



HEGGIES

REPORT 30-1409-R3

Revision 0

Integrated Noise Monitoring Program Donaldson Mine, Abel Mine, Tasman Mine, Bloomfield Mine and CHPP

PREPARED FOR

Donaldson Coal Pty Ltd
PO Box 37
Maitland NSW 2320

5 DECEMBER 2007

HEGGIES PTY LTD

ABN 29 001 584 612

Incorporating

New Environment

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Integrated Noise Monitoring Program

Donaldson Mine, Abel Mine, Tasman Mine, Bloomfield Mine and CHPP

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1 INTRODUCTION

Heggies Pty Ltd (Heggies) has been engaged to prepare an Integrated Noise Monitoring Program (INMP) for the Donaldson, Abel, Tasman and Bloomfield Mines (the mining operations) in accordance with the Abel Coal project approval (Application No. 05_0136) granted by the Minister for Planning for the Abel Coal Mine Project.

The objectives of the INMP are to fulfil the requirement of Schedule 4 of the Abel Coal Project Approval and Section 3 of the Statement of Commitments contained within the Abel Underground Mine Part 3A Environmental Assessment (Donaldson Coal 2006).

The objectives of the INMP are to:

- Ensure contributed cumulative noise emissions from the mining operations comply with the Industrial Noise Policy (INP) recommended noise levels.
- Identify potential noise sources and their relative contribution to noise impacts from the development.
- Outline the methodologies to be used, including justification for monitoring intervals, weather conditions, seasonal variations, monitoring locations, periods and times of measurements, including the means for determining the noise levels emitted by the development.

The INMP is to encompass the requirements of the noise monitoring programs for the Donaldson, Abel, Tasman and Bloomfield mines into a single integrated noise monitoring program and reporting for all four (4) mines in the area. The Environmental Management Strategy (EMS) defines the roles and responsibilities of each respective mining operation.

It is intended that this INMP be reviewed and finalised once the Bloomfield EA has been completed and approval has been granted.



2 POTENTIAL NOISE IMPACTS AND MAJOR NOISE SOURCES

2.1 Key Noise Monitoring Locations

The nearest potentially affected residential areas beyond the boundaries of the mining operations are shown in **Appendix A**. The key monitoring locations representative of the surrounding receivers, and identified in the respective Approvals for the operations, are to be used for evaluating and assessing noise emissions from mining operations. **Table 1** presents the receiver identifier and location together with the proposed monitoring procedure described in **Section 3**.

Table 1 Nearest Potentially Affected Receiver Locations Surrounding Abel Coal Mine

Receiver Identifier	Receiver Location	Respective Focus Operation
A	Beresfield Weakleys Drive	Donaldson
B	Beresfield Yarram Avenue	Donaldson
C	Ebenezer Park	Donaldson
D	Black Hill School	Donaldson, Abel
E	Black Hill Browns Road	Donaldson, Abel
F	Black Hill John Renshaw Drive	Donaldson, Abel
G	Buchanan	Bloomfield
H	Louth Park	Bloomfield
I	Ashtonfield	Bloomfield
J	Thornton	Bloomfield
K	Catholic Diocese of Maitland, formerly Barter Enterprises,	Donaldson, Abel
L	Kilshanny Ave, Ashtonfield	Bloomfield
M	Boundary Rd, West Wallsend	Tasman
N	George Booth Drive, Seahampton	Tasman
TBA	TBA – pending Bloomfield EA	Bloomfield
TBA	TBA – pending Bloomfield EA	Bloomfield



3 NOISE MONITORING PROCEDURES

3.1 General Requirements

The noise measurement procedures employed throughout the monitoring program shall be guided by the requirements of AS 1055-1997 “*Acoustics - Description and Measurement of Environmental Noise*” and the NSW Industrial Noise Policy.

Noise monitoring should be conducted initially on a quarterly basis and consist of continuous unattended and operator attended noise monitoring. The frequency of monitoring will be reviewed after the first 12 months of operation to determine future monitoring requirements.

Noise monitoring will be conducted in accordance with the NMP for each respective operation. The NMP for each operation are contained in **Appendix B** to **Appendix D**.

3.2 Operator-Attended Noise Surveys

Operator - attended noise measurements shall be conducted at Locations A, F, G, K and L plus 2 variable locations depending upon mining operations (to be finalised upon the approval of Bloomfield EA) to quantify and characterise the maximum (L_{Amax}), the energy equivalent (L_{Aeq}), and background (L_{A90}) noise levels from ambient noise sources and mining operations over a 15 minute measurement period.

Tasman amenity noise levels will be monitored at Locations M and N and amenity noise levels will be assessed in accordance with the short term monitoring methodology outlined in Appendix B2 of the INP.

The operator shall quantify noise emissions and estimate the $L_{Aeq(Period)}$ noise contribution from each of the mining operations for the day, evening and night time periods, as well as the overall level of ambient noise.

During attended monitoring, digital recordings will be conducted to allow for additional post analysis of the mine noise levels and source identification.

3.3 Unattended Continuous Noise Logging

In order to supplement the operator-attended measurements, unattended continuous real time noise monitoring shall be conducted at Locations A, F, G, K and L for a period of 7 days per quarter, to quantify overall ambient noise amenity levels resulting from mining, and processing emissions and other environmental noise sources. Data from unattended continuous noise logging will allow trends to be identified in ambient noise levels surrounding the mining operations and the assessment of cumulative noise impacts from all mining related noise sources in the area.

The monitoring locations chosen should be representative of noise emissions from mining operations and coal processing in order to determine compliance with the approval conditions and/or allow the contributed noise level to be calculated at the nominated assessment locations.

3.4 Site Noise Level Audits

As part of the noise management strategy, the noise monitoring program will conduct regular (annual) noise surveillance measurements of acoustically significant plant and equipment, to ensure that they remain within the specified compliance levels.



4 INSTRUMENTATION AND MEASUREMENT PARAMETERS

4.1 Operator-Attended Surveys and Unattended Logging

All acoustic instrumentation employed throughout the monitoring program shall meet with the requirements of AS 1259.2-1990, "*Sound Level Meters*".

Portable sound level meters used for operator attended noise monitoring should be capable of conducting real time third octave analysis.

Noise loggers shall be programmed to continuously record statistical noise level indices in 15 minute intervals which may include the LA_{max}, LA₁, LA₅, LA₁₀, LA₉₀, LA₉₉, LA_{min} and the LA_{eq}.

Instrument calibration shall be checked before and after each measurement survey, with the variation in calibrated levels not exceeding ± 0.5 dBA.

4.2 Meteorological Parameters

All noise measurements shall be accompanied by both qualitative description (including cloud cover) and quantitative measurements of prevailing local weather conditions throughout the survey period.

Meteorological measurements shall be guided by the requirements of AS 2923-1987 "*Ambient Air-Guide for Measurements of Horizontal Wind for Air Quality Applications*" and the DECC. The automatic weather station situated on the Donaldson mine site is programmed to continuously record the meteorological parameters as shown in **Table 2**.

