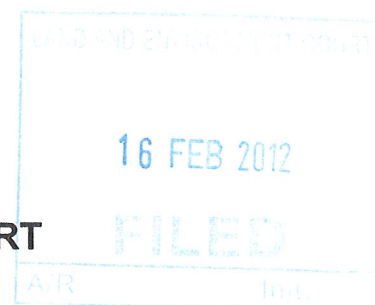


**ADDITIONAL INFORMATION –
CONSOLIDATED ACOUSTIC REPORT**



COURT DETAILS

Court	Land and Environment Court of New South Wales
Class	1
Case numbers	10928 of 2010


TITLE OF PROCEEDINGS

Applicants	<u>DELLARA PTY LTD</u>
First Respondent	<u>MINISTER FOR PLANNING</u>
Second Respondent	<u>PENRITH CITY COUNCIL</u>

PREPARATION DETAILS

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Signature	
Capacity	The Respondent's solicitor by her employed solicitor Nicola Maree Gillies
Date of signature	16 / 2 / 12

ORCHARD HILLS WASTE & RESOURCE
MANAGEMENT FACILITY
CONSOLIDATED ACOUSTIC REPORT

MINISTER FOR PLANNING & PENRITH CITY COUNCIL
ATS DELLARA PTY LTD
- LAND & ENVIRONMENT COURT
PROCEEDINGS NO. 10928 OF 2010

REPORT NO. 09154-FM-CAR

WILKINSON  MURRAY

ORCHARD HILLS WASTE & RESOURCE
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CONSOLIDATED ACOUSTIC REPORT

MINISTER FOR PLANNING & PENRITH CITY COUNCIL
ATS DELLARA PTY LTD
- LAND & ENVIRONMENT COURT
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FEBARUARY 2012

PREPARED FOR

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ACOUSTICS AND AIR

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GLOSSARY OF ACOUSTIC TERMS

Most environments are affected by environmental noise which continuously varies, largely as a result of road traffic. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. These descriptors, which are demonstrated in the graph overleaf, are here defined.

Maximum Noise Level (L_{Amax}) – The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

dB(A) – A-weighted decibels. 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 on is denoted as dB(A). Practically all noise is measured using the A filter.

Frequency – Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.

Impulsive Noise – Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.

Intermittent Noise – The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.

L_{A1} – The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time.

L_{A10} – The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time. The L_{A10} is a common noise descriptor for environmental noise and road traffic noise.

L_{A90} – The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

L_{Aeq} – The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

ABL – The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening and night time) for each day. It is determined by calculating the 10th percentile (lowest 10th percent) background level (L_{A90}) for each period.

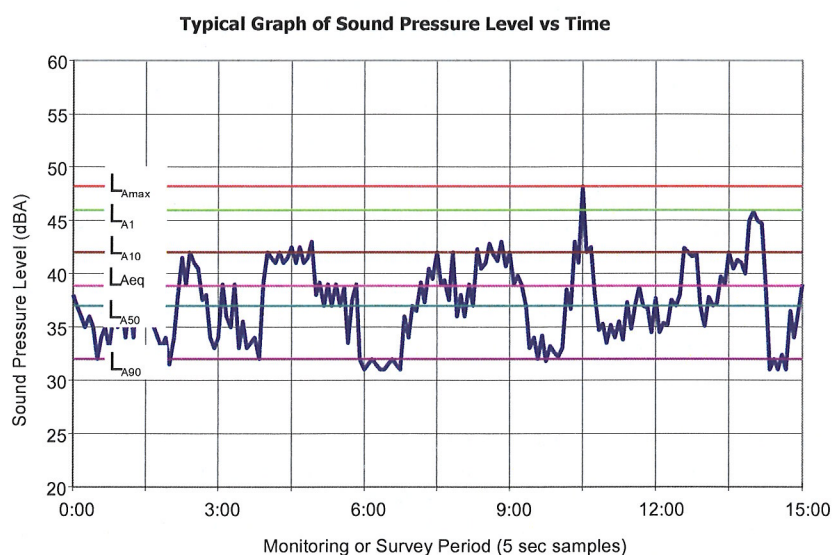
RBL – The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and night time.

