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**NOISE ASSESSMENT
GREGORY HILLS HEALTH HUB
11 &15 HOLBORN CIRCUIT
GLEDSWOOD HILLS**

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1.0 INTRODUCTION

Atkins Acoustics was engaged by ORCA Partners Pty Ltd to prepare a noise assessment to support a Development Application seeking Council approval to develop a mixed-use development known as the Gregory Hills Health Hub.

The proposal involves developing a greenfield site on the corner of Gregory Hills Drive and Holborn Circuit, Gledswood Hills (*Attachment 1*) to accommodate professional health consulting services, cafe, retail and bulk goods outlet. The proposed design provides onsite parking for 142 vehicles (Mott MacDonald) (*Attachment 2*).

This report was prepared to address acoustics and the Camden Council DCP 2011; Councils Environmental Noise Policy (CENP); ambient background noise; identify noise assessment goals; assess noise emitted from mechanical plant; assess noise exposure from road traffic; and, if required recommend noise controls. It is noted that the noise environment across much of the Precinct will vary considerably in the future as development occurs and road traffic increases.

The assessment considered the following architectural plans prepared by *Architects Nicholas + Associates*:

- Site Plan - DA-001, Issue D, dated 20 October 2015
- Ground Floor - DA-010, Issue J, dated 20 October 2015
- First Floor - DA-011, Issue H, dated 20 October 2015
- Roof Plan - DA-012, Issue E, dated 20 October 2015
- Elevation - DA-160, Issue E, dated 20 October 2015
- Elevation - DA-161, Issue E, dated 20 October 2015
- Elevation - DA-162, Issue C, dated 20 October 2015

The findings and recommendations presented in this report have been prepared for the particular investigation described and to support a Development Application. The report is not intended for and should not be used in any other context or for any other purpose without approval from *Atkins Acoustics*.

2.0 DESCRIPTION OF PROPOSAL

The development site is located within the planned Central Hills Business Park at Gregory Hills within the Camden LGA. Central Hills Business Park is serviced by Gregory Hills Drive and located on the southern side of the development site (*the Site*). Vehicular access to *the Site* is shown on Digitaria Road. Land development proposals to the south and north of *the Site* include a Tavern (south) and Daycare Centre (north). Both sites are separated from the proposal by road reserves. Vacant land opposite across Holborn Circuit and adjoining *the Site* is zoned for commercial development. The closest identified residential zoned land is approximately 200m to the north on Silverwood Street and Lenton Grove (*Attachment 1*). The residential area is separated from *the Site* by commercial lots, that when developed would provide additional acoustic shielding.

As a result of the land in the immediate vicinity of *the Site* being zoned commercial and undeveloped; Gregory Hills Drive carrying low traffic volumes; and, the existing low daytime background noise levels (35-38dBA), this assessment has been based on recommended planning levels (CENP).

2.1 Operating Hours

The proposed operating hours sought for the professional health consulting services, retail and bulk goods outlet are 7.00am to 7.00pm, seven (7) days a week and 7.00am to 10.00pm for the cafe.

2.2 Traffic Generation

The Traffic and Parking Impact Statement (Mott MacDonald (MM)) reports that Gregory Hills Drive is progressively being extended and will incorporate additional connections to the north and south as surrounding residential and industrial precincts are developed. The corridor (Gregory Hills Drive) is forecast (MM) to accommodate over 2000 vehicles during peak hours and 20,000 ADT when fully developed.

MM concludes that additional traffic generated by the proposed Health Hub during AM and PM commuter peak hours is insignificant and represents less than 1.5% of forecast traffic on Gregory Hills Drive. For road traffic generation associated with the proposal MM projects peak AM and PM vehicle trips of 151 and 174 vehicle per hour, respectively.

