

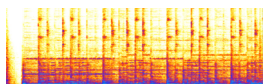
COOKSON PLIBRICO RELOCATION PROJECT

Lot 2 D.P 1064872 Princes Highway & Sylvester Avenue UNANDERRA

Project Application MP 09_0045 Noise Impact Assessment Acoustic Report

Issued

27 May 2009

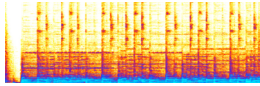


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1 Executive Summary

This noise impact assessment is in relation to the proposal to relocate Cookson Plibrico's existing facility in Bulli to a new site at Lot 2 D.P 1064872 Princes Highway & Sylvester Avenue, Unanderra - Project Application MP 09_0045.

The building will comprise precast concrete walls with a steel-framed colorbond roof. Much of the existing equipment and machinery at the Bulli site will be relocated to the new building. Some items of equipment will be replaced with new.

As part of the Development Application process, a Noise Impact Assessment has been carried out for the proposed site. The Noise Impact Assessment has been carried out with an understanding of both Wollongong City Council and the Department of Environment and Climate Change requirements, and in accordance with the following:

- NSW DECC Protection of the Environment Operations Act 1997, plus amendments.
- NSW Industrial Noise Policy 1999.
NSW EPA, now NSW Department of Environment and Climate Change.
- NSW Environmental Criteria for Road Traffic Noise 1999.
NSW EPA, now NSW Department of Environment and Climate Change.
- Chapter 171 of the Construction Site Noise Guidelines from The Environmental Noise Control Manual 1994.
NSW EPA, now NSW Department of Environment and Climate Change.

The closest affected residential receivers are located at Orama Parade, 350 m to the north of the site, on the opposite side of the Princes Highway. Compliance with the environmental noise limits at this location will ensure compliance with the environmental noise limits at all other residential receivers around the site. The existing ambient noise levels at the Orama Parade location are currently the result of a combination of traffic flows on the Princes Highway and industrial noise from the industrial park.

Long-term noise monitoring has been undertaken over 10 days to establish the existing noise environment of the area. Short-term noise monitoring has also been undertaken.

Both the noise intrusiveness criterion and amenity criterion have been considered in determining the correct project-specific noise level.

Measurements of existing internal operational noise levels have been carried out at the existing facility in Bulli. The results of these measurements have been used to calculate the future noise levels from the proposed site.

Worst-case operational noise levels have been calculated taking into account the relevant building and distance attenuation factors.

The resulting predicted noise levels at the nearest residential receivers are found to comply with the noise criteria.

Modifying factors for annoying noise characteristics have been considered. The impact of meteorological conditions (temperature inversions and wind) have also been considered.

Considering the predicted noise levels under worst-case meteorological conditions, no additional noise controls are required to control operational noise levels during the typical operating scenario for the facility. The proposed construction of the envelope of the building (precast concrete wall panels plus colorbond roof) will be sufficient to control operational noise levels at all residential receiver locations.

With the Com Cast Vibro Table operating before 7am or after 6pm there is a predicted exceedance of the existing background noise level at the Orama Parade Residences by 2 to 11 dB at 125 Hz to 1 kHz.

We do note that this prediction assumes a worst-case allowance for wind effects, combined with worst-case corrections for temperature inversions, combined with the lowest measured background noise levels - under calm weather conditions.

However, to ensure that adverse noise impacts on residences are avoided, we recommend that the Com Cast Vibro Table is not operated before 7am or after 6pm.

With this time restriction in place, it is considered that there will be no operational noise impact resulting from the proposed facility.

Increases in traffic flows have been considered. The additional vehicles are expected to be equivalent to less than 1 truck trip per hour. This is not considered to be significant compared with the existing traffic flows along the Princes Highway and any increase to the existing traffic noise levels will be less than 2 dB.

Therefore, we consider there to be no impact on existing traffic noise levels from the small increase in traffic resulting from the relocation of the facility.

Construction noise limits have been set at 5 dB(A) above the daytime background rating level – giving a maximum $L_{A10, 15min}$ of 54 dB(A) at the Orama Parade residences.

Typically construction noise varies, depending on the activity and the number of pieces of plant operating at any given time. In most cases the period of greatest noise output is the early stages during earth moving, when heavy equipment is located on site such as excavators, bulldozers and trucks.