Sound Absorption – The ability of a material to absorb sound energy through its conversion into thermal energy.

Sound Level Meter – An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure level.

Sound Pressure Level – The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.

Tonal Noise – Containing a prominent frequency and characterised by a definite pitch.



1 INTRODUCTION

Wilkinson Murray Pty Limited, as part of the Further Modified Project Preferred Report (FMPPR) for the proposed Orchard Hills Waste and Resource Management Facility, has conducted noise assessment of the proposed facility based on construction and operational noise models/scenarios.

Further to the submission of the FMPPR a joint conference was held between the acoustic experts, being Mr Brian Clarke (Wilkinson Murray) and Mr Steven Cooper (The Acoustic Group). The findings of the joint conferencing are detailed in the report submitted to the Land and Environment Court of New titled:

Joint Conference Report - Minister for Planning & Penrith City Council ats Dellara Pty Ltd
– Land & Environment Court Proceedings No. 10928 of 2010 dated 22 December 2011.

Item 3 of the above joint report titled- Acoustic Documentation relevant for the Subject Application (relates to part of 6.4b of Second Respondents amended Statement of Contentions) identified disagreement between the experts whereby Mr Cooper was is of the opinion that;

"Considers that at the present time there is no clear acoustic assessment as to what has actually been assessed and what is required to achieve acoustic compliance for the few stages that have been assessed. A condition of consent for acoustics that requires reference to 5 or 6 reports (or parts of those reports) is inappropriate. A consolidated acoustic report covering the entire project is required for clarity of the proposal and must specify the acoustic measures required for the project."

Mr Clarke considered that reference to the identified documents provides details of the chronology of the application and provides adequate information upon which to assess the FMPPR. However, as additional noise modelling has been conducted to address item 5 of the joint report it was determined that the preparation of a "Consolidated Acoustic Report" be conducted to address this area of disagreement and provide a complied report to assist the court.

2 REFERENCE DOCUMENTS

This report presents the assessment of potential noise impacts of the Further Modified Preferred Proposed waste and resource management facility and its associated haulage activities in accordance with the following guidelines as required by the NSW Office of Environment and Heritage (OEH).

- Interim Construction Noise Guideline
- Industrial Noise Policy (INP)
- Environmental Criteria for Road Traffic Noise (ECRTN) – it is noted that the ECRTN has been superseded in July 2011 by the Road Noise Policy, but there are no changes in the new document that would affect the assessment for this project. Therefore, reference to the ECRTN has been retained for the purposes of consistency.

In relation to addressing the acoustic issues, the following documents have been referenced:

- Orchard Hills Waste and Resource Management Facility, which is described in the Modified Preferred Project Report (MPPR) prepared by R.W. Corkery & Co, dated January 2011 which includes Appendix 2, "Noise Assessment", to the Modified Preferred Project Report;
- Orchard Hills Waste and Resource Management Facility – Penrith and Anor ats Dellara – Land and Environment Court Proceedings 10928 of 2011, Response for additional information in relation to the Further Modified Preferred Project Report (FMPPR) Supplementary Noise Assessment (Wilkinson Murray Pty Limited Ref NG 240911 BCmk5.doc) dated 24 September, 2011.
- Orchard Hills Waste and Resource Management Facility – Supplementary Noise Assessment (Wilkinson Murray Pty Ltd Ref NG 290911 BC LTR7.doc) dated 29 September, 2011;
- The Acoustic Joint Conference Report prepared by Dr Rob Bullen and Mr Steven Cooper dated 27 July 2011 which addressed acoustic issues for the Modified Preferred Report;
- The Acoustic Joint Conference Report prepared by Mr Brian Clarke and Mr Steven Cooper dated 22 December 2011 which addressed acoustic issues for the Further Modified Preferred Report;
- Report for Modifications to the Modified Preferred Project Overview Report by GHD Pty Ltd Dated September 2011.
- OEH letter "Review of Orchard Hills Waste Project (Project Application MP_090074) Exhibition of Further Modified Preferred Project Report September 2011 dated 16 November 2011 (reference DOC11/52564).
- Orchard Hills Waste and Resource Management Facility – Penrith and Anor ats Dellara - Land and Environment Court Proceedings 10928 of 2011, Response for additional information in relation to the Further Modified Preferred Project Report (FMPPR) Supplementary Statement of Evidence (Wilkinson Murray Pty Limited Ref: Sup Report 09154-FM) dated February, 2012.

