



Acoustic Report

Northern Residential Precinct

Tallawarra Lands Part 3A

Project 211 106

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The work reported herein has been carried out in accordance with the terms of membership. We stress that the advice given herein is for acoustic purposes only, and that the relevant authorities should be consulted with regard to compliance with regulations governing areas other than acoustics.

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1 INTRODUCTION

TRUenergy own Tallawarra, a large infill land site located on the East Coast, South of Wollongong. The land was originally part of a coal fired power station, long ceased operation and since demolished.

A new gas fired power station has been constructed and commissioned using superefficient Combined Cycle Gas Turbine (CCGT) technology. Additionally, a development approval has been obtained for Tallawarra power station Stage B, another TRUenergy power station to adjoin stage A.

The current technology offered by the gas fired station together with substantial noise control measures being incorporated in the design and construction mean that much of the land at Tallawarra is now surplus to the requirements of the power station.

Known as "Tallawarra Lands", this surplus land has recently been rezoned. The proposed land use outcomes are a mix of environmental and recreational, business/industrial/commercial, and residential zones.

TRUenergy have recently lodged a concept plan development application for development of the land for multiuse purposes including residential, business / commercial and light industrial.

As part of the power station redevelopment for Stage A and B TRUenergy have commissioned SKM Consulting Engineers to examine noise impacts generated by Stage A and B CCGT, together with existing noise from the Southern Freeway and the Illawarra Rail Line on the Tallawarra Lands subject to rezoning. The results of the SKM assessment is detailed in SKM report *Tallawarra Lands Part 3A Concept Plan Application, Final v5, 19 January 2011, Project Number EN02773*.

This report provides noise contour information across the site as a result of existing and expected noise from the power stations, Southern Freeway and the Illawarra Rail Line.

PKA Report requirements

PKA have been commissioned by TRUenergy to examine the SKM report and the documented expected noise levels. PKA are required to nominate typical building measures for the Northern Residential Precinct based on the newly prepared subdivision layout in order to control internal noise to within satisfactory limits.

The results are based on the final lot layout for the Northern (Residential) Precinct shown in Northrop drawing dated 22nd February 2012.

This report provides the results of our investigation.

The primary focus of this report is to address noise from the power station. Noise from the Southern Freeway, Illawarra Rail Line and Illawarra Regional Airport are discussed but no specific noise control treatments are required to address noise from these sources at the Northern Residential Precinct.

2 SUMMARY

It is proposed to redevelop the lands identified as the Northern Residential Precinct, which lie within the Tallawarra Lands, to the north of the Tallawarra Power station.

SKM have carried out noise modelling over the proposed redevelopment area. The modelling includes noise impacts from the existing and proposed power stations, the Southern Freeway and the Illawarra Railway. The only significant acoustic impact on the Northern Residential Precinct is from the existing and proposed power stations.

Examination of the noise modelling results has found that no lots within the proposed subdivision are impacted by either the L_{Amax} 50 or L_{Aeq} 40 noise contours (from the power stations). As such noise levels at all lots comply with the noise criteria identified in this report without further acoustic treatment.

3 ASSESSMENT CRITERIA

The noise emissions from the power station, freeway and railway line are very different in character. As such they cannot be assessed using the same noise criteria.

3.1 Power Station

We propose to include the recommendations of *Australian/New Zealand Standard AS/NZS 2107:2000 Acoustics - Recommended design sound levels and reverberation times for building interiors*. The following is an extract from the standard, applicable to residential dwellings:

**TABLE 1
RECOMMENDED DESIGN SOUND LEVELS FOR DIFFERENT AREAS OF
OCCUPANCY IN BUILDINGS**

| Type of occupancy/activity | Recommended design sound level, LAeq, dB(A) | | Recommended reverberation time (T), s |
|---|---|----|---------------------------------------|
| 7 RESIDENTIAL BUILDINGS (see Note 7 and Clause 5.2) | | | |
| Houses in areas with negligible transportation- | | | |
| Sleeping areas | 25 | 30 | - |
| Houses and apartments near minor roads- | | | |
| Living areas | 30 | 40 | - |
| Sleeping areas | 30 | 35 | - |
| Work areas | 35 | 40 | - |
| Apartment common areas (e.g foyer, lift lobby) | 45 | 55 | See Note 3 |
| Houses and apartments near major roads- | | | |
| Living areas | 35 | 45 | |
| Sleeping areas | 30 | 40 | |
| Work areas | 35 | 45 | |
| Apartment common areas (e.g. foyer, lift lobby) | 45 | 55 | See Note 3 |

We consider that the classification for houses and apartments near minor roads is appropriate. As such this provides the following noise criteria relevant to this development

| Area | AS2107 recommendation | PKA Proposed Design Criteria (unadjusted) | Adjusted for tonality |
|----------------|-----------------------|---|-----------------------|
| Living areas | 30-40 | 35 | 30 |
| Sleeping areas | 30-35 | 30 | 25 |
| Work areas | 35-40 | 35 | 30 |

The tonality correction is necessary to allow for the potential non-broadband character of the noise from the power station. We note however that the Sound Plan noise level predictions prepared by SKM already include a penalty for potential tonality. As such we will apply the SKM predictions to the unadjusted internal noise criteria.

The appropriate assessment criterion for potential noise disturbance to sleep is currently under review by the Office of Environment and Heritage (OEH, formerly DECCW/EPA).

As a guideline the DECCW have in the past (*Environmental Criteria for Road Traffic Noise* (1999) and *Environmental Noise Control Manual* (1985)) sought to protect sleep arousal by ensuring that the $L_{1(60sec)}$ noise level of any specific source does not exceed the background L_{90} level by more than 15dB(A) outside a resident's bedroom window between 10pm and 7am.

The most recent noise policy issued by the OEH is the NSW Road Noise Policy (2011) which concludes that "maximum internal noise levels below 50-55dB(A) are unlikely to awaken people from sleep".

The background +15dB(A) criteria would lead to a site specific criteria of $36 + 15 = 51\text{dB(A)}$ (external) for the Northern Residential Precinct. Assuming typical dwelling construction this would lead to an internal noise level in the order of 41dB(A) with windows open.

In the absence of any specific directions otherwise we have applied an L_{max} criteria (for sleeping areas only) of 51dB(A) external and 41dB(A) internal for the Northern Residential Precinct.

3.2 Other Noise Sources

The SKM report sets out noise criteria for other noise sources impacting the Tallawarra Lands including:

- Road traffic noise from the southern freeway
- Rail noise from the Illawarra Rail Line
- Aircraft noise from Illawarra Regional Airport

The SKM report indicates noise from the above sources are all below the relevant criteria that the Northern Residential Precinct. Our inspection of the noise data within the SKM report confirms that noise from the above sources do not significantly impact the Northern Residential Precinct.

4 NOISE SOURCE DATA

Noise level data for the completed stage A and the projected stage B power stations have been taken from noise contour data prepared by SKM. We have based the assessment on the combined operations of the Stage A and B as prepared by SKM in Figure 4-1.

SKM have advised that the Leq noise contour includes a +5 dB(A) penalty for the expected low frequency components.

