

Liddell Coal Operations Pty Limited

Liddell Colliery Noise Monitoring Program

January 2008



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Prepared by

Umwelt (Australia) Pty Limited

on behalf of

Liddell Coal Operations Pty Limited

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1.0 Introduction

This Noise Monitoring Program outlines the noise monitoring required to be undertaken by Liddell Coal Operations Pty Limited (Liddell Coal) to ensure compliance with statutory requirements at Liddell Colliery. The program addresses the requirements contained in Liddell Coal's development consent (DA 305-11-01) and the general terms of approval issued by the Department of Environment and Climate Change (DECC) in relation to the required Environment Protection Licence (EPL).

This program has been developed to satisfy schedule 3, condition 5 of Liddell Coal's development consent which is reproduced below.

5. The Applicant shall prepare and implement a Noise Monitoring Program for the development to the satisfaction of the Director-General. This Program must be submitted to the Director-General by 31 January 2008, and must include regular attended monitoring, and a noise monitoring protocol for evaluating compliance with the noise impact assessment and land acquisition criteria in this consent.

2.0 Noise Criteria

Schedule 3, condition 1, of the development consent specifies the noise criteria for the operation of Liddell Colliery. This Monitoring Program has been designed so that Liddell Coal can demonstrate compliance status with the noise criteria specified in the development consent.

2.1 Impact Assessment Criteria

Schedule 3, condition 1, of the development consent contains the Noise Impact Assessment Criteria and is outlined below.

Project Specific Noise Impact Assessment Criteria

1. The Applicant shall ensure that the noise generated by the development does not exceed the noise impact assessment criteria in Table 1 at any residence on, or on more than 25 per cent of, any privately owned land.

Table 1: Noise impact assessment criteria dB(A)

Assigned Residential Location Number	Noise Criteria	Sleep Disturbance Noise Criteria $L_{A(1min)}$
	$L_{Aeq(15\text{ minute})}$	
1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	35 dB(A) Day	
	35 dB(A) Evening	
	36 dB(A) Night	45 dB(A) Night

Notes:

- To determine compliance with the $L_{Aeq(15\text{ minutes})}$ noise limits, noise from the development is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.
- To determine compliance with the $L_{A(1\text{ minute})}$ noise limits, noise from the development is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECC may accept

alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).

- The noise emission limits identified in the above table apply under meteorological conditions of:
 - Wind speeds of up to 3 m/s at 10 metres above ground level; or
 - Temperature inversion conditions of up to 3°C/100m and wind speeds of up to 2 m/s at 10 metres above ground level.

2.2 Land Acquisition Criteria

Project specific and cumulative land acquisition criteria are outlined in schedule 3, condition 2 of the development consent.

Land Acquisition Criteria

2. If the noise generated by the development exceeds the criteria in Table 2, the Applicant shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 10-12 of Schedule 4.

Table 2: Land acquisition criteria dB(A)

Day/Evening/Night L _{Aeq} (15 minute)	Land
40	Any residence on, or on more than 25 percent of, any privately owned land.

Note: Noise generated by the development is to be measured in accordance with the notes to Table 1.

Cumulative noise criteria also apply to acquisition, refer to **Section 2.3**.

2.3 Cumulative Noise Criteria

Cumulative noise criteria have also been outlined in the development consent, due to the presence of other mining operations surrounding the Liddell Colliery. Schedule 5, condition 3 and 4 development consent are reproduced below.

3. The Applicant shall take all reasonable and feasible measures to ensure that the noise generated by the development combined with the noise generated by other mines does not exceed the following amenity criteria at any residence on, or on more than 25 percent of, any privately owned land:
 - L_{Aeq}(11 hour) 50 dB(A) – Day;
 - L_{Aeq}(4 hour) 45 dB(A) – Evening;
 - L_{Aeq}(9 hour) 40 dB(A) – Night.
4. If the noise generated by the development when combined with the noise generated by other mines exceeds the following amenity criteria at any residence on, or on more than 25 percent of, any privately owned land, then upon receiving a written request from the landowner, the Applicant shall acquire the land on as equitable basis as possible with the relevant mines, based on each mine's relative noise contribution to the cumulative noise, in accordance with the procedures in conditions 10-12 of Schedule 4:
 - L_{Aeq}(11 hour) 53 dB(A) – Day;
 - L_{Aeq}(4 hour) 48 dB(A) – Evening; and
 - L_{Aeq}(9 hour) 43 dB(A) – Night.