3.0 NOISE ASSESSMENT DESIGN OBJECTIVES

3.1 Council DCP

Camden Council DCP 2011 Part B General Land Use Control Section B1.16 Acoustic Amenity, sets out procedures for assessing acoustic amenity. The objectives of the DCP include:

1. *Ensure that excessive noise impacts from busy roads, rail corridors and other noise-generating land uses, which affect sensitive receivers, are mitigated.*
2. *Design and manage subdivisions to minimise noise intrusion into residential areas.*
3. *Ensure the amenity of nearby residential uses is not unreasonably decreased by noise intrusion from commercial or industrial development.*

Camden Council DCP 2011 Part D Controls Applying to Specific Land Uses/Activities, Section D4.10 Noise and Vibration sets out procedures for assessing acoustic amenity, including:

1. *Development shall comply with the acoustic criteria contained within Camden Council's Environmental Noise Policy.*
2. *Any noise generated shall not be offensive in accordance with the provisions of the Protection of the Environment Operations Act 1997.*
3. *Where it is considered that a development may have an adverse noise impact on nearby residential areas or adjoining properties, an acoustic assessment undertaken by a qualified acoustic consultant shall be submitted to Council with the development application. The assessment must be in accordance with Council's Environmental Noise Policy.*
4. *Where it is considered that a development may have an adverse vibration impact on nearby residential areas or adjoining properties, an assessment of vibration by a qualified consultant shall be undertaken and submitted to Council with the development application. The assessment must be in accordance with DECCW's Assessing Vibration: A Technical Guideline.*
5. *The industry shall operate in a manner to avoid unreasonable noise and interference to adjoining industrial occupations. Special precautions must also be taken to avoid nuisance to neighbouring residential areas and other sensitive land uses, particularly from warning sirens, public address systems, heavy duty compressors and the like.*

3.2 Camden Council Environmental Noise Policy

For assessment of mechanical plant noise Council's Noise Policy (CNP) requires operational noise to be assessed in accordance with the DECC's, NSW Industrial Noise Policy (INP). The INP states that the intrusiveness of a noise source is considered to be acceptable if the $L_{Aeq,15min}$ level does not exceed the rated background level (RBL) level by more than 5dB. Council's Noise Policy (CNP) requires operational noise from new development to be assessed in accordance with and recommends that all developments must be design to "Acceptable Recommended" levels in Table 2.1 of the INP. Referenced to the INP the "Acceptable Recommended" design levels are summarised in Table 1.

Table 1 Recommended LAeq Noise Levels.

Type of Receiver	Area	Time of Day	Recommended Acceptable LAeq Noise Level dBA
Residence	Suburban	Day	55
		Evening	45
		Night	40
Active Playground	All	When in use	55
Commercial	All	When in use	65
Industrial	All	When in use	70

3.3 Road Traffic Noise

Council Noise Policy (Section 5) refers to noise from road traffic and assessment Guidelines documented in the EPA, Environmental Criteria for Road Traffic Noise (ECRTN). The ECRTN was replaced in March 2011 with the Road Noise Policy (RNP). The RNP provides no criteria for assessing road traffic noise at commercial/retail properties. For childcare facilities, the RNP recommends road traffic noise criterion for outdoor play areas of $L_{Aeq, 1 \text{ hour}}$ 55 (external). For land use development with potential to create additional traffic on collector roads the Council's Noise Policy (Table 5.3.1) recommends noise criteria of $L_{Aeq, 1 \text{ hour}}$ 60 (day) and $L_{Aeq, 1 \text{ hour}}$ 55 (night).

4.0 OVERVIEW OF SOURCE NOISE DATA

4.1 Mechanical Plant

At the present time mechanical plant including air conditioning and exhaust fans have not been designed, specified or selected. To assist with this assessment a typical range of plant selections and noise outputs are summarised in *Table 4.1*.

Table 4.1: Mechanical Plant Sound Power Levels
dBA re: 10^{-12} Watts

Plant Descriptions	Sound Power Levels dBA
Small (single fan) A/C Condenser	65
Medium (double fan) A/C Condenser	70
Large (double fan) A/C Condenser	80
Small exhaust fan (Toilet, garbage room)	60-65
Small kitchen/cafe exhaust fan	65-75

4.2 Road Traffic Noise Gregory Hills Drive

The UK Department of the Environment, Calculation of Road Traffic Noise (*CoRTN*) provide road traffic noise modelling procedures that are recognised and accepted by the NSW, EPA. Factors considered by the CoRTN model include traffic volumes, traffic speed, offset distances, screening from barriers, etc.