The following sections detail noise measurements, applicable noise criteria at identified receivers, noise modelling procedures and results of noise modelling along with operational measures and procedures that are required to manage noise emissions from the site.

3 SITE DESCRIPTION

The Project Site is located within a predominantly rural area comprising open grazing land and low density housing (refer to **Figure 3.1**).

Immediately to the west of the Project Site is land owned by the Commonwealth which is used by the Australian Defence Force. To the south of the Project Site and south of Patons Lane, the land accommodates buildings and other facilities associated with an existing horse stud.

Located approximately 0.5-1.5km to the north of the Project Site and beyond open grazing land is a relatively recent (early 1990's) residential subdivision comprising of detached housing referred to as "The Vines". Further to the north (approximately 2-3km), the land also comprises low density residential dwellings on large allotments, with this area extending north to the M4 Motorway.

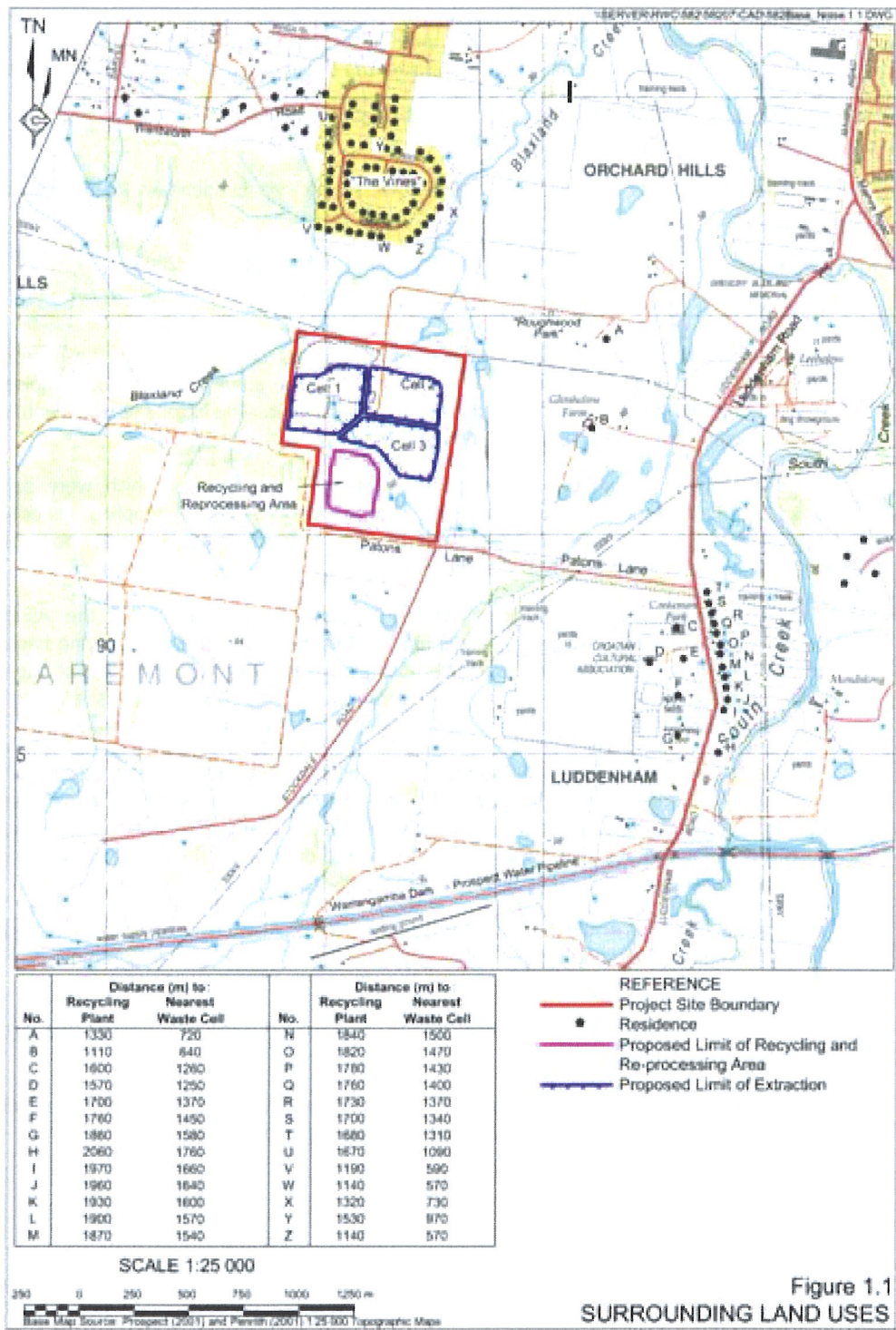
Land uses immediately east of the Project Site consist of open grazing land and ancillary buildings including rural housing. Further to the east (approximately 3km) are the established residential suburbs of St Clair and Erskine Park.