Table 2 Meteorological Measurement Parameters

Measured Parameter	Unit	Sample Interval
Mean wind speed	m/s	15 minute
Mean wind direction	Degrees	15 minute
Aggregate rainfall	mm	15 minute
Mean air temperature	C°	15 minute

4.3 Plant and Equipment Observations and Log

During the attended noise measurements, the operator shall record any significant mine generated noise sources (ie haul trucks, dozers, etc). In addition, the operator shall obtain copies of the relevant fixed plant and mobile equipment mining operating shift logs to be included in the noise monitoring report.



5 COMPLIANCE MODELLING METHODOLOGY

A computer noise model was developed as part of the noise impact assessment for each operation. The computer model incorporated the significant noise sources and their design sound power levels associated with the proposed development and the surrounding terrain, aspects of the built environment and nearby receiver areas.

The computer model was prepared using RTA Software's Environmental Noise Model (ENM for Windows, Version 3.06), a commercial software system developed in conjunction with the NSW Department of Environment and Climate Change (DECC, formerly EPA). The acoustical algorithms utilised by this software have been endorsed by the Australian and New Zealand Environment and Conservation Council (ANZECC) and all State Environmental Authorities throughout Australia as representing one of the most appropriate predictive methodologies currently available.

As part of the noise monitoring program, on a quarterly basis, a compliance noise model will be maintained containing all significant noise sources on the sites during the noise monitoring period. The purpose is to predict the contributed noise level from the operation, which can then be compared and calibrated to the actual measured (operator- attended), contributed noise level.

Additionally, the compliance noise model will allow the determination of compliance with criteria at locations where direct noise measurements have not been conducted or where noise contribution cannot be measured or detected, for example where background noise levels are higher than the consent criteria.

This will assist in developing a calibrated noise model for site which will allow an accurate forecast of any future development or significant events that may occur on the site.



6 DATA ANALYSIS

6.1 Determining Compliance

6.1.1 Operator - attended Noise Survey Results

The $L_{Aeq(Period)}$ cumulative noise level contributions from the mining operations as well as the overall ambient noise levels together with the weather and mine operating conditions shall be reported on a quarterly basis as outlined in the respective NMP for each operation.

The overall cumulative noise emissions from the four (4) mining operations shall be evaluated and assessed against the recommended noise levels as per Table 2.2 of the NSW INP.

Compliance may be determined by:

- direct measurement of the consent criteria - $L_{Aeq(Period)}$;
- operator estimated $L_{Aeq(Period)}$ contribution;
- by calculation from near field measurements;
- from post analysis of audio recordings;
- by measurement at a representative location;
- predictions from the compliance noise model; or
- a combination of any or all the methods shown.

6.1.2 Unattended Continuous Noise Logging

The unattended ambient noise logger data from each monitoring location, together with the weather shall be presented graphically on a daily basis and presented in the noise monitoring report.

It should be noted that the ambient noise levels do not necessarily reflect the contributed level of noise emissions from mining operations. The ambient noise level data quantifies the overall noise level at a given location independent of its source or character. The ambient noise monitoring data will provide indications of the cumulative noise emissions from all industrial noise sources and amenity levels.

Prior to further analysis, the ambient noise level data from each monitoring location which correlate with periods of unstable weather (ie rainfall greater than 0.5 mm or wind speed greater than 5 m/s) shall be discarded.

6.1.3 Noise Compliance Model

The noise compliance model output for each respective mining operation will provide predicted noise levels from the current operational scenario at all relevant assessment locations, which can then be compared to the measured noise levels and estimated mine contribution levels.

Additionally, the model output can be integrated into similar models for the other operations for the production of cumulative ($L_{Aeq(Period)}$) noise contours.

7 REPORTING

7.1 Noise Monitoring Report

All routine monitoring results will be documented and reported initially on a quarterly basis.



Quarterly reports should consist of the following information.

- Summary of all attended and unattended noise monitoring results
- Predicted noise levels at each assessment location from the compliance noise model
- Measured/ calculated and/or operator estimated mine $L_{Aeq}(\text{Period})$ contributed noise levels for each monitoring location
- Details of any complaints relating to noise and their state of resolution

7.2 Reporting Non-compliances

In the event of a potential exceedance of the relevant noise emission criteria, the respective operations' Environmental Officer shall be promptly informed of the location, the margin of exceedance and the source of emission, if it has been identified. The noise, weather and relevant operating data shall be documented and forwarded to the respective Environmental Officer so that the matter can be investigated and appropriate actions undertaken accordingly.

Additional noise measurement methods such as near field monitoring or unattended directional noise monitoring may be utilised to investigate noise emissions in relation to noise complaints, or to determine compliance with the approval conditions where potential non-compliances have been measured or are difficult to quantify from operator-attended or unattended noise measurements.