Based on typical sound power outputs of such pieces of equipment (typically in the order of 110dB(A)), and the distances between the site and the nearest residences (350 m), it is anticipated that the construction noise limits will be met most of the time.

Consequently, construction noise impact is not anticipated to be significant for this project. However, it is recommended that a construction noise management plan be implemented.

2 Introduction

This Noise Impact Assessment has been prepared by Acoustic Studio for Prince Property Consulting acting on behalf of Cookson Plibrico. The assessment is in relation to the proposal to relocate Cookson's existing facility in Bulli to a new site at Lot 2 D.P 1064872 Princes Highway & Sylvester Avenue, Unanderra.

Cookson Plibrico's main business is the production of refractory products for other industry.

The subject site is located on the southwestern side of Sylvester Avenue. The site is located within an existing industrial area with frontage to Sylvester Avenue and to the Princes Highway. There is no existing development on the site.

The current proposal is to construct a new factory facility on the site. The building will comprise precast concrete walls with a steel-framed colorbond roof. Much of the existing equipment and machinery at the Bulli site will be relocated to the new building. Some items of equipment will be replaced with new.

As part of the Development Application process, a Noise Impact Assessment has been carried out for the proposed site. This assessment:

- Identifies any beneficial or adverse noise impacts that might result in the surrounding community.
- Describes any noise mitigation measures and strategies that will be necessary to protect the acoustic amenity of the area.
- Describes the methods by which compliance with the acoustic criteria can be determined after the development is completed.

This report presents this assessment in detail.

There are three sources of noise that will potentially impact upon the neighbouring community. These are:

- Operational noise produced by the day-to-day production of the facility.
- Traffic noise produced by traffic associated with the operations of the facility.
- Construction noise associated with the construction of the facility.

The assessment considers these three noise sources.

3 Project Description

3.1 Site location and surrounding area

Figure 1 shows the location of the proposed site in Unanderra.

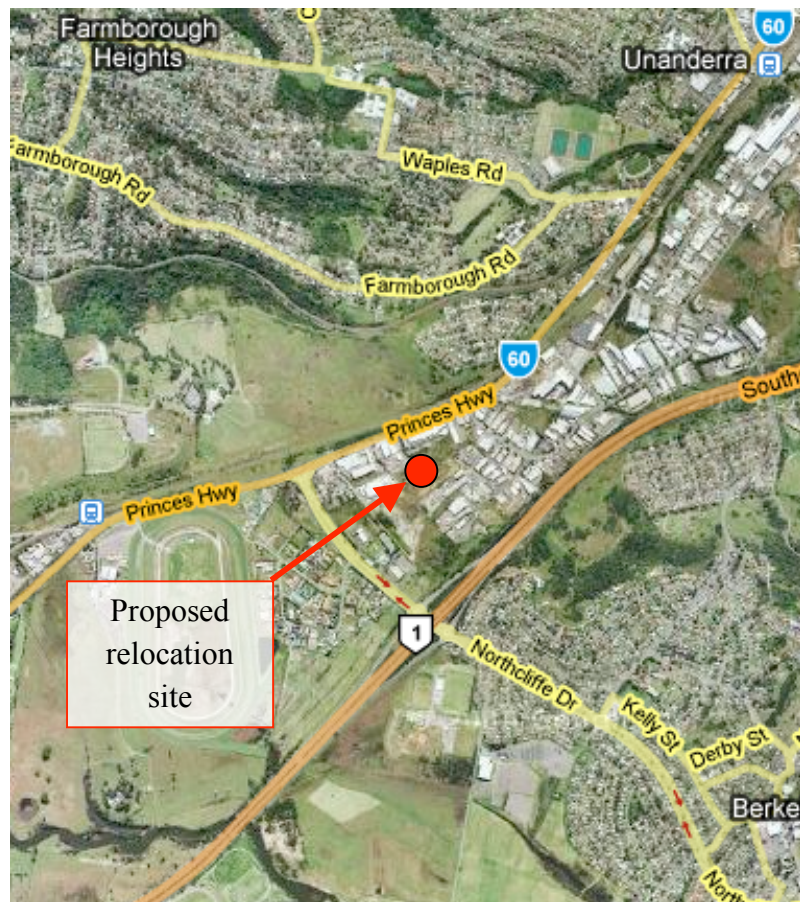


Figure 1: The relocation site in Unanderra

Figure 2 shows the surrounding area, including the nearest residential areas.