Figure 3.1 indicates the land ownership and residences closest to the Project Site. The residences potentially most affected by noise from the Project are:

- residences within "The Vines" Estate located approximately 0.5-1.5km north of the Project Site;
- two isolated, rural residences immediately east of the site, and
- residences located east and south-east of the site on Luddenham Road.

Where the Project's noise is satisfactorily controlled to these three groups of residences, then noise from the Project will comply with the relevant criteria at all other noise-sensitive receivers.

Figure 3.1 Site & Environs



4 EXISTING NOISE ENVIRONMENT

Developing noise criteria for the Project's noise emissions first requires knowledge of the level of existing background noise. To this end, long-term, unattended noise monitoring was undertaken adjacent to the following four residences during the monitoring periods indicated:

- **Site 1:** Vacant Lot adjacent to 15 Cabernet Circuit, The Vines, Orchard Hills (28 May – 8 June, 2009);
- **Site 2:** Bates' Residence, on "Roughwood Park" via Luddenham Road, Orchard Hills (18 – 28 June 2009);
- **Site 3:** 216 Luddenham Road, Luddenham (28 May – 8 June, 2009);
- **Site 4:** 229 Luddenham Rd (2 –13 July 2011)

These monitoring locations were chosen on the basis of representing those residences potentially most affected by noise from the Project. The surveyed background noise levels measured in mid-2009 remain applicable for this assessment. The latter site was identified as a result of joint conferencing hence the different year.

The monitoring was undertaken using environmental noise loggers which were set to A-Weighted, Fast response, continuously monitoring over 15-minute sampling periods. The equipment calibration was checked before and after the surveys and no significant instrumentation drift occurred.

The data collected from the noise loggers enabled the calculation of the Assessment Background Level (ABL), which is a single figure measure of the otherwise varying background noise during each day, evening and night periods respectively. The median of these daily values at each monitoring site is the Rating Background Level (RBL), which is taken to be the value which defines the background noise level to be used for assessing the Project.

Notably, the calculation of the RBL's excludes any noise data collected during periods of rain or high winds (> 5m/s) in accordance with the Industrial Noise Policy (INP). Detailed results of the noise monitoring – including periods of weather-excluded data. Notably, even notwithstanding the exclusion of this weather-affected data, more than a week's worth of valid monitoring data was obtained at each of the three sites monitored.

Tables 4.1, 4.2, 4.3 and 4.4 indicate the calculated RBL levels over the daytime time periods (7.00am-6.00pm as defined by the OEH). The Project will not operate during night, evening or shoulder periods.