3.0 Monitoring Standards

Noise monitoring at Liddell Colliery will be undertaken in accordance with all relevant Australian Standards, legislation and DECC approved methods for sampling. The Australian Standards and DECC approved methods relevant to the Noise Monitoring Program are listed below:

- AS 1055 – 1997: Acoustics – Description and Measurement of Environmental Noise;
- NSW Industrial Noise Policy (DEC 2000);
- Environmental Noise Control Manual (DEC 1994);
- Environmental Criteria for Road Traffic Noise (DEC 1999); and
- AS IEC 61672.1 – 2004: Electroacoustics – Sound Level Meters – Sound Level Meters.

4.0 Monitoring Locations

Noise monitoring during mining operations at Liddell Colliery will be undertaken at the locations shown on **Figure 4.1** and specified in **Table 4.1**. These monitoring locations have been selected as they are representative of potentially impacted residences surrounding the Liddell Colliery.

Table 4.1 - Noise Monitoring Locations

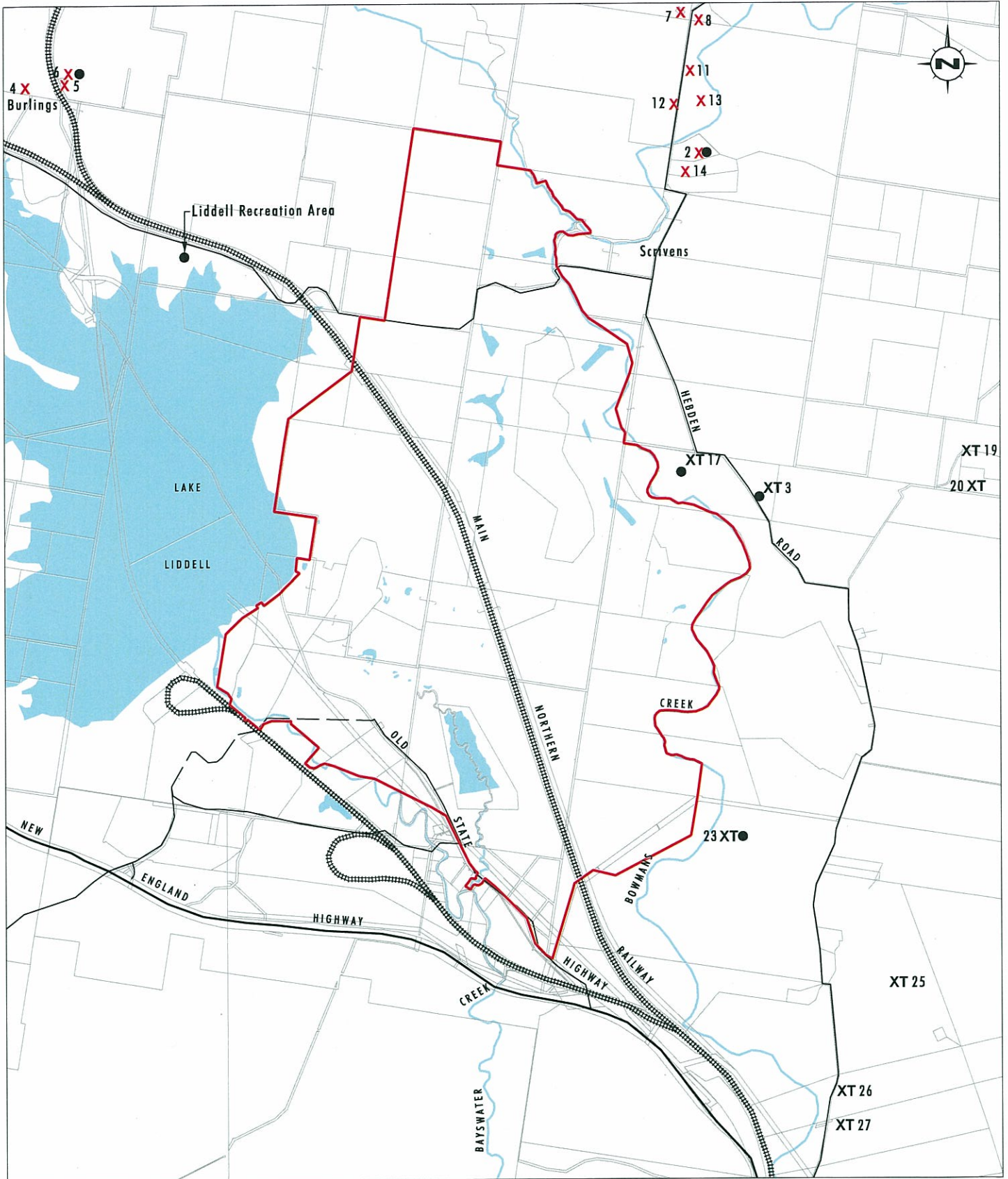
Monitoring Location	Description
2	Residence located to the north-east of the mine site
3	Residence located to the east of the mine site
6	Residence located to the north-west of the mine site
17	Residence located to the east of the mine site
23	Residence located to the south-east of the mine site
Liddell Recreation Area	Located to the west of the mine site