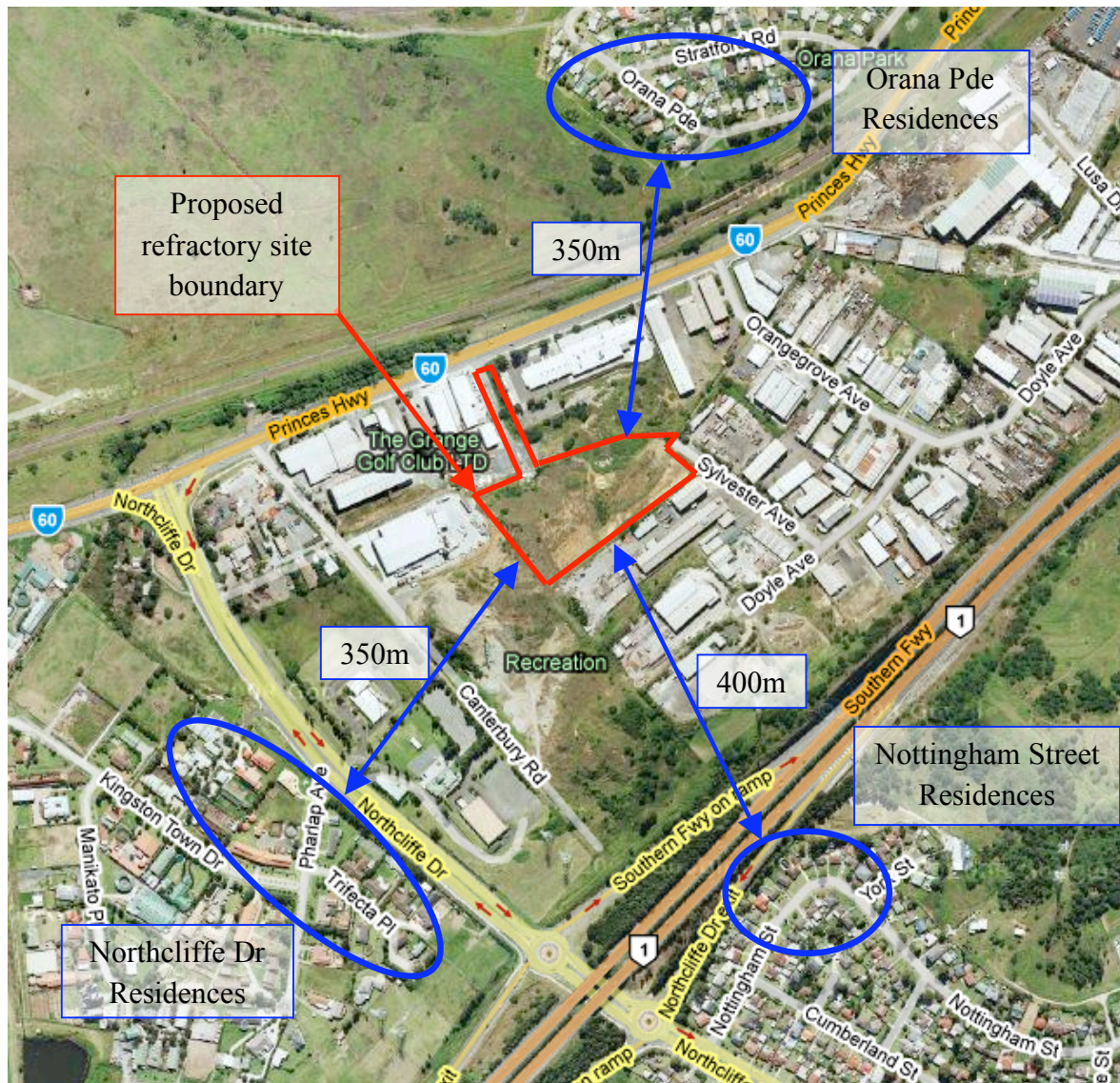


Figure 2: Site location and surrounding neighbourhood

The subject site is located in an existing industrial estate in the suburb of Unanderra, approximately 8 kilometers south-west of the Wollongong CBD.

The proposed site is within an existing industrial development.

The adjoining sites to the south-west, with frontage to Canterbury Road, contain industrial development including a concrete batching plant plus a site approved for a waste recycling facility.

The adjoining sites to the south-east contain a storage depot for Grace Removals and Joy Mining Machinery, which manufactures machinery for the mining industry.

