



**NEW HOPE**  
GROUP

## J.11 Noise and Vibration Management Plan





NEW HOPE  
GROUP

# NOISE AND VIBRATION MANAGEMENT PLAN

*New Acland Coal Mine  
Stage 3 Project*

JANUARY 2014



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# 1. Introduction

This report documents the Noise and Vibration Management Plan (NVMP) for New Acland Coal Pty Ltd (NAC) proposed New Acland Stage 3 Coal Mine Project – Revised Project (the revised Project).

NAC currently operates the existing New Acland coal mine (the Mine) which is an open cut coal mine on mining lease (ML) 50170 and ML 50216, under the approval of EA No. EPML00335713. The Mine has approval from the Department of Environment and Heritage Protection (DEHP) to produce up to 4.8 Million tonnes per annum (Mtpa) of product coal.

NAC is currently seeking environmental approvals for the revised Project which involves the continuation and extension of the Mine up to a maximum capacity of 7.5 Mtpa of product coal through the inclusion and progressive development of three new resource areas within mining lease application (MLA) 50232 – Manning Vale West, Manning Vale East and Willeroo.

The NVMP will be administered as a supporting document for the revised Project's future Plan of Operations.

## 1.1. Objectives

The objectives of the NVMP are to:

- comply with all regulatory requirements;
- identify major noise and vibration sources from the mining operations;
- minimise noise and vibration emissions to the maximum possible extent;
- provide a process for the investigation of complaints relating to noise and vibration in a timely manner and for derivation of measures that deal effectively with the causes of legitimate complaints;
- reduce the potential for exceedances relating to noise and vibration emissions;
- document proactive mitigation measures for each noise and vibration source;
- identify proposed noise and vibration monitoring locations, equipment and frequency for the Mine's monitoring program;
- document actions and responsibilities in the event of an exceedance of a noise and vibration trigger level or a legitimate complaint; and
- document reporting and management requirements for noise and vibration monitoring data.

## 1.2. Environmental Requirements and Obligations

Queensland legislation relevant to addressing the noise and vibration aspects of the revised Project:

- the *Environmental Protection Act 1994* (EP Act), and its subordinate legislation;

- the *Environmental Protection (Noise) Policy 2008* (EPP (Noise)).

In terms of site specific environmental approvals, the operation of the revised Project must comply with the conditions of its future Environmental Authority (EA).

### 1.3. Summary of Noise and Vibration Criteria

A summary of noise and vibration criteria assessed and recommended for management of noise for the revised Project are tabulated in Table 1-1.

**Table 1-1 Summary of Noise and Vibration Criteria**

Noise and vibration type	Criteria	Period	Levels dB(A)
Operational mining noise ( all noise sources)	EPP(Noise)	Daytime and evening	$L_{Aeq,adj,1\text{ hr}}$ 42
		Night time	$L_{Aeq,adj,1\text{ hr}}$ 37
Construction noise during daytime	Nil	Daytime	Nil
Blasting noise	Noise and vibration from blasting Guideline	Monday to Friday 9am-3pm, Saturday 9am-1pm**	115 db (Lin) peak for 9 out of any 10 consecutive blasts, regardless of the interval between blasts Any single blast must not exceed 120 db
Blasting vibration	Noise and vibration from blasting Guideline		5mm/s for 9 out of any 10 consecutive blasts Any single blast must not exceed 10mm/s
Rail Traffic Noise	Queensland Rail Code of Practice – Railway Noise Management	24 hours	$L_{Aeq}$ (24 hour) 65 $L_{Amax}$ 87
Road Traffic Noise	Main Roads Code of Practice - Road Traffic Noise Management	Between 6am and midnight	$L_{A10}$ (18hr) 68 dB(A)
Low Frequency Noise impact from mining operation	Draft Guideline – Assessment of low frequency noise	24 hours	$L_{eq}$ 55 (Lin)
			if $L_{eq}$ (Lin) is >55, dB(Lin) & dB(A) difference <15

(\*\* = All other times, Sundays and Public Holidays blasting is not permitted.)

## 1.4. Responsibilities

The key responsibilities of NAC and the New Hope Group (NHG) under the NVMP are defined in Table 1-2.