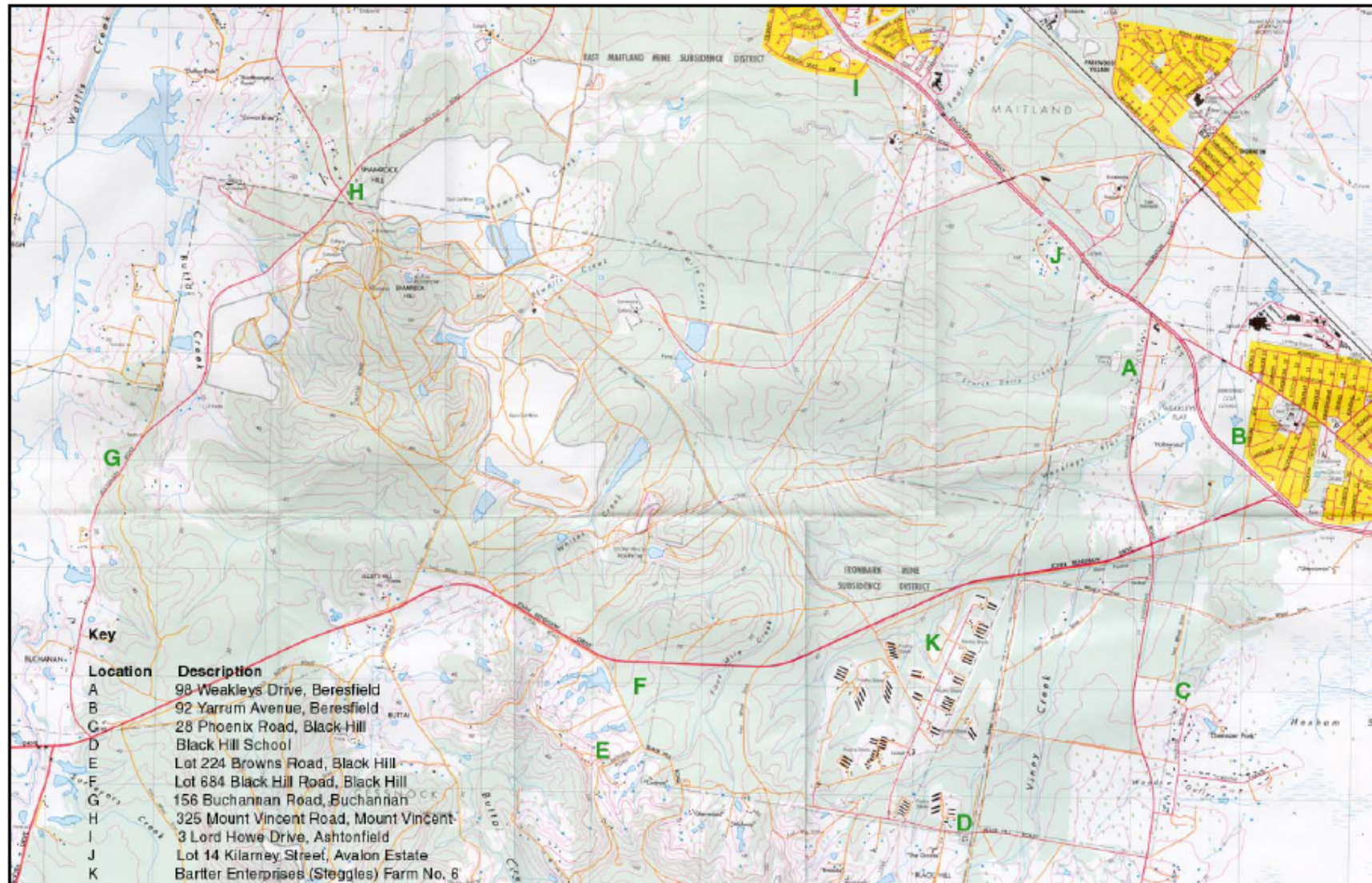
8 COMMUNITY INFORMATION & COMPLAINTS

Each respective NMP addresses the handling of complaints, however, in the event of a complaint, additional noise monitoring may be required to be undertaken. Depending on the type of complaint, location, several measurement methods and techniques can be utilised to identify the noise source causing the complaint. Such methods may be:

- Operator attended measurement at the affected location combined with audio recordings or at an alternate representative location.
- Unattended noise monitoring
- Real-time noise monitoring combined with audio recordings
- by calculation from near field measurements;
- a combination of any or all the methods shown.

Appendix A – Location Map

Report 30-1409-R3



Appendix B – Donaldson Mine Noise Monitoring Plan



HEGGIES

A U S T R A L I A

REPORT 30-1343-R4

Revision 0

Donaldson Mine Noise Monitoring Program

PREPARED FOR

**Donaldson Coal Pty Ltd
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16 MARCH 2006



Donaldson Mine Noise Monitoring Program

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Appendix A Location Map

Appendix B Example of Unattended Continuous Noise Monitoring



1 INTRODUCTION

Heggies Australia Pty Ltd (Heggies) was engaged to prepare an operational Noise Monitoring Plan in accordance with the amended (26 August 2005) development consent (DA 98/01173, dated 13 February 1998, lodged with Maitland City Council and DA 118/698/22, dated 19 February 1998, lodged with Cessnock City Council) granted by the Minister for Urban Affairs and Planning for the Donaldson Coal Mine.

The objectives of the mine Noise Monitoring Plan are as follows:

- Determine compliance with the conditions of the Minister's consent, specifically Conditions 15 and 16 of Schedule 2.
- Identify potential noise sources and their relative contribution to noise impacts from the development, including rail noise impacts.
- Specify appropriate intervals for noise monitoring to evaluate, assess and report the LA10(15minute) noise emission levels due to normal operations of the mine under prevailing weather conditions, or as otherwise determined by the Department of Environment and Conservation (DEC).
- Outline the methodologies to be used, including justification for monitoring intervals, weather conditions, seasonal variations, selecting locations, periods and times of measurements, the design of any noise modelling or other studies, including the means for determining the noise levels emitted by the development.



2 POTENTIAL NOISE IMPACTS AND MAJOR NOISE SOURCES

2.1 Noise Sources

In order to minimise noise impacts from the various items of plant and equipment, particularly during night-time operations, the noise levels of the major items of plant and equipment will be monitored before they are put into use. No item of plant and equipment should emit sound power levels which exceed the limits set out in the Donaldson Mine Construction, Transportation and Operations Noise Management Plan. All sound power measurement procedures of the plant and equipment shall be guided by the requirements of AS 2012-1977 "*Method for Measurement of Airborne Noise from Agricultural Tractors and Earthmoving Machinery*", AS 2012.1-1990 "*Acoustics - Measurement of Airborne Noise Emitted by Earthmoving Machinery and Exterior Noise*", and ISO 9614-2:1996 to determine stationary and dynamic (operating) sound power levels.

2.2 Key Noise Monitoring Locations

The nearest potentially affected residential areas beyond the proposed Donaldson Coal Mine boundary are shown in **Appendix A**. Ten Key Monitoring Locations representative of the surrounding noise environment have been selected as reference locations and to form the basis for evaluating and assessing noise emissions from mining operations. **Table 1** presents the receiver identifier and location together with the proposed monitoring procedure described in **Section 3**.

Table 1 Nearest Potentially Affected Receiver Locations Surrounding Donaldson Mine

Receiver Identifier	Receiver Location
A	Beresfield Weak leys Drive
B	Beresfield Yarram Avenue
C	Ebenezer Park
D	Black Hill School
E	Black Hill Browns Road
F	Black Hill John Renshaw Drive
G	Buchanan
H	Louth Park
I	Ashtonfield
J	Thornton
K	Catholic Diocese of Maitland, formerly Barter Enterprises,



3 NOISE MONITORING PROCEDURES

3.1 General Requirements

The noise measurement procedures employed throughout the monitoring programme shall be guided by the requirements of AS 1055-1997 “Acoustics - Description and Measurement of Environmental Noise” and the Environmental Noise Control Manual (1994).

Operator-attended or unattended noise measurements will be conducted at Location A and the three (3) potentially most affected receiver locations, relevant to the mining operations at the time of monitoring.

3.2 Operator-Attended Noise Surveys

Operator-attended noise measurements shall be conducted at Location A and the three (3) potentially most affected receiver locations in order to quantify noise emissions and estimate the LA10 noise contribution from mining, rail loading and processing operations as well as the overall level of ambient noise.

The operator shall quantify and characterise the maximum (L_{Amax}), average maximum (LA_{10}) and the energy equivalent (L_{Aeq}) intrusive noise level from ambient noise sources and mining operations over a 15 minute measurement period.

3.3 Unattended Continuous Noise Logging

In order to supplement the operator-attended measurements, unattended continuous noise logging shall be conducted at selected locations to quantify overall ambient noise amenity levels resulting from mining, rail loading and processing emissions and other environmental noise sources. Data from unattended continuous noise logging will allow trends to be identified in ambient noise levels surrounding the mine.

3.4 Monitoring Locations and Intervals

Operator-attended noise measurements shall be monitored as a minimum one day per calendar quarter and at the commencement of any significant operational event (eg bund wall construction) at Location A (Weak leys Drive, Beresfield) and three (3) additional receiver location(s) of the remaining Key Monitoring Locations listed in **Table 1**, dependant on current mining operations.. Operator-attended noise measurements shall be carried out during day, evening and night-time periods.

Unattended noise logging shall be carried out on a quarterly basis using Location A (Weak leys Drive, Beresfield) as a reference position, being the closest most affected residence to the mining operations. Three (3) additional noise loggers will be deployed at the most affected of the remaining Key Monitoring Locations listed in **Table 1**.