Across Sylvester Avenue to the north-east are warehouse premises.

Adjoining the site to the north-west is the Fielders Bakeries complex. Immediately to the west of the battleaxe driveway is a development containing a boat salesroom and a Coates equipment hire depot.

In the wider context, the site is located in an industrial estate of approximately 190 hectares, positioned between the south coast railway and Princes Highway to the north, and the Southern Freeway to the south.

Approximately 350 metres to the north of the site, on the opposite side of the Princes Highway and rail-line, is a residential subdivision containing approximately 100 dwellings.

Approximately 350 metres to the south-west of the site are dwellings associated with the Kembla Grange racecourse and equestrian centre. 150 metres to the south-west is the Illawarra German Association and approximately 250 metres to the south/south-west is the Hansen and Cole Funeral Parlour.

Approximately 400 metres to the south-east of the site, on the opposite side of the Southern Freeway, is low-density residential development in the suburb of Berkeley. There is also low-density residential development approximately 650 metres to the east of the site.

There is direct line-of sight between the site and some of the Orana Parade Residences to the north. These are considered to be the most critical receivers since the topography of the area is such that the non-industrial developments to the south and east are naturally screened/shielded from the site.

Therefore compliance with all relevant noise limits at the Orana Parade Residences will ensure compliance with all relevant noise limits at all other residences around the site.

3.2 Site description and the proposed building

The site is currently vacant. A battleaxe access driveway provides access to the site from the Princes Highway.

Figure 3 shows the site plan and the proposed location of the building.

The site slopes up from the Princes Highway and has an average gradient across the site of approximately 11 percent. There is a small hill on the south-western boundary which screens it from properties in that direction.