**Table 1-2 Responsibilities of NAC and NHG staff relating to the NVMP**

Role	Responsibilities
Mine Management	<ul style="list-style-type: none"> <li>■ Ensuring the Mine Environmental Team is adequately resourced to achieve the best possible environmental management at the Mine, including implementation and maintenance of the NVMP.</li> <li>■ Ensuring the Mine possesses an efficient and focussed complaints management procedure to properly manage legitimate complaints in a timely manner.</li> <li>■ Ensuring the Mine possess an adequate community consultation strategy.</li> <li>■ Ensuring the appropriate staff are available after hours to make as required critical management decisions around the Mine's activities based on noise monitoring, noise complaint receipt or other noise management related inputs.</li> </ul>
Drill and Blast Superintendent	<ul style="list-style-type: none"> <li>■ Ensure blasting is planned and managed within EA limits.</li> <li>■ Ensure compliance with site complaints handling procedure to ensure that complaints are investigated in a timely manner and as required the implementation of management measures to reduce the likelihood of similar complaints being generated in the future.</li> </ul>
Mining Superintendents	<ul style="list-style-type: none"> <li>■ Ensure mining is planned and managed within EA limits.</li> <li>■ Ensure that relevant complaints are investigated in a timely manner and as required the implementation of management measures to reduce the likelihood of similar complaints being generated in the future.</li> </ul>
CHPP Superintendent	<ul style="list-style-type: none"> <li>■ Ensure CHPP operations are planned and managed within EA limits.</li> <li>■ Ensure that relevant complaints are investigated in a timely manner and as required the implementation of management measures to reduce the likelihood of similar complaints being generated in the future.</li> </ul>
Maintenance Superintendent	<ul style="list-style-type: none"> <li>■ Ensure equipment is maintained appropriately               <ul style="list-style-type: none"> <li>+ Ensure that relevant complaints are investigated in a timely manner and as required the implementation of management measures to reduce the likelihood of similar complaints being generated in the future.</li> </ul> </li> </ul>
NHG Corporate Office Environmental Staff	<ul style="list-style-type: none"> <li>■ Provision of as required support to Mine management and the Mine Environmental Team to update management plans, implement new noise and vibration control measures and investigate significant noise and vibration complaints.</li> <li>■ Provision of as required support to Mine management and the Mine Environmental Team for significant regulatory and community matters.</li> </ul>

## 2. Background Information

This section presents background information from the revised Project's noise and vibration impact assessment that has been used to inform the development of the noise and vibration management strategy.

### 2.1. Mining Noise Sources

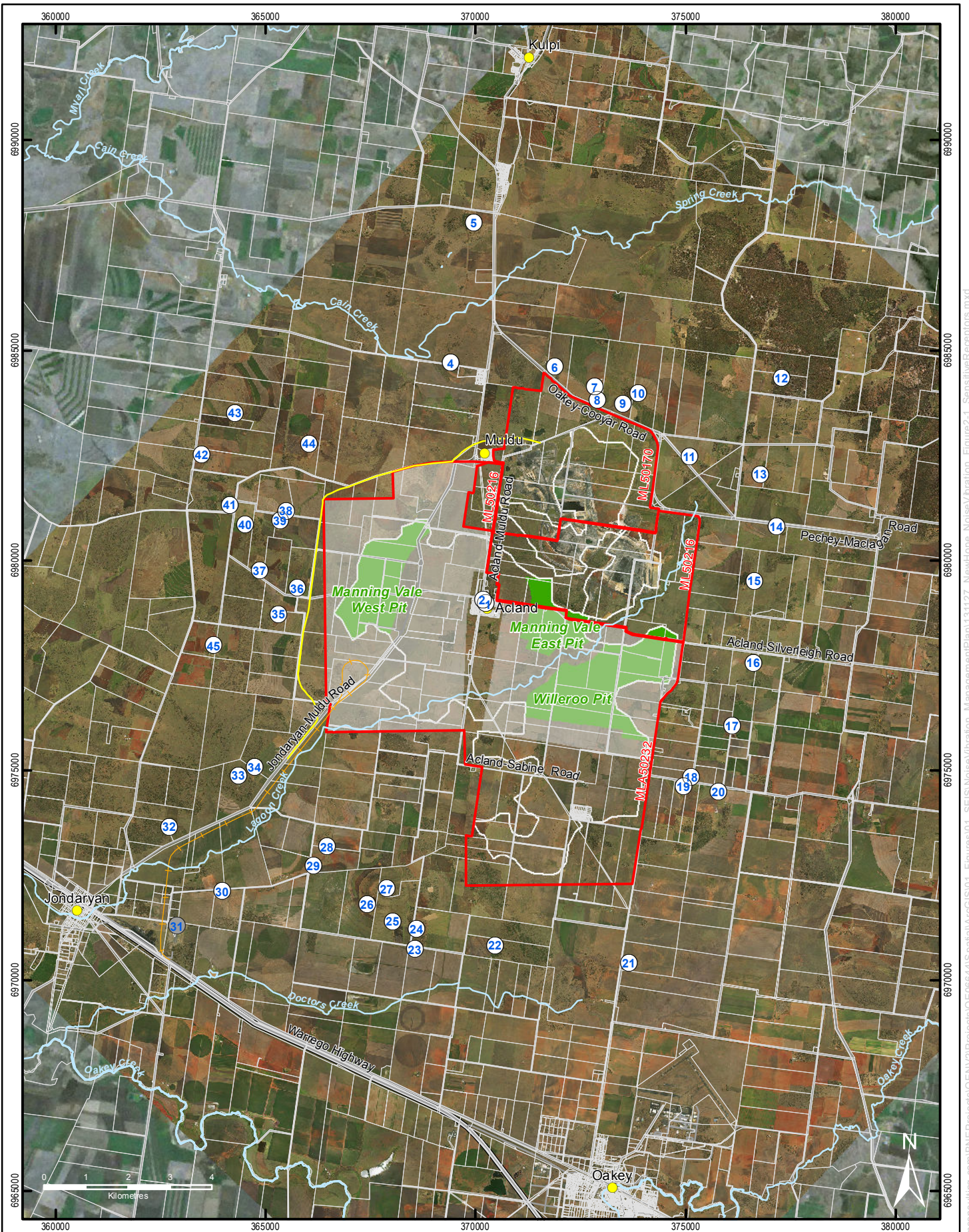
Noise attenuated excavators, track dozers, loaders and rear dump trucks will be utilised for the mining operations. The mining fleet incorporated in the noise model during the early, middle and final stages of the revised Project life and their associated sound power levels (SWL) are presented in Table 2-1.