The additional three (3) monitoring locations chosen should be representative of noise emissions from mining operations in order to determine compliance with Condition 15 (ie for all locations). For those locations where compliance cannot be determined from measurements at the four (4) locations, attended monitoring will be conducted at those locations in order to determine compliance.



4 INSTRUMENTATION AND MEASUREMENT PARAMETERS

4.1 Operator-Attended Surveys and Unattended Logging

All acoustic instrumentation employed throughout the monitoring programme has been designed to comply with the requirements of AS 1259.2-1990, “*Sound Level Meters*” and carries current NATA or manufacturer calibration certificates. All instrumentation shall be programmed to record continuously statistical noise level indices in 15 minute intervals which may include the L_{Amax}, L_{A1}, L_{A5}, L_{A10}, L_{A90}, L_{A99}, L_{Amin} and the L_{Aeq}.

The statistical noise exceedance levels (LAN) are the levels exceeded for N% of the 15 minute interval. The L_{A90} represents the level exceeded for 90% of the interval period and is referred to as the average minimum or background noise level. The L_{A10} is the level exceeded for 10% of the time and is usually referred to as the average maximum noise level. The L_{Aeq} is the equivalent continuous sound pressure level and represents the steady sound level which is equal in energy to the fluctuating level over the interval period. The L_{Amax} is the maximum noise level recorded over the interval.

Instrument calibration shall be checked before and after each measurement survey, with the variation in calibrated levels not exceeding ± 0.5 dBA.

4.2 Weather Monitoring Instrumentation

All noise measurements shall be accompanied by both qualitative description (including cloud cover) and quantitative measurements of prevailing local weather conditions throughout the survey period.

Meteorological measurements shall be guided by the requirements of AS 2923-1987 “*Ambient Air-Guide for Measurements of Horizontal Wind for Air Quality Applications*” and the DEC. The automatic weather station situated on the Donaldson site will be programmed to continuously record the meteorological parameters as shown in **Table 2**.

Table 2 Meteorological Measurement Parameters

Measured Parameter	Unit	Sample Interval
Mean wind speed	m/s	15 minute
Mean wind direction	Degrees	15 minute
Aggregate rainfall	mm	15 minute
Mean air temperature	°C	15 minute

4.3 Plant and Equipment Observations and Log

During the attended noise measurements, the operator shall record any significant mine generated noise sources (ie haul trucks, dozers, etc). In addition, the operator shall obtain copies of the relevant fixed plant and mobile equipment mining operating shift logs to be included in the quarterly noise monitoring report.



5 DATA PRESENTATION AND REPORTING

5.1 Operator-attended Noise Survey Results

The LA_{10(15minute)} noise level contributions from mining operations as well as the overall ambient noise levels together with the weather and mine operating conditions shall be reported on a quarterly basis.

The contributed noise emissions from mining operations shall be evaluated and assessed against the noise level criteria given in Development Consent. Compliance may be determined by:

1. direct measurement of the consent criteria - LA_{10(15minute)};
2. operator estimated LA_{10(15minute)} contribution;
3. by calculation from near field measurements;
4. by measurement at a representative location; or
5. a combination of all the methods 1 to 4 shown.

In the event of an exceedance of the relevant noise emission criteria the Donaldson Environmental Officer shall be promptly informed of the location, the margin of exceedance and the source of emission. The noise, weather and plant operating data shall be documented and forwarded to the Environmental Officer so that an appropriate response can be made.

Additional noise measurement methods such as near field monitoring or unattended directional noise monitoring may be utilised to investigate noise emissions in relation to noise complaints, or to determine compliance with the consent conditions where potential non-compliances have been measured or are difficult to quantify from operator-attended or unattended noise measurements.

In addition, all routine monitoring results will be documented and reported six-monthly. This information is also included in the Annual Environmental Management Report (AEMR) which is sent to the relevant authorities as listed in Condition 117 for the life of the mine.

5.2 Unattended Continuous Noise Logging

The unattended ambient noise logger data from each monitoring location, together with the weather and mine operating conditions shall be presented graphically on a daily basis. A sample graphical presentation is attached as **Appendix B**.

It should be noted that the ambient noise levels do not necessarily reflect the contributed level of noise emissions from mining operations. The ambient noise level data quantifies the overall noise level at a given location independent of its source or character.

Prior to further analysis, the ambient noise level data from each monitoring location which correlate with periods of unstable weather (ie rainfall greater than 0.5 mm or wind speed greater than 5 m/s) shall be discarded. The remaining ambient noise level data shall be processed using an acceptable statistical technique and reported on six-monthly and an annual basis in accordance with Development Consent requirements.



6 COMMUNITY INFORMATION AND COMPLAINTS

Donaldson Mine will ensure that the local community is kept informed (by way of local newsletters, leaflets, newspaper advertisements and community notice boards as appropriate) of the progress of the project, including prior notice of:

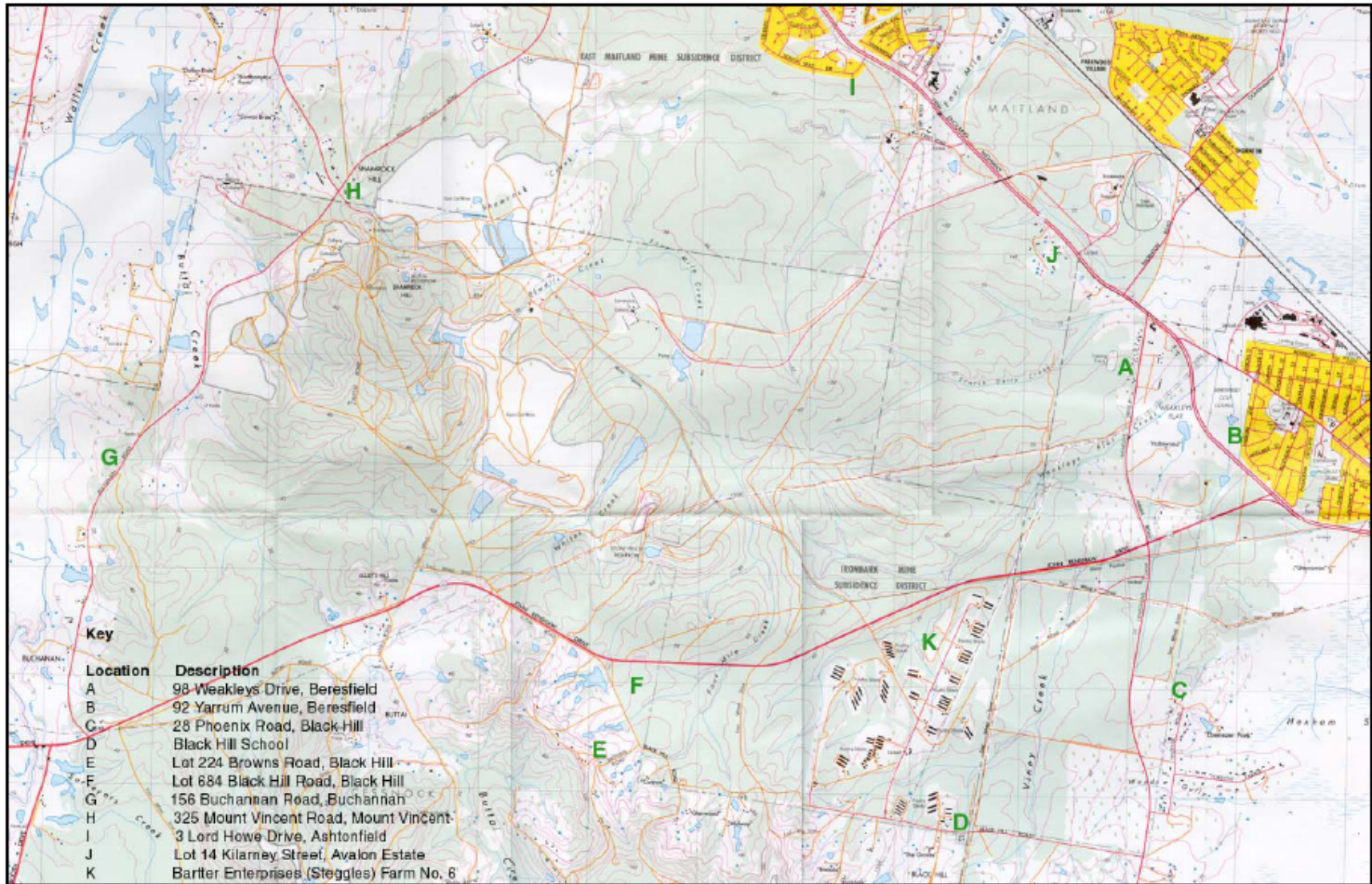
- The nature of works proposed for the forthcoming period.
- Hours of operation.
- A 24 hour contact telephone number.
- Proposed blasting programme; and any changes to the programme; work required outside the normal working hours; and individuals' rights under the Conditions of the Development Consent (such as the rights for acquisition or independent monitoring) and mechanisms proposed to be used to safeguard the community and individual properties against adverse impacts from the development.