5.0 Monitoring Protocol

All monitoring is to be undertaken in accordance with Liddell Colliery procedure for environmental monitoring and evaluation.

As specified in the development consent, regular attended noise monitoring will be undertaken at representative locations surrounding Liddell Colliery. Monitoring at each of the locations specified in **Table 4.1** will consist of unattended continuous noise logging over at least 72 hours on a bi-annual basis during the mining operations at Liddell Colliery. Operator-attended noise measurements over 15 minute periods will also be undertaken during this bi-annual monitoring. The operator-attended monitoring is to be undertaken, where possible, at the beginning and ending of the unattended continuous noise logging.

Noise monitoring is to be undertaken on a bi-annual basis at representative periods of the summer and winter seasons. All noise measurements will be accompanied by both qualitative description (including cloud cover) and quantitative measurements of prevailing



Source: Liddell Coal



Legend

- Liddell Colliery DA Boundary
- Noise Monitoring Site
- X Private Residences
- XT Mine Owned Residences
- ▶ Existing Dams

FIGURE 4.1
Noise Monitoring Locations

weather conditions throughout the monitoring period. Quantitative data will be sourced from the meteorological monitoring station utilised by Liddell Colliery.

During the attended noise measurements, the operator will also record any significant mining generated noise sources (i.e. haul trucks, dozers etc.).

5.1 Review

Monitoring results will be reviewed on a bi-annual basis following the conclusion of the monitoring period by the Liddell Coal Environment and Community Coordinator to assess compliance with noise criteria outlined in **Section 2.0**.

5.2 Corrective Action

In the event that the monitoring system or local community identifies an exceedance of the noise criteria stipulated in the development consent, the Environment and Community Coordinator will investigate the noise source and appropriate corrective action will be undertaken.

In the event that the investigation determines that noise from Liddell Coal's operations is likely to be responsible for an exceedance of the noise criteria at nearby privately owned residences or on 25 percent of any privately owned land (except where this is predicted in the Environmental Assessment for the Liddell Colliery Modification to Development Consent (EA) (Umwelt, 2006) and except where a negotiated agreement has been entered into in relation to that impact) Liddell Coal will:

- notify the Director-General and the affected landowners and/or existing or future tenants (including tenants of mine owned properties) in accordance with schedule 4, condition 2 of the development consent. Liddell Coal will provide quarterly monitoring results to each of these parties until the results show that the operation is complying with the noise quality criteria
- review mitigation measures which would prevent the exceedance from re-occurring;
- report the exceedance to the Liddell Colliery Community Consultative Committee (CCC) and in the Liddell Colliery Annual Environmental Management Report (AEMR).