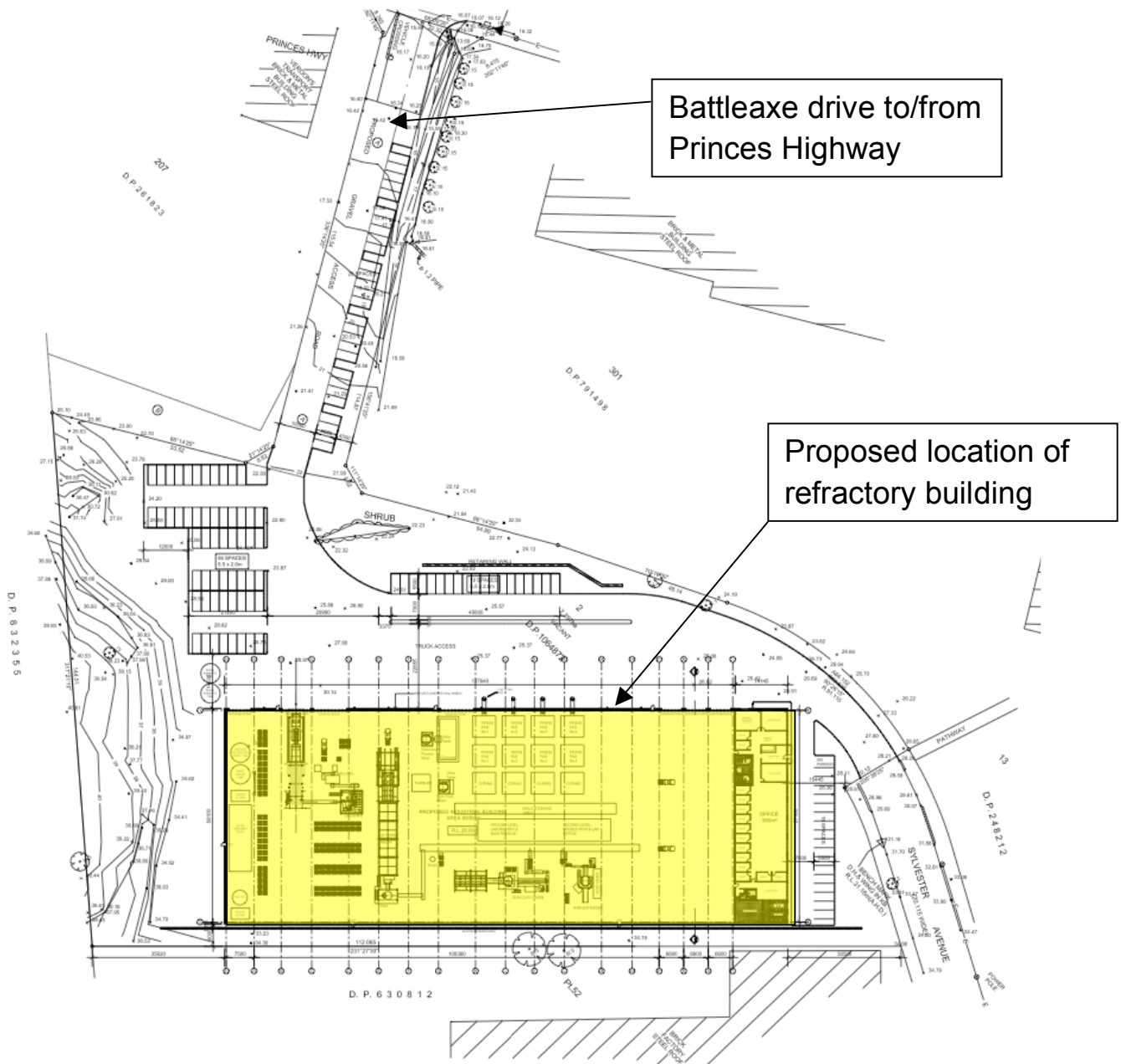


Figure 3 Site plan and building location

3.3 Development proposal

3.3.1 Construction

The proposal is for a factory building of approximately 8,000 m², with an attached office component of 900 m². The building will be constructed from pre-cast concrete wall panels with a steel-framed colorbond roof.

The proposed building will be a maximum of 15 m high.

3.3.2 Employee numbers

The facility will employ a total of 110 people, including approximately 50 office employees and 60 factory employees, working varying shifts.

3.3.3 Hours of operation

The proposed hours of operation of the facility are Monday to Friday, 6.00am to 10.00pm. The operations will occur in two shifts, being 6.00am to 2.00pm and 2.00pm to 10.00pm.

3.3.4 Process and machinery

The facility will produce refractory products used in high-heat industry applications. Cookson Plibrico produces castable products of high purity concrete so they can be exposed to high temperatures.

Much of the existing equipment and machinery at the Bulli site will be relocated to the new building. Some items of equipment will be replaced with new.

4 Relevant Act, Policies and Guidelines

Acoustic Studio has had no direct dialogue with either the Department of Environment and Climate Change NSW or Wollongong City Council in respect of this assessment.

We do acknowledge both parties interest in the proposal and the requirement to avoid any adverse noise or vibration impacts.

Wollongong City Council, in their letter dated 15 March 2009, makes no reference to noise and vibration.

The Department of Environment and Climate Change (DECC) NSW, in their letter dated 23 February 2009, makes specific note of the need for the proposal to avoid any adverse noise or vibration impacts. The letter also references key policies and guidelines that need to be considered in the assessment.

Acoustic Studio understands the views of the DECC and understands that the DECC has declined any further interest.

Noting the views of the DECC, Acoustic Studio has undertaken this Noise Impact Assessment in accordance with the following:

- NSW DECC Protection of the Environment Operations Act 1997, plus amendments.
- NSW Industrial Noise Policy 1999.
NSW EPA, now NSW Department of Environment and Climate Change.
- NSW Environmental Criteria for Road Traffic Noise 1999.
NSW EPA, now NSW Department of Environment and Climate Change.
- Chapter 171 of the Construction Site Noise Guidelines from The Environmental Noise Control Manual 1994.
NSW EPA, now NSW Department of Environment and Climate Change.

5 General Operational Noise Assessment Methodology

The noise impact assessment methodology follows the following steps:

1. Determine the project specific noise levels for intrusiveness and amenity.
2. Measure and determine existing background and ambient noise levels around the site and at closest noise-sensitive receivers.
3. Apply adjustments as necessary to account for the effect of any annoying noise characteristics (such as tonality, intermittency, etc).
4. Predict future operational noise levels, taking meteorological effects into account (wind and temperature inversions).
5. Compare predicted noise levels with project specific noise levels and assess impacts.
6. Consider feasible and reasonable noise mitigation strategies where the project specific noise levels are exceeded.

6 Noise Assessment Surveys

The NSW Industrial Noise Policy sets two separate noise criteria to meet environmental noise objectives: one to account for intrusive noise and the other to protect the amenity of particular land uses.

Assessing intrusiveness

The intrusiveness criterion requires that the equivalent continuous noise level of the source should be not more than 5dB above the measured background noise level.