Donaldson Mine will also ensure that the AEMR, minutes from Community Consultative Committee meetings and results and interpretation of monitoring and/or modelling required by the Development Consent are placed on the Internet for public information within 14 days after they are available. The Internet address is to be made publicly available.

In terms of complaints, Donaldson Mine will record details of all complaints received in an up-to-date log book and ensure that a response is provided to the complainant within 24 hours.

If Donaldson Mine's response does not address the complaint to the satisfaction of the complainant within six weeks, Donaldson Mine will refer the matter to an independent mediator (approved by the Director-General) as outlined by the procedure in Conditions 21, 22 and 23, and bear the costs of such mediation. Donaldson Mine will then immediately carry out such works as agreed through the mediation process.

Further, Donaldson Mine will make available a report on complaints received every three months to the Community Consultative Committee and to relevant government agencies and the Councils upon request and include a summary in the Ames. The report shall include the number of complaints that have been resolved with or without mediation.



Appendix A

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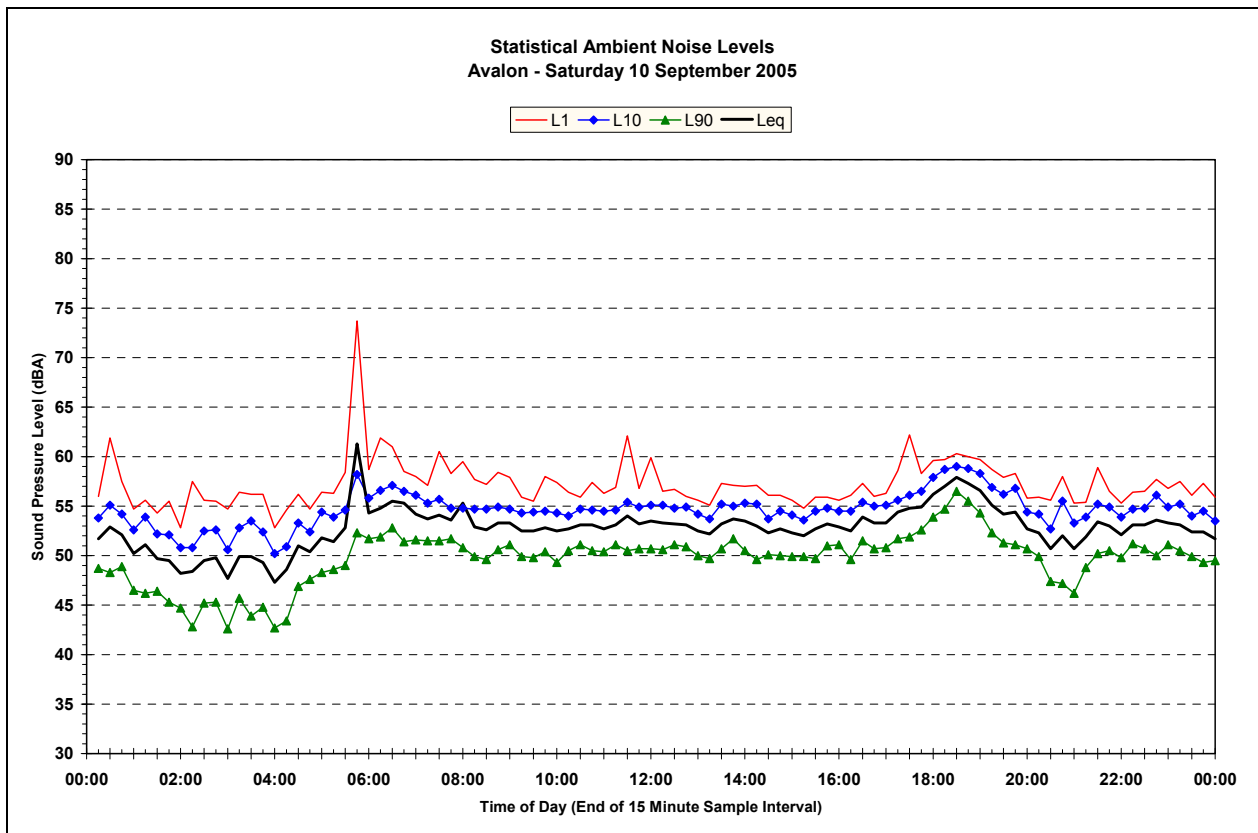
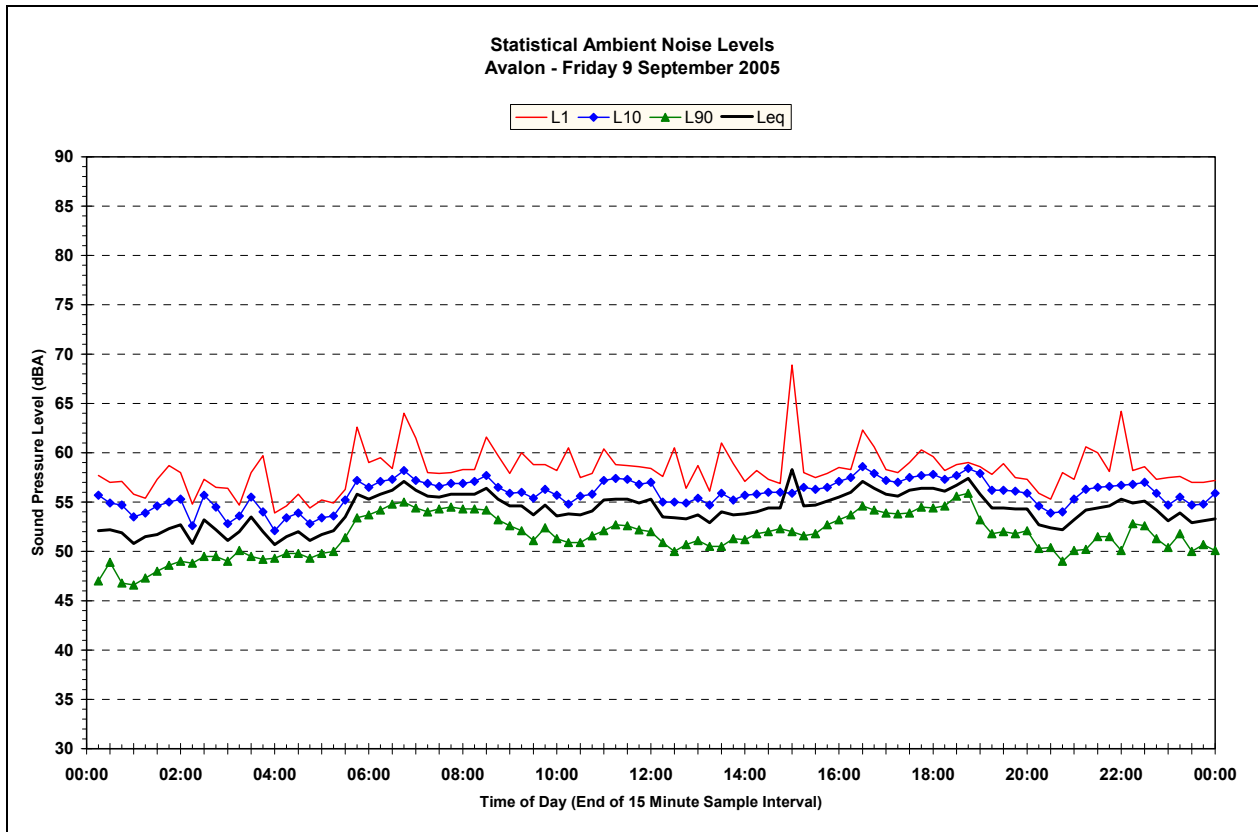
Noise Monitoring Locations

