



88-90 Cornwall Street, Taree

Noise Impact Assessment

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E-LAB Consulting

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Document QA and Revisions

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1 INTRODUCTION

This Noise Impact Assessment has been prepared by E-LAB Consulting in support of a Development Application (DA) made to Midcoast Council for the cancer care facility to be located at 88-90 Cornwall Street, Taree.

In summary, this assessment addresses the following key considerations:

- Noise emissions from mechanical plant associated with the project building to surrounding noise-sensitive receivers.

The acoustic legislation, standards and guidelines applicable to the proposed developed include:

- Midcoast Council (formerly Greater Taree City Council) *Development Control Plan (DCP)* 2010;
- NSW Environment Protection Authority (EPA) *Noise Policy for Industry (NPI)* 2017; and
- Protection of the Environment Operations Act 1997 (POEO Act).

2 PROJECT OVERVIEW

2.1 SITE DESCRIPTION

The project site is located at 88-90 Cornwall Street, Taree and sits within the Midcoast Council Local Government Area (formerly Greater Taree City Council). The site is a rectangular shaped allotment with an overall site area of approximately 1,240m².

Surrounding sites to the north, east, west and south are identified as residential dwellings and shown in Figure 1. Bounding the site to the north is Cornwall Street, and to the south is Cornwall Lane.

The site comprises of the following allotments and legal description at the date of this report:

- 88 Cornwall Street (DP666993)
- 90 Cornwall Street (DP626521)

The location and boundary of the proposed development and the surrounding noise-sensitive receivers are shown in Figure 1. The noise-sensitive receivers have been delineated into receiver catchments (RCs) as noted in Figure 1 and have been identified as comprising of general residential receivers.

Figure 1: Aerial image and boundaries of site



2.2 PROPOSED DEVELOPMENT

The DA seeks a development consent for the demolition of the existing structures, the design, construction, and operation of a new 2-storey cancer care facility, which is proposed to comprise of the following:

- On-grade parking accessed via Cornwall Lane on the southern boundary, to accommodate 6 car parking spaces.
- Ground floor is proposed to comprise of various rooms for administrative use (consultation rooms, interview rooms), general use (storerooms, waiting areas, amenities) and treatment rooms/wards.
- Level 1 is proposed to comprise of rooms and areas for staff use (planning, offices, meeting rooms, phone booths), and an external plant area.

2.3 SITE ACOUSTIC CONSIDERATIONS

Upon reviewing the design documentation for the Development Application, the acoustic elements to consider for the proposed development are noise emissions from mechanical plant associated with the project building to surrounding noise-sensitive receivers.

3 PROJECT NOISE CRITERIA

This section presents the regulatory requirements, and acoustic design criteria for the proposed development.

3.1 EXTERNAL NOISE EMISSIONS

3.1.1 Midcoast Council (formerly Greater Taree City Council) Development Control Plan (DCP) 2010;

The Midcoast Council (formerly Greater Taree City Council) DCP 2010 does not provide specific controls or requirements for commercial development with regard to noise emissions. On this basis, we recommend the use of the noise emission methodology described in the NPI, outlined below.

3.1.2 NSW EPA Noise Policy for Industry (NPI) 2017 – Industrial Noise (Plant and Equipment)

The NPI sets out a framework for the derivation of project noise trigger levels that are used to assess the potential impacts of noise from industry (and industrial noise sources) and indicate the noise level at which feasible and reasonable noise management measures should be considered.

This policy applies to noise sources from activities listed in Schedule 1 of the POEO Act and those regulated by the EPA. This includes noise sources from mechanical plant and equipment within the proposed redevelopment, for which this policy will be applied.

The project noise trigger level provides a benchmark for assessing a proposal, where if exceeded, indicates a potential noise impact on the community and so triggers a management response such as additional mitigation measures. The project noise trigger level is the lower (the more stringent) value of the project intrusiveness noise level and project amenity noise level determined in Sections 2.3 and 2.4 of the NPI, respectively.

Project Intrusiveness Noise Level

The intrusiveness of an industrial noise source may generally be considered acceptable if the level of noise from the source (in terms of L_{Aeq}) measured over a 15-minute period does not exceed the background noise level by more than 5 dB when beyond a minimum threshold. The project intrusiveness noise level is only applicable to surrounding residential receivers.

To account for the temporal variation of background noise levels, the method outlined in Fact Sheet A of the NPI establishes a method in determining the Rating Background Noise Level (RBL) to be used in the assessment.

The intrusiveness noise level is determined as follows:

$$L_{Aeq,15min} \text{ (Intrusiveness Criteria)} = \text{Rating Background Noise Level (RBL)} + 5 \text{ dB(A)}$$

This assessment has adopted the minimum background noise levels nominated by the NPI in accordance with Fact Sheet A. The corresponding minimum intrusiveness noise levels are provided in Table 1.

Table 1: Minimum assumed RBLs and project intrusiveness noise levels

TIME OF DAY	MINIMUM ASSUMED RBL - dB(A)	MINIMUM PROJECT INTRUSIVENESS NOISE LEVELS - $L_{Aeq,15min}$ dB(A)
Day	35	40
Evening	30	35
Night	30	35



Project Amenity Noise Level

The recommended amenity noise levels 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.

