by more than 5 dB.
- Maintaining noise **amenity** for various categories of land use (including residential receivers and other sensitive receivers). The amenity criterion is based on the sensitivity of a particular land use to industrial-type noise. The recommended amenity noise levels detailed in Table 2.2 of NSW NPFI represent the objective for total industrial noise at a receiver location, whereas the project amenity noise level represents the objective for noise from a single industrial development at a receiver location. This is to ensure that industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area. The project amenity criteria for each new source of industrial noise is equalled to recommended amenity noise level minus 5dB(A). A +3dB(A) to be added to project amenity noise level for conversion from a period level to a 15-minutes level. Where the resultant project amenity noise level is 10dB or more below the existing industrial noise level, the project amenity noise levels can be set at 10 dB below existing industrial noise levels if it can be demonstrated that existing industrial noise levels are unlikely to reduce over time.

The project amenity noise levels at the nearest affected residential receiver are listed in Table 3.

Table 2.2: Amenity noise levels.

Receiver	Noise amenity area	Time of day	L_{Aeq} , dB(A)
(see Table 2.3 to determine which residential receiver category applies)			Recommended amenity noise level
Residential	Rural	Day	50
		Evening	45
		Night	40
	Suburban	Day	55
		Evening	45
		Night	40
	Urban	Day	60
		Evening	50
		Night	45

Table 3: Amenity noise levels, dB(A) (Source NSW NPFI)

The following are the time periods referred to above:

- Daytime: 0700 to 1800 hrs;
- Evening: 1800 to 2200 hrs;
- Night-time: 2200 to 0700 hrs.

The nearest affected residence is at 675-677 Old Northern Road, Dural which shares a boundary with the proposed Dural Health Hub site.

Based on the preliminary acoustic measurements performed on Old Northern Road as detailed in Table 2, the amenity criteria as detailed in Table 4 below are applicable.

Location	Time	Descriptor	Amenity Noise	Development Emitted Noise
Residence – 675-677 Old Northern Road, Dural	0700 to 1800	L _{eq} , 15min, day	55	52
	1800 to 2200	L _{eq} , 15min, evening	45	42
	2200 to 0700	L _{eq} , 15min, night	40	37

Table 4: Recommended maximum development emitted noise at the nearest affected residence

Note that the above recommended maximum Development Emitted Noise at the nearest affected residence is subject to review following detailed noise logging (7 days minimum) and measurements at the Development Application stage, where the intrusive noise levels can be determined in accordance with the NSW NPFI (2017) procedures.

5. Conclusion

Norrebro has been engaged by Healing ONR to provide an acoustic assessment to accompany the planning proposal for a health services facility at 679-685 Old Northern Road, Dural.

Operator attended measurements for the existing acoustic conditions have been undertaken.

It is concluded that acoustic criteria stipulated in the relevant codes and guidelines can be met at the proposed location in terms of noise emissions towards adjacent properties. It was found that the existing noise levels were generally high and any future mechanical plant can be acoustically treated to achieve compliance.

A full acoustic assessment report will be prepared for the Development Application stage when full noise logging has been conducted and mechanical plant noise data is available. It is expected that typical mechanical plant noise will be masked during the daytime by the traffic noise from the Old Northern Road.

Please do not hesitate to contact the undersigned directly for acoustic matters relating to this project.

Yours faithfully,



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