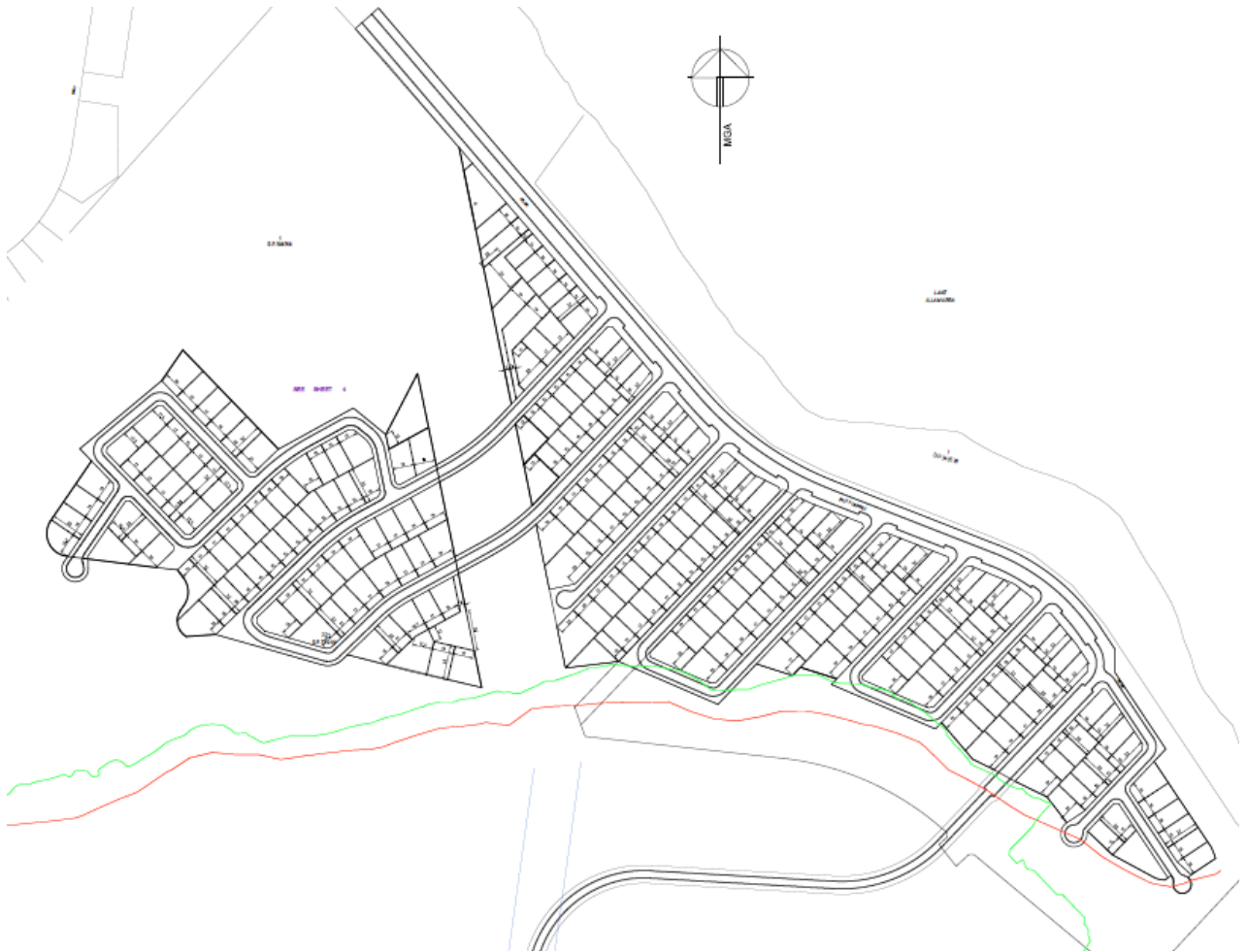


Fig 4.1: Tallawarra A & B Power Station Noise Impacts dB(A).

L_{Aeq} 40 contour shown in RED

L_{Amax} 50 contour shown in GREEN

5 SITE ANALYSIS

We have based our assessment on the Northern Residential Precinct final lot layout prepared by Northrop dated 22/2/12 (see Fig 4.1). The plan shows the lots within the proposed residential area comprising conventional and large lots.

No lots within the proposed subdivision are impacted by either the L_{Amax} 50 or L_{Aeq} 40 noise contours. As such noise levels at all lots comply with the noise criteria identified in this report without further acoustic treatment.