To ensure that industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area, a project amenity noise level applies for each new source of industrial noise as follows:

$$\text{Project Amenity Noise Level} = \text{Recommended Amenity Noise Level (see Table 2)} - 5 \text{ dB(A)}$$

The recommended amenity noise level, project amenity noise level, and converted project amenity noise level for comparison with the intrusiveness criteria (from time of day period to 15-minute) is provided for each surrounding receiver catchment in Table 2.

Table 2: Project amenity noise level criteria for each receiver catchment

RECEIVER TYPE	TIME OF DAY	RECOMMENDED AMENITY NOISE LEVEL - $L_{Aeq,period}$ dB(A)	PROJECT AMENITY NOISE LEVEL - $L_{Aeq,period}$ dB(A)	PROJECT AMENITY NOISE LEVEL - $L_{Aeq,15min}$ dB(A)
Residential – Suburban	Day	55	50	53
	Evening	45	40	43
	Night	40	35	38

Note 1: Suburban residential as classified in Table 2.3 of the Noise Policy for Industry (NPI) 2017

Sleep Disturbance and Maximum Noise Level Assessment

Where the proposed redevelopment night-time noise levels generated at a residential location exceed either:

- $L_{Aeq,15min}$ 40 dB(A) or the prevailing RBL plus 5 dB(A), whichever is greater, and/or
- L_{AFmax} 52 dB(A) or the prevailing RBL plus 15 dB(A), whichever is greater,

a detailed maximum noise level event assessment should be undertaken.

Corrections for Annoying Noise Characteristics – Noise Policy for Industry Fact Sheet C

Fact Sheet C contained within the Noise Policy for Industry outlines the correction factors to be applied to the source noise level at the receiver before comparison with the project noise trigger levels established within this report, to account for the additional annoyance caused by these modifying factors.

The modifying factor corrections should be applied having regard to:

- The contribution noise level from the premises when assessed/measured at a receiver location, and
- The nature of the noise source and its characteristics (as set out in Fact Sheet C)

Table C1 within Fact Sheet C sets out the corrections to be applied for any assessment in-line with the NPI. The corrections specified for tonal, intermittent and low-frequency noise are to be added to be added to the measured or predicted levels at the receiver before comparison with the project noise trigger levels. The adjustments for duration are to be applied to the criterion.

Project Noise Trigger Levels

Table 3 presents the project intrusiveness and project amenity noise levels for each period, and each receiver catchment, as well as the resultant project noise trigger levels (PNTLs) that shall be applied for any assessment of impacts of mechanical plant and equipment noise on the surrounding receiver catchments.



Table 3: Project noise trigger levels (PNTL) to be applied to each surrounding receiver type

RECEIVER TYPE	TIME OF DAY	PROJECT INTRUSIVENESS NOISE LEVEL - $L_{Aeq,15min}$ dB(A)	PROJECT AMENITY NOISE LEVEL - $L_{Aeq,15min}$ dB(A)	SLEEP DISTURBANCE NOISE LEVEL - dB(A)	PROJECT NOISE TRIGGER LEVEL - $L_{Aeq,15min}$ dB(A)
Residential - RC1 to RC4	Day	40	53	-	40
	Evening	35	43	-	35
	Night	35	38	40 $L_{Aeq, 15min}$ 52 L_{AFmax}	35

4 NOISE IMPACT ASSESSMENT

4.1 MECHANICAL PLANT AND EQUIPMENT NOISE IMPACT ASSESSMENT

Plantrooms, noisy plant and equipment such as cooling towers and chillers, and other mechanical noise generating sources should be located and designed such that the noise emissions meet the requirements of the Noise Policy for Industry 2017, detailed in Section 3.1.2.

A preliminary review of noisy external plant and equipment has been undertaken by E-Lab based on indicative equipment selections and locations which are typically finalised during the design development stage of the project.

4.1.1 Mechanical Services

Major external mechanical plant and equipment include the following, as per preliminary information provided by DSA Consulting:

- Linear Accelerator (LINAC) Chiller – 82dB(A) Sound Power Level.
- Outdoor AC Condensers – 68dB(A) Sound Power Level.
- Roof-mounted fans for exhaust/outside air – 53 to 55dB(A) at 3m Sound Pressure Level.

4.1.2 Medical Gases Noise Emission

No major external plant and equipment are proposed for medical gases, however DSA consulting has advised that discharge points associated with patient venturi suction exhausted to the atmosphere will generate a resultant sound pressure level of 63dB(A) at 3m.