Assessing amenity

The amenity assessment is based on noise criteria specific to land use and associated activities. The criteria relate only to industrial-type noise and do not include road, rail or community noise. The existing noise level from industry is measured - if it approaches the criterion value, then the noise levels from new industries (or expansion) need to be designed so that the cumulative effect does not produce noise levels that would significantly exceed the criterion.

There is a separate amenity criterion for high traffic areas.

The cumulative effect of noise from all industrial sources is considered in assessing impact.

Project specific noise level

The more stringent of the intrusive and the amenity criterion sets the project specific noise level.

Accounting for annoying noise characteristics

If a noise source exhibits any particularly annoying characteristics (tones, impulses, low frequency noise, and intermittency), an adjustment is applied to the source noise level before comparison with the project specific noise level.

Accounting for meteorological effects

Under certain meteorological conditions (temperature inversions and downwind conditions) noise levels can increase at receiver locations, compared to calm and/or non-inversion conditions. Therefore it is necessary to establish whether or not these adverse meteorological conditions will effect the noise impact assessment and to compare the predicted noise level under these conditions to the project specific noise level.

6.1 Assessment locations

The assessment locations represent the closest and most exposed residences to the proposed building. These are located to the north, between Farmborough Road and the Princess Highway, on Orana Parade.

There is direct line-of sight between the site and some of the Orana Parade Residences. Hence, these are considered to be the most critical receivers since the topography of the area is such that the non-industrial developments to the south and east are naturally screened/shielded from the site.

Therefore compliance with all relevant noise limits at the Orana Parade Residences will ensure compliance with all relevant noise limits at all other residences around the site.

The Orana Parade assessment location is shown in Figure 4.

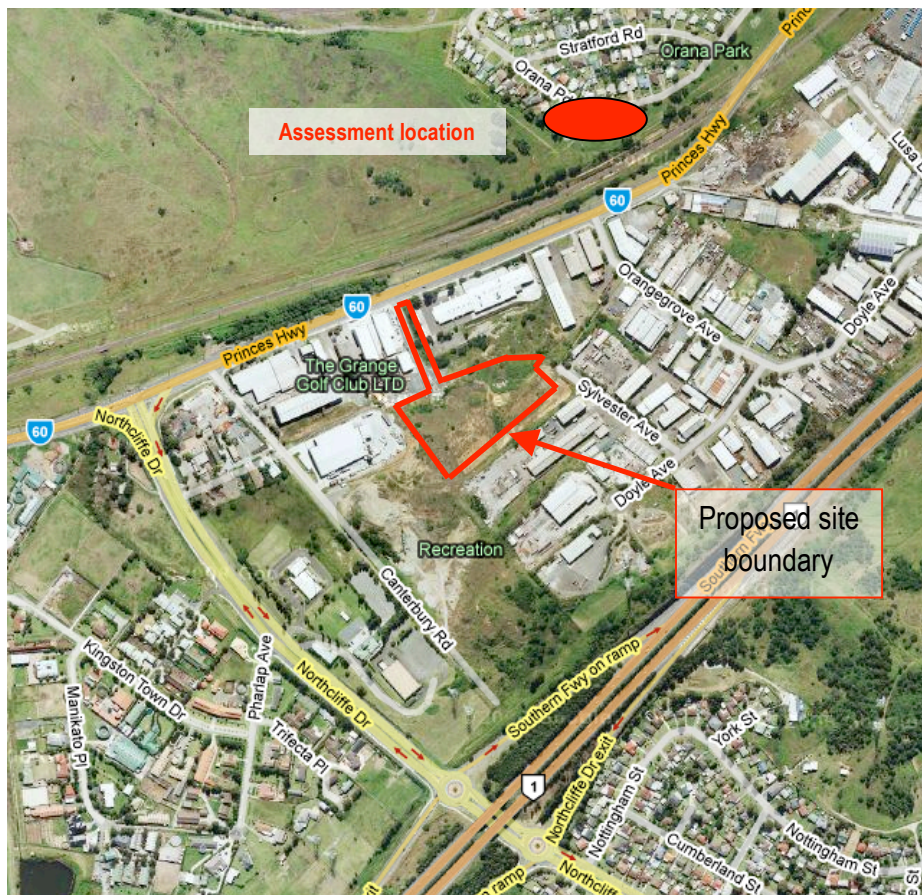


Figure 4: Orana Parade noise impact assessment location

6.2 General survey information

Surveys of the existing noise environment at the site and at the nearest residential receivers on Orana Parade have been carried out. Both short-term and long-term monitoring of existing noise levels has been carried out. Jason Cameron of Acoustic Studio Pty Ltd carried out the surveys.