Appendix B

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Example of Unattended Continuous Noise Monitoring



Appendix C – Abel Mine Noise Monitoring Plan



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Revision 0

Abel Mine Project Noise Monitoring Program

PREPARED FOR

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24 SEPTEMBER 2007

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DOCUMENT CONTROL

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Appendix A Location Map



1 INTRODUCTION

Heggies Pty Ltd (Heggies) has been engaged to prepare an operational Noise Monitoring Program (NMP) for the Abel Coal Project in accordance with project approval (Application No. 05_0136) granted by the Minister for Planning for the Abel Coal Mine Project.

The objectives of the NMP are to fulfil the requirement of Schedule 4 of the Abel Coal Project Approval and Section 3 of the Statement of Commitments contained within the Abel Underground Mine Part #A Environmental Assessment (Donaldson Coal 2006).

The objectives of the NMP are to:

- Ensure compliance with the project approval conditions can be achieved.
- Identify potential noise sources and their relative contribution to noise impacts from the development.
- Outline the methodologies to be used, including justification for monitoring intervals, weather conditions, seasonal variations, monitoring locations, periods and times of measurements, the design of any noise modelling or other studies, including the means for determining the noise levels emitted by the development.

The Abel NMP will be integrated with the noise monitoring programs for the Tasman, Donaldson and Bloomfield mines into a single integrated Noise Monitoring Program for all four (4) mines in the area.



2 PROJECT APPROVAL

The relevant conditions relating to noise from the Abel Coal Project approval are reproduced below.

Schedule 4

NOISE

Note: These conditions should be read in conjunction with section 3 of the Statement of Commitments.

Noise Limits

23 *The Proponent shall ensure that the noise generated by the Project does not exceed at any privately-owned residence the levels set out in the following table for the monitoring location nearest that residence.*

Table 1: Noise limits dB(A)

Day	Evening	Night		Location and Locality*
		L_{Aeq}(15 min)	L_{A1}(1 min)	
50	48	41	51	A Weakleys Dr, Beresfield
50	48	41	51	B Yarrum Rd, Beresfield
43	44	38	50	C Phoenix Rd, Black Hill
41	40	36	46	D Black Hill School
41	40	36	46	E Brown Rd, Black Hill
41	40	36	46	F Black Hill Rd, Black Hill
43	41	36	46	G Buchanan Rd, Buchanan
43	41	36	46	H Mt Vincent Rd, Louth Park
44	46	38	48	I Lord Howe Dr, Ashtonfield
49	47	40	50	J Kilarney St, Avalon Estate
41	40	37	46	K Catholic Diocese (Former Barter) K1, K2, K3
46	46	40	53	L Kilshanny Ave, Ashtonfield

Notes:

- *To determine compliance with the L_{Aeq}(15 minute) limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 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 the 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_{A1}(1 minute) limit, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*
- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Noise Policy.*
- *These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.*

* Revised to list alphabetically



Noise Monitoring

24. The Proponent shall prepare and implement a Noise Monitoring Program for the project to the satisfaction of the Director-General. This program must:

- (a) be submitted to the Director-General for approval within 6 months of this approval;
- (b) be prepared in consultation with the DECC; and
- (c) use a combination of attended and unattended monitoring measures to monitor the performance of the project.

2.1 Statement of Commitments

3.3 Monitoring

Within 6 months of this approval being granted a Noise Monitoring Program shall be prepared and implemented for the Abel Underground Mine and the Bloomfield CHPP, to the satisfaction of the Director-General. The Noise Monitoring Program shall include a combination of real-time and supplementary attended monitoring measures, and a noise monitoring protocol for evaluating compliance with the noise environmental assessment. This plan will be integrated with the monitoring plans for the Tasman, Donaldson and Bloomfield Mines to provide a single integrated Noise Monitoring Program for all 4 mines.



3 POTENTIAL NOISE IMPACTS AND MAJOR NOISE SOURCES

3.1 Noise Sources

In order to minimise noise impacts from the various items of plant and equipment, particularly during night-time operations, the noise levels of the major items of plant and equipment will be monitored before they are installed. The sound power level of plant and equipment should not be greater than the modelled design sound power levels set out in the Abel Mine Environmental Assessment Report (Heggies Report 30-1409R1). If the sound power level of equipment is determined to be higher than assumed in the assessment prediction of the noise impact of this equipment may be required. Further mitigation of the equipment may be required before installation if the prediction results in an exceedance of the approval conditions.