4.1.3 Other Services

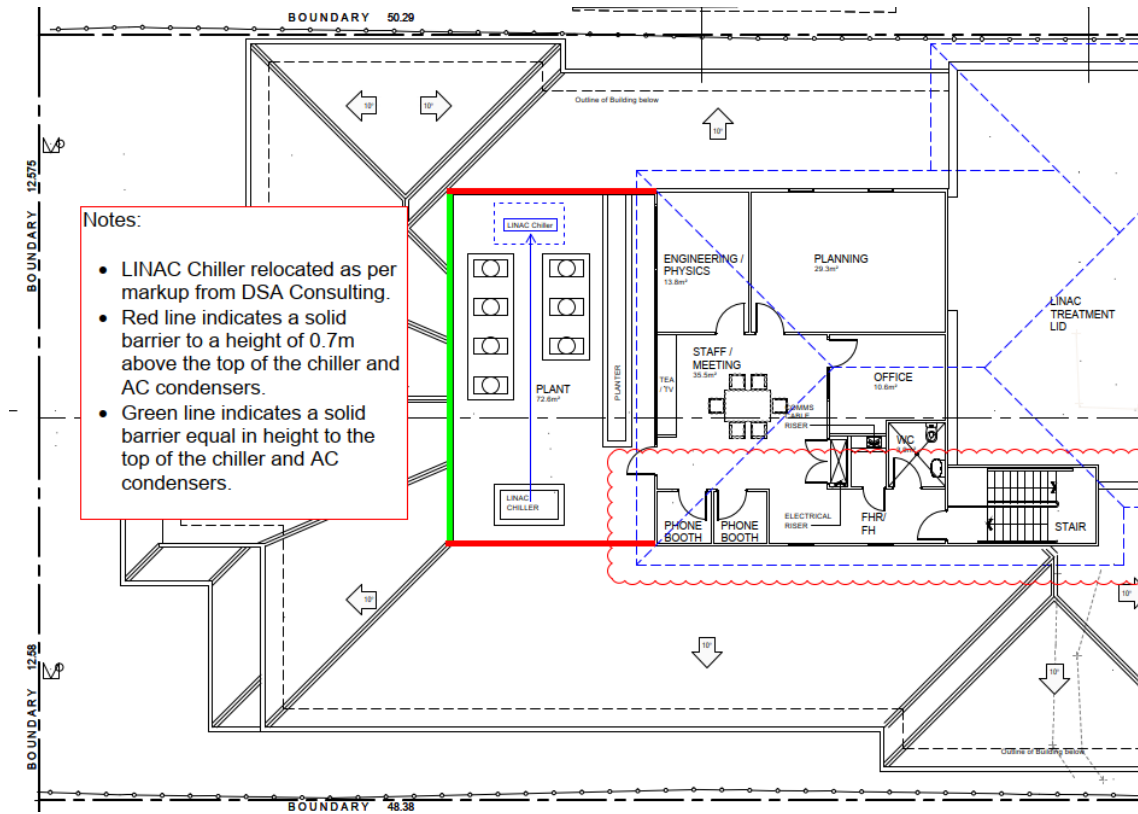
This office has been advised that other services (specifically for electrical, hydraulic and vertical transport) will not be providing major external mechanical plant and equipment with the potential to generate a level of noise that would require specific acoustic treatment.

4.1.4 Mitigation Measures

Based on the information presented above, we note the following with regard to acoustic treatment for services plant and equipment:

- A barrier/screen is to be constructed to the perimeter of the first floor outdoor plant area. Refer to Figure 2 below. Screen is to be constructed to a minimum height of 0.7m above the top of the LINAC chiller and outdoor AC units. The barrier / screen is to be constructed from a material with an acoustic performance of no less than R_w25 and be solid and gap free, such as Colorbond steel or 9mm FC Sheet.
- Roof mounted exhaust/outside air fans and discharge associated with patient venturi systems will be capable of satisfying noise emission goals established in Section 3.1 provided suitable plant selections and siting is considered at detailed design stage. Where necessary, standard acoustic treatments such as acoustic insulation within ductwork, attenuators/silencers, wrapping of equipment casing or noise screens can be provided.

Figure 2: Proposed treatment to first floor external plant and equipment



It should be noted that the acoustic treatments presented in this report may be refined once the mechanical plant and equipment selections and designs are finalised during the detailed design phase of the proposed development. We confirm that there are enough spatial provisions in the scheme so that acoustic measures are implemented where required to meet the noise emission levels in Section 3.1.

5 CONCLUSION

This noise assessment report has been prepared by E-LAB Consulting to accompany a Development Application submission for the cancer care facility to be located at 88-90 Cornwall Street, Taree.

The following assessment has been conducted as part of this noise impact assessment:

- Noise emissions from mechanical plant associated with the project building to surrounding noise-sensitive receivers.

To assess each of the acoustic considerations for the proposed redevelopment, noise criteria have been established in Section 3, and in accordance with the following documents:

- Midcoast Council (formerly Greater Taree City Council) *Development Control Plan (DCP)* 2010; and
- NSW Environment Protection Authority (EPA) *Noise Policy for Industry (NPI)* 2017.

Having given regard to the analysis conducted within this report, it is the finding of this noise impact assessment that the proposed redevelopment is compliant with the relevant noise and vibration criteria controls for this type of development, and it is expected to comply with the applicable regulations with regards to noise and vibration, particularly those listed above.

It is recommended the development application for the proposed development is not rejected on the basis of noise emission, under the implementation of the mitigation measurements outlined within this report.