4.3 Road Traffic Noise Diagitaria Road

The calculation of road traffic noise for vehicles on Diagitaria Road utilised a single event level (SEL) of Lw91dB(A) (per vehicle) established from audit measurements of vehicle movements for similar configuration and the following formula:

$$L_{Aeq(1hr)} = SEL_c + 10\log(N_c) - 10\log(3600) - 15\log(r) - 8$$

where: SEL_c = single event sound power level (car)
 N = number of vehicles in one (1) hour
 3600 = number of seconds in one (1) hour
 r = distance from centreline of road (metres)

5.0 SITE NOISE MODELLING

5.1 Mechanical Plant

During the detail design phase of the project, investigations would be undertaken to ensure that plant selections and plant noise emissions satisfy the recommended assessment noise goals. From preliminary noise modelling, with appropriate selection and design detailing it is considered reasonable and feasible to control plant and equipment noise to levels that satisfy the recommended planning assessment goals of 55dBA for the childcare facility and 65dBA at nearby commercial property boundaries.

5.2 Road Traffic Noise

5.2.1 Gregory Hills Drive

MM concludes that additional traffic generated by the proposed Health Hub during AM and PM commuter peak hours represents less than 1.5% of forecast traffic on Gregory Hills Drive. Noise modelling for the additional traffic predicted that traffic noise from Gregory Hills Drive would increase by 0.05dB. An increase of 1dB would be described minimal and in terms of traffic noise not normally be perceived.

5.2.1 Diagitaria Road

For road traffic on Diagitaria Road, MM projected peak AM and PM vehicle trips of 151 and 174 vehicle per hour, respectively. Considering a worse case scenario of 174 vehicles per hour, with a 50-50, split the traffic noise level predicted for the childcare facility of 54dBA satisfies the RNP external criterion (55dBA) and Council's Noise Policy daytime criterion (60dBA).

6.0 ASSESSMENT

Camden Council DCP 2011 Part B - General Land Use Control Section B1.16 Acoustic Amenity, and Part D - Controls Applying to Specific Land Uses/Activities, Section D4.10 Noise and Vibration set out procedures for assessing noise and acoustic amenity. For assessment of mechanical plant noise the DCP refers to Council's Noise Policy (CNP) and reference to the DECC's, NSW Industrial Noise Policy (INP). The INP states that the intrusiveness of a noise source is considered to be acceptable if the $L_{Aeq,15min}$ level does not exceed the rated background level (RBL) level by more than 5dB. Council's Noise Policy (CNP) requires operational noise from new development to be assessed in accordance with and recommends that all developments be design to "Acceptable Recommended" levels in Table 2.1 of the INP. It is noted that that the noise environment across much of the Precinct will vary considerably in the future as development occurs and road traffic increases and that the existing ambient noise levels in the area are not representative of future levels. This assessment has focuses on and adopted Council's recommended planning levels.

The closest identified residential zoned land is approximately 200m to the north on Silverwood Street and Lenton Grove (*Attachment 1*). The residential area is separated from *the Site* development by commercial lots, that when developed would provide additional acoustic shielding.

With respect to mechanical plant preliminary noise modelling has demonstrated that with appropriate selection and design detailing it is considered reasonable and feasible to control plant and equipment noise to levels that satisfy the recommended planning assessment goals of 55dBA for the childcare facility, and 65dBA at nearby commercial property boundaries. It is recommended that during the detail design phase of the project, investigations be undertaken to ensure that plant selections and plant noise emissions satisfy the recommended assessment noise goals.

Noise modelling for the projected additional road traffic on Gregory Hills Drive has shown that the proposal would increase predicted future traffic noise levels by 0.05dB. An increase of 1dB would be described minimal and in terms of traffic noise not normally be perceived.

Modelling of road traffic noise from Diagitaria Road has shown that the predicted external level for the proposed childcare facility of 54dBA satisfies the RNP external criterion (55dBA) and Council's Noise Policy daytime criterion (60dBA).

6.1 Recommendations

During the detail design phase of the project, final plant selections, installation locations and noise emissions should be reviewed to confirm that the recommended design noise goals and Council DA Conditions are satisfied.

ATTACHMENT 1: SITE LOCATION

Figure 1: Gregory Hills Corporate Park (GHCP) Site Layout Plan and Staging



Source: De Angelis + Taylor Associates Site Plan SK01 - 25/11/11

ATTACHMENT 2: SITE LAYOUT