All sound power measurement procedures of the plant and equipment shall be guided by the requirements of AS 2012-1977 “*Method for Measurement of Airborne Noise from Agricultural Tractors and Earthmoving Machinery*”, AS 2012.1-1990 “*Acoustics - Measurement of Airborne Noise Emitted by Earthmoving Machinery and Exterior Noise*”, and ISO 9614-2:1996 to determine stationary and dynamic (operating) sound power levels.

3.2 Key Noise Monitoring Locations

The nearest potentially affected residential areas beyond the proposed Abel Coal Mine boundary are shown in **Appendix A**. Twelve (12) key monitoring locations representative of the surrounding receivers, and identified in the Approval for the site, are to be used for evaluating and assessing noise emissions from mining operations. **Table 1** presents the receiver identifier and location together with the proposed monitoring procedure described in **Section 4**.

Table 1 Nearest Potentially Affected Receiver Locations Surrounding Abel Coal Mine

Receiver Identifier	Receiver Location
A	Beresfield Weakleys Drive
B	Beresfield Yarram Avenue
C	Ebenezer Park
D	Black Hill School
E	Black Hill Browns Road
F	Black Hill John Renshaw Drive
G	Buchanan
H	Louth Park
I	Ashtonfield
J	Thornton
K	Catholic Diocese of Maitland, formerly Bartter Enterprises,
L	Kilshanny Ave, Ashtonfield



4 NOISE MONITORING PROCEDURES

4.1 General Requirements

The noise measurement procedures employed throughout the monitoring program shall be guided by the requirements of AS 1055-1997 "*Acoustics - Description and Measurement of Environmental Noise*" and the NSW Industrial Noise Policy.

Noise monitoring should be conducted initially on a quarterly basis and consist of continuous unattended and operator attended noise monitoring. The frequency of monitoring will be reviewed after the first 12 months of operation to determine future monitoring requirements.

4.2 Operator-Attended Noise Surveys

Operator - attended noise measurements shall be conducted at the four (4) potentially most affected receiver locations relevant to the mining operations at the time of monitoring, in order to quantify noise emissions and estimate the LAeq noise contribution from the Abel Mine and the Bloomfield CHPP, as well as the overall level of ambient noise.

The operator shall quantify and characterise the maximum (LAmax), the energy equivalent (LAeq), and background (LA90) noise levels from ambient noise sources and mining operations over a 15 minute measurement period.

During attended monitoring, digital recordings will be conducted to allow for additional post analysis of the mine contributed LAeq(15minute) and LA1(1minute) noise levels and source identification.

4.3 Unattended Continuous Noise Logging

In order to supplement the operator-attended measurements, unattended continuous real time noise monitoring shall be conducted at the four (4) potentially most affected locations, relevant to the mining operations occurring at the time, for a period of 7 days per quarter, to quantify overall ambient noise amenity levels resulting from mining, and processing emissions and other environmental noise sources. Data from unattended continuous noise logging will allow trends to be identified in ambient noise levels surrounding the mine and the assessment of cumulative noise impacts from all mining related noise sources in the area.

The monitoring locations chosen should be representative of noise emissions from mining operations and coal processing in order to determine compliance with the approval conditions and/ or allow the contributed noise level to be calculated at the nominated assessment locations.

4.4 Site Noise Level Audits

As part of the noise management strategy, the noise monitoring program will conduct regular (annual) noise surveillance measurements of acoustically significant plant and equipment, to ensure that they remain within the specified compliance levels.



5 INSTRUMENTATION AND MEASUREMENT PARAMETERS

5.1 Operator-Attended Surveys and Unattended Logging

All acoustic instrumentation employed throughout the monitoring program shall meet with the requirements of AS 1259.2-1990, “*Sound Level Meters*”.

Portable sound level meters used for operator attended noise monitoring should be capable of conducting real time third octave analysis.

Noise loggers shall be programmed to continuously record statistical noise level indices in 15 minute intervals which may include the L_{Amax}, LA1, LA5, LA10, LA90, LA99, L_{Amin} and the LA_{eq}.

Instrument calibration shall be checked before and after each measurement survey, with the variation in calibrated levels not exceeding ± 0.5 dBA.

5.2 Meteorological Parameters

All noise measurements shall be accompanied by both qualitative description (including cloud cover) and quantitative measurements of prevailing local weather conditions throughout the survey period.

Meteorological measurements shall be guided by the requirements of AS 2923-1987 “*Ambient Air-Guide for Measurements of Horizontal Wind for Air Quality Applications*” and the DECC. The automatic weather station situated on the Donaldson mine site is programmed to continuously record the meteorological parameters as shown in **Table 2**.

Table 2 Meteorological Measurement Parameters

Measured Parameter	Unit	Sample Interval
Mean wind speed	m/s	15 minute
Mean wind direction	Degrees	15 minute
Aggregate rainfall	mm	15 minute
Mean air temperature	C°	15 minute

5.3 Plant and Equipment Observations and Log

During the attended noise measurements, the operator shall record any significant mine generated noise sources (ie haul trucks, dozers, etc). In addition, the operator shall obtain copies of the relevant fixed plant and mobile equipment mining operating shift logs to be included in the noise monitoring report.



6 COMPLIANCE MODELLING METHODOLOGY

A computer noise model was developed as part of the noise impact assessment for the Environmental Assessment (EA) to assess noise emissions from the proposed Abel coal mine. The computer model incorporated the significant noise sources and their design sound power levels associated with the proposed development and the surrounding terrain, aspects of the built environment and nearby receiver areas.

The computer model was prepared using RTA Software's Environmental Noise Model (ENM for Windows, Version 3.06), a commercial software system developed in conjunction with the NSW Department of Environment and Climate Change (DECC, formerly EPA). The acoustical algorithms utilised by this software have been endorsed by the Australian and New Zealand Environment and Conservation Council (ANZECC) and all State Environmental Authorities throughout Australia as representing one of the most appropriate predictive methodologies currently available.

As part of the noise monitoring program, a compliance noise model will be maintained containing all significant noise sources on site during the noise monitoring period. The purpose is to predict the contributed noise level from the operation, which can then be compared and calibrated to the actual measured (operator- attended), contributed noise level.

Additionally, the compliance noise model will allow the determination of compliance with criteria at locations where direct noise measurements have not been conducted or where noise contribution cannot be measured or detected, for example where background noise levels are higher than the consent criteria.

This will assist in developing a calibrated noise model for site which will allow an accurate forecast of any future development or significant events that may occur on the site.



7 DATA ANALYSIS

7.1 Determining Compliance

7.1.1 Operator - attended Noise Survey Results

The LAeq(15minute) noise level contributions from mining operations as well as the overall ambient noise levels together with the weather and mine operating conditions shall be reported on a quarterly basis.

The contributed noise emissions from mining operations shall be evaluated and assessed against the noise level criteria given in Development Consent. Compliance may be determined by:

- direct measurement of the consent criteria - LAeq(15minute);
- operator estimated LAeq(15minute) contribution;
- operator estimated LA1(1minute) contribution
- by calculation from near field measurements;
- from post analysis of audio recordings;
- by measurement at a representative location;
- predictions from the compliance noise model; or
- a combination of any or all the methods shown.