5.3 Complaints

A procedure for handling complaints has been implemented as part of the Liddell Colliery Environmental Management System (EMS) to ensure a consistent approach to handling any complaint. All legitimate complaints will be thoroughly investigated by the Liddell Coal Environment and Community Coordinator. Feedback to the complainant will be provided within 48 hours of receiving the complaint. Details of complaints and outcomes from any investigations relating to noise will be provided to mine planning and production personnel to assist in the improvement of noise management practices.

In addition to the regular monitoring outlined in **Table 4.1**, if Liddell Colliery receives a complaint regarding noise at a particular receiver location, specific monitoring may be undertaken to demonstrate compliance with noise criteria outlined in **Section 2.0** or to investigate possible sources.

In accordance with schedule 4, condition 4 of the development consent, if a landowner considers the development to be exceeding the noise criteria, except where this is predicted in the EA (Umwelt, 2006) then he/she may request an independent review of the impacts of Liddell Colliery operations on his/her land. Should this occur, Liddell Coal will undertake the process in accordance with schedule 4, conditions 4 to 8 of the development consent.

5.4 Acquisition

Should noise generated by Liddell Colliery operations exceed the land acquisition criteria outlined in **Sections 2.2** and **2.3**, and upon receiving a written request for acquisition from the affected landowner, Liddell Coal will acquire the land in accordance with schedule 3, conditions 2 and 4 (land acquisition criteria) and schedule 4, conditions 10 to 12 (land acquisition) of the development consent.

6.0 Reporting

All monitoring records required to be kept by Liddell Coal will be:

- in a legible form, or in a form that can readily be reduced to a legible form;
- kept for at least four years; and
- produced in a legible form to any authorised officer of DECC who asks to see them.

The following records will also be kept in respect of noise monitoring undertaken:

- the dates on which the monitoring was undertaken;
- the times at which the monitoring was undertaken;
- the point at which the monitoring was undertaken; and
- the name of the person who undertook the monitoring.

7.0 Accountabilities

The relevant Liddell Coal personnel accountabilities for the implementation of this Noise Monitoring Program are provided in **Table 7.1**.

Table 7.1 – Noise Monitoring Program Accountabilities

Position	Responsibility
Operations Manager	Provide adequate resources to assist the implementation of the Noise Monitoring Program
Environment and Community Coordinator	Ensuring the implementation of the monitoring program Undertake a review of noise monitoring results on a biannual basis Engage a suitably qualified consultant to undertaken noise monitoring and/or relevant investigations where required Ensure monitoring results are provided to the CCC and in the AEMR Report any exceedances for which Liddell Colliery is responsible to the Director-General and the relevant landholder(s)
External Consultant	Undertake noise monitoring in accordance with the Noise Monitoring Program and associated standards and procedures as outlined in the program.

8.0 Auditing and Review

This Noise Monitoring Program is to be reviewed in consultation with the Director-General at least every three years. The review will reflect changes in environmental expectations, technology and operational procedures.

Auditing of this Program will also occur in accordance with the Liddell Colliery procedure for environmental auditing or as otherwise directed by the Director-General

9.0 References

Australian Standards (1997) 1055-1997: Acoustics – Description and Measurement of Environmental Noise

Australian Standards (2004) AS IEC 61672.1 – 2004 Electroacoustics – Sound Level Meters

Department of Environment and Conservation (2000) NSW Industrial Noise Policy

Department of Environment and Conservation (1994) Environmental Noise Control Manual

Department of Environment and Conservation (1999) Environmental Criteria for Road Traffic Noise

Liddell Colliery EMS Procedure – Environmental Monitoring and Evaluation

Liddell Colliery EMS Procedure – Environmental Reporting

Liddell Colliery EMS Procedure – Community Complaints and Environmental Incident Report

Liddell Colliery EMS Procedure – Environmental Auditing

Umwelt (Australia) Pty Limited (2006) Environmental Assessment for Liddell Colliery Modification to Development Consent

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