Long-term noise monitoring was carried out for ten days from Tuesday 12th August 2008 to Friday 22nd August 2008 to establish the range of ambient noise levels for the neighbourhood. The monitoring was carried out with an RTA Technology Environmental Noise Logger Type 02 (Serial Number 038). The calibration of the logger was checked before and after use and no variation was noted.

Short-term noise monitoring was carried out between 9:30pm and 10:30pm on Tuesday 12th August 2008 and between 6:00am and 7:00am on Friday 22nd August 2008 in order to establish the background noise level octave band spectra at the site and at the Orana Parade residential location. Octave band measurements were made with a Brüel & Kjær Hand-held Analyser Type 2250 (Serial Number 2446899). The calibration of the analyser was checked before and after the survey and no variation in level occurred.

Figure 5 shows the noise survey measurement locations.

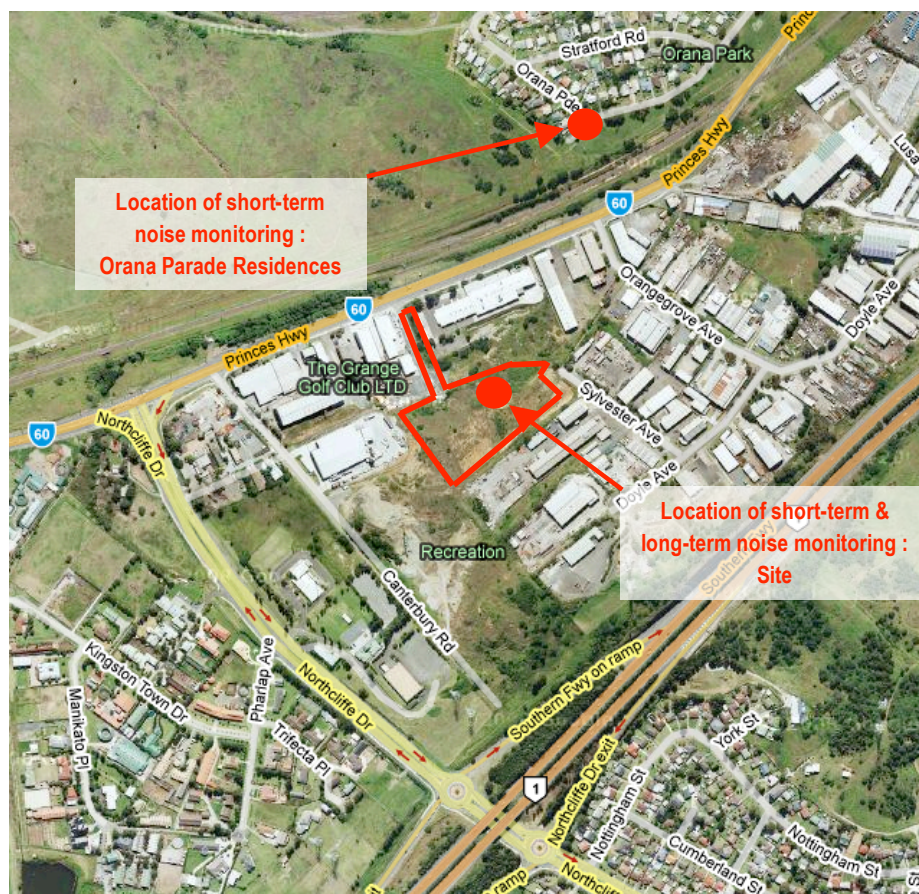


Figure 5: Location of short-term and long-term background noise survey measurements

The proposed operating hours for the facility are 6am to 10pm.

In accordance with the methodology prescribed in the NSW Industrial Noise Policy 2000, three time periods have been set for the assessment:

- Morning 0600 – 0700 (based on the NSW INP *Night* time period, 2200 – 0700)
- Day 0700 – 1800
- Evening 1800 – 2200

The Morning and Evening time periods are the most critical, since this is when the existing background noise levels are lowest.

The short-term monitoring was carried out at times specifically chosen to correspond with the quietest times of the Morning and Evening time periods (ie between 6:00am and 7:00am, plus between 9:30pm and 10:30pm).