7.1.2 Unattended Continuous Noise Logging

The unattended ambient noise logger data from each monitoring location, together with the weather and mine operating conditions shall be presented graphically on a daily basis and presented in the noise monitoring report.

It should be noted that the ambient noise levels do not necessarily reflect the contributed level of noise emissions from mining operations. The ambient noise level data quantifies the overall noise level at a given location independent of its source or character. The ambient noise monitoring data will provide indications of the cumulative noise emissions from all industrial noise sources and amenity levels.

Prior to further analysis, the ambient noise level data from each monitoring location which correlate with periods of unstable weather (ie rainfall greater than 0.5 mm or wind speed greater than 5 m/s) shall be discarded.

7.1.3 Noise Compliance Model

The noise compliance model output will provide predicted noise levels from the current operational scenario at all relevant assessment locations, which can then be compared to the measured noise levels and estimated mine contribution levels.

Additionally, the model output can be integrated into similar models for the other operations for the production of cumulative noise contours.



8 REPORTING

8.1 Noise Monitoring Report

All routine monitoring results will be documented and reported initially on a quarterly basis. This information is also included in the Annual Environmental Management Report (AEMR) which is sent to the relevant authorities as listed in Schedule 5 Condition 4 of the project approval.

Quarterly reports should consist of the following information.

- Summary of all attended and unattended noise monitoring results
- Predicted noise levels at each assessment location from the compliance noise model
- Measured/ calculated and/or operator estimated Abel mine $L_{Aeq}(15\text{minute})$ contributed noise levels for each monitoring location
- Measured/ calculated and/or operator estimated Abel mine $L_{A1}(1\text{minute})$ contributed noise levels for each monitoring location
- Statement of compliance/ non-compliance
- Details of any complaints relating to noise and their state of resolution

8.2 Reporting Non-compliances

In the event of a potential exceedance of the relevant noise emission criteria the Abel Coal Mine Environmental Officer shall be promptly informed of the location, the margin of exceedance and the source of emission, if it has been identified. The noise, weather and plant operating data shall be documented and forwarded to the Environmental Officer so that the matter can be investigated and appropriate actions undertaken accordingly.

Additional noise measurement methods such as near field monitoring or unattended directional noise monitoring may be utilised to investigate noise emissions in relation to noise complaints, or to determine compliance with the approval conditions where potential non-compliances have been measured or are difficult to quantify from operator-attended or unattended noise measurements.



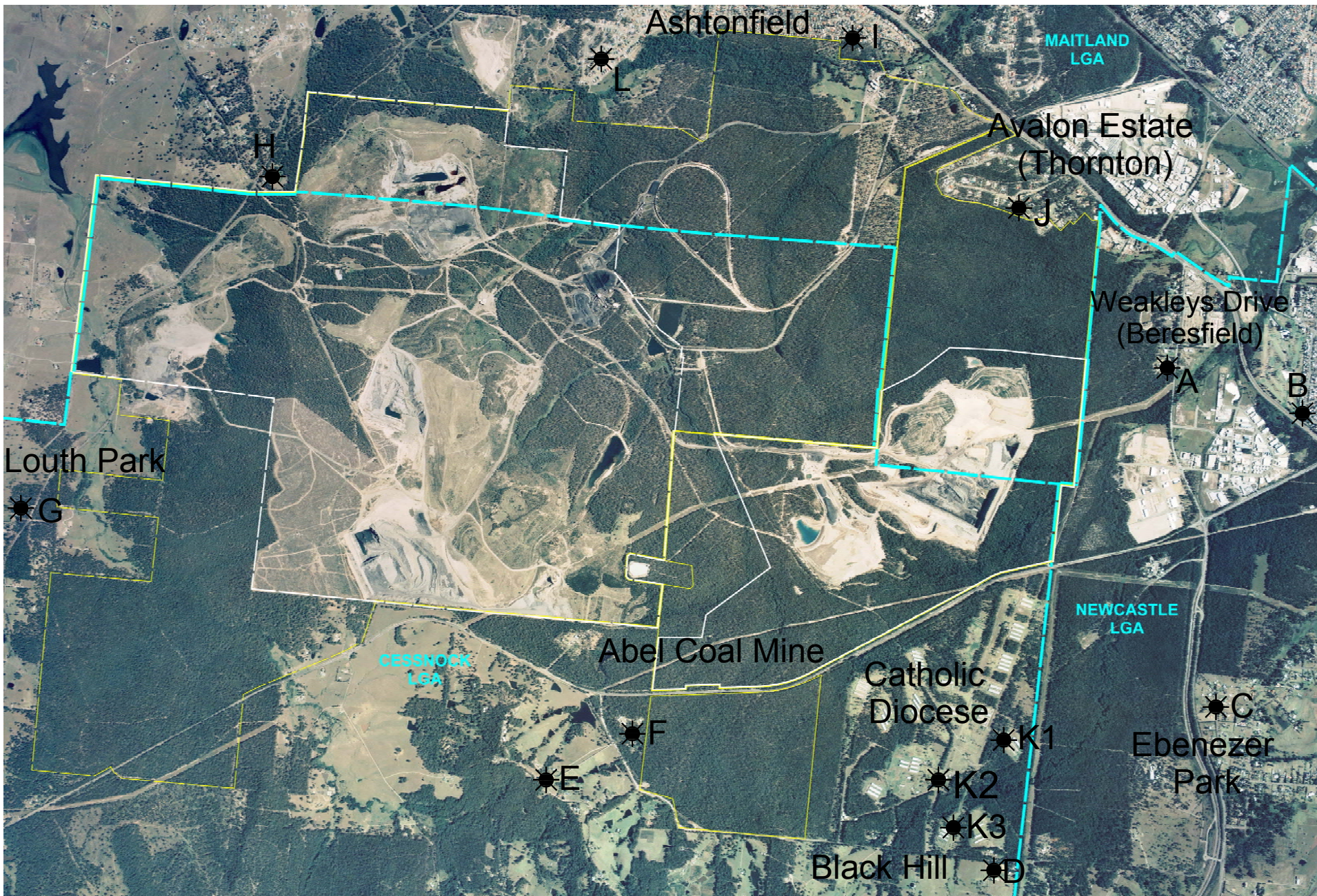
9 COMMUNITY INFORMATION AND COMPLAINTS

Abel Coal Mine will ensure that the local community is kept informed (by way of the Company website www.doncoal.com.au) of the progress of the project, including prior notice of:

- The nature of works proposed for the forthcoming period.
- Hours of operation.
- A 24 hour contact telephone number.

Abel Coal Mine will also ensure that the Annual Environmental Monitoring Report (AEMR), minutes from Community Consultative Committee meetings and results and interpretation of monitoring and/or modelling required by the Project Approval are made publicly available at the mine and on the mine's website.

In terms of complaints, Abel Mine will record details of all complaints received in an up-to-date log book and ensure that a response is provided to the complainant within 24 hours.



Appendix A
 Report 30-1409
 Location Map

☀ E - Noise Monitoring/Assessment Location



Appendix D – Bloomfield Mine Noise Monitoring Plan

Bloomfield Noise Monitoring Plan will be included once the Bloomfield EA has been completed and approval has been granted.