Results of noise monitoring are presented in Appendix C. Periods where data has been excluded are shown as shaded.

As is relevant for developing the Project's noise amenity criteria, on-site surveys indicated that the existing (pre-Project) level of "industrial" noise is negligible.

Table 4.1 Summary of Background Noise Levels for Residences of The Vines (Site 1)

Date	Assessment Background Level
	dB(A)
	Daytime ¹
28 May 2009	35.1
29 May 2009	33.8
30 May 2009	37.0
31 May 2009	35.0
01 June 2009	33.0
02 June 2009	29.2
03 June 2009	33.2
04 June 2009	32.5
05 June 2009	30.2
06 June 2009	33.7
07 June 2009	35.7
08 June 2009	35.2
RBL	34

Note: (1) Daytime 7.00am-6.00pm

Table 4.2 Summary of Background Noise Levels at Site 2 – Roughwood Park "Bates" Residence

Date	Assessment Background Level
	dB(A)
	Daytime ¹
18 June 2009	40.5
19 June 2009	38.7
20 June 2009	37.0
21 June 2009	35.3
22 June 2009	33.7
23 June 2009	33.9
24 June 2009	35.9
25 June 2009	33.0
26 June 2009	33.0
27 June 2009	33.1
28 June 2009	32.1
RBL	34

Note: (1) Daytime 7.00am-6.00pm

**Table 4.3 Summary of Background Noise Levels at Site 3
– 216 Luddenham Road, Luddenham**

Date	Assessment Background Level
	dB(A)
	Daytime ¹
28 May 2009	39.0
29 May 2009	37.0
30 May 2009	39.5
31 May 2009	38.2
01 June 2009	37.0
02 June 2009	34.0
03 June 2009	36.5
04 June 2009	37.5
05 June 2009	35.0
06 June 2009	36.0
07 June 2009	38.0
08 June 2009	37.2
RBL	37

Note: (1) Daytime 7.00am-6.00pm

**Table 4.4 Summary of Background Noise Levels at Site 4
– 229 Luddenham Road, Luddenham**

Date	Assessment Background Level
	dB(A)
	Daytime ¹
2-July-2011	37.5
3-July-2011	40
4-July-2011	38.5
5-July-2011	39
6-July-2011	37.5
7-July-2011	39.3
8-July-2011	35.2
9-July-2011	36
10-July-2011	36.7
11-July-2011	32.2
12-July-2011	36
RBL*	37.1

Note: (1) Daytime 7.00am-6.00pm

*Median of unshaded days – shaded periods are weather affected.

5 PROJECT NOISE CRITERIA

Construction and Operational noise criteria are detailed in the following sections.

5.1 Construction Noise Criteria

During its site establishment or construction phase, noise from the site is assessed in relation to the OEH's Interim Construction Noise Guideline which recommends noise level objectives based on the following recommended standard hours of work:

- Monday to Friday 7.00am to 6.00pm;
- Saturday 8.00am to 1.00pm; and
- No work on Sundays or Public Holidays.

Construction Noise Goals at residences are detailed in **Table 5.1**.

Table 5.1 Construction Noise at Residences Using Quantitative Assessment

Time of Day	Management Level $L_{Aeq,15min}$ dB(A)	How to Apply
Recommended standard hours: Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays	Noise affected RBL + 10 dB	<p>The noise affected level represents the point above which there may be some community reaction to noise.</p> <p>Where the predicted or measured L_{Aeq} (15 min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to minimise noise.</p> <p>The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.</p>
	Highly noise affected 75 dB	<p>The highly noise affected level represents the point above which there may be strong community reaction to noise.</p> <p>Where noise is above this level, the proponent should consider very carefully if there is any other feasible and reasonable way to reduce noise to below this level.</p> <p>If no quieter work method is feasible and reasonable, and the works proceed, the proponent should communicate with the impacted residents by clearly explaining the duration and noise level of the works, and by describing any respite periods that will be provided.</p>