6.3 Noise survey measurement results

6.3.1 Short-term background noise monitoring

The lowest measured octave band background noise levels during the measurement time periods are presented in Figures 6 and 7.

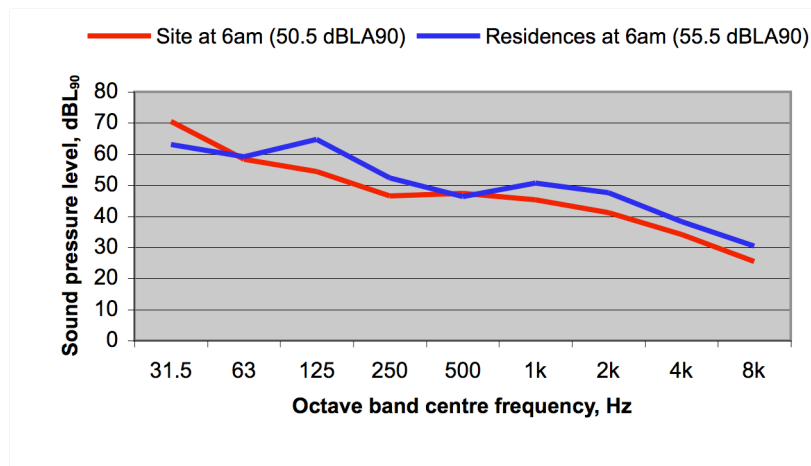


Figure 6: MORNING - Lowest measured octave band sound pressure levels, dBLA90, measured at 6am

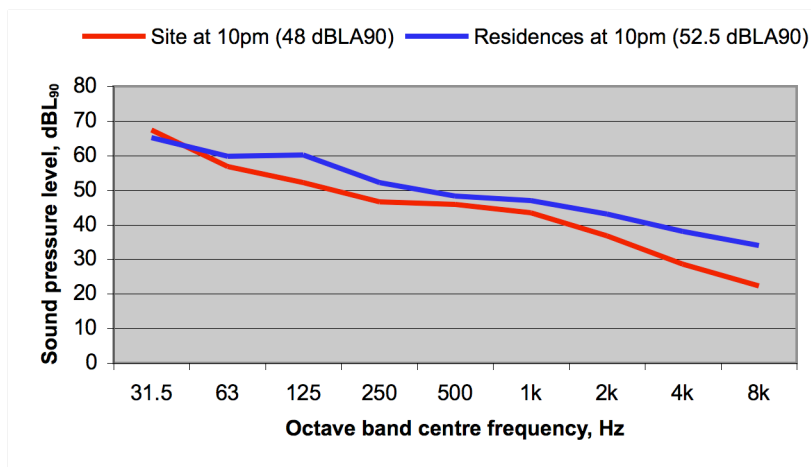


Figure 7: EVENING - Lowest measured octave band sound pressure levels, dBLA90, measured at 10pm

The existing background noise environment at both the Orama Parade residences and the site is a mix of traffic on the Princess Highway and noise from existing industry. At the Orama Street residences, noise from existing industry was audible.

The figures indicate that, at 6am and 10pm, the background noise level at the residential location is generally approximately 5 dB(A) (or 5 dB) higher than at the site. For the purpose of this assessment, we have considered that the background noise level at the residential location is equal to the background noise level at the site. We consider this to be a conservative assumption – ie the background noise level at the residential receiver location is likely to be up to 5 dB(A) higher than we have assumed.

6.3.2 Long-term background noise monitoring

The noise logger was located on the proposed site. This location was chosen since it was a secure location for the logger, and is a valid reference location for the short-term monitoring carried out at the residential receiver location.

The logger collected the following noise level data:

- The A-weighted equivalent continuous noise level (L_{Aeq}).
- Statistical indices including the L_{A0} , L_{A1} , L_{A5} , L_{A10} , L_{A50} , L_{A90} , L_{A100} . These are the A-weighted noise level exceeded 0% of the sample time (the maximum level), 1%, 5%, 50%, 90% and 100% (the minimum level) respectively. Note that the L_{A90} is defined as the background noise level.

The measured L_{A1} , L_{A10} , L_{Aeq} and L_{A90} noise levels are presented in the graphs below.

The noise logger was set to sample every tenth of a second, and to calculate the equivalent continuous noise level plus statistical noise levels over each 15 minutes of operation.