**Table 2-1 Mining Equipment for the Revised Project and Typical Sound Power Levels**

Item	Quantity of equipment			Sound power level dB(A)
	Year 2019	Year 2023	Year 2029	
500 t Excavator	1	1	1	118
350 t Excavator	2	2	2	118
900 kW Loader	3	4	4	114
220 t Rear Dump Truck	7	7	7	112
180 t Rear Dump Truck	15	19	20	112
Side Tipping Truck	4	4	4	112
100 t Track Dozer	12	12	12	113
65 t Track Dozer	2	2	2	113
50 t Track Dozer	1	1	1	113
100 t Wheel Dozer	3	3	3	117
50 t Drilling Rig	2	2	2	118
140 kL Water Truck	1	1	1	115
55 kL Water Truck	2	2	2	115
400 kW Grader	2	2	2	110
220 kW Grader	2	2	2	110
CHPP	3	3	3	119
Conveyor system at MHF and between CHPP and MHF				78 per meter
Scraper at MHF	2	2	2	104
Reclaimer at MHF	1	1	1	109 including 5dB(A) impulsiveness correction

### 2.2. Sensitive receptors

Sensitive receptors are locations which have the potential to be impacted by noise and vibration from the revised Project. The nearest sensitive receptors to the revised Project are presented in Figure 2-1.



**LEGEND**

- Towns and Localities
- Sensitive Receptor - Residential
- Sensitive Receptor - Commercial
- Creeks
- Jondaryan-Muldu Road Diversion
- Casdastre
- Mining Tenements
- Proposed Extent of Surface Rights Area
- Stage 3 Pit Areas



**NEW ACLAND COAL MINE  
STAGE 3 PROJECT**

**Figure 2-1 - Sensitive Receptors**

Scale 1:120,000 on A4  
Projection: Australian Geodetic Datum - Zone 56 (AGD84)



### 2.3. Potential for Impacts

The noise and vibration impact of the revised Project has been assessed. A computer noise model was developed using SoundPLAN version 7.2 to predict the noise impact during different stages of the mining operations.

Modelling results show at noise sensitive receivers 1 and 2, the most dominant noise sources include the CHPP, excavators from Manning Vale East and West pits, rear dump trucks and side tipping trucks travelling to and from the train loading facility.

For the closest noise sensitive receivers located to the north of the revised Project site, the most dominant noise sources include CHPP, conveyors and loaders.

For the closest noise sensitive receivers located to the west of the revised Project site, the most dominant noise sources include excavators from Manning Vale West pit, CHPP, rear dump truck and side tipping trucks.

For the closest noise sensitive receivers located to the east of the revised Project site, the most dominant noise sources include excavators and rear dump truck.

The un-weighted noise levels from the revised Project's mining operation are predicted to comply with the low frequency noise criteria.

The airblast overpressure and vibration impacts from blasting can be managed to achieve acceptable levels at the revised Project's sensitive receivers.

Road and rail traffic noise impacts have been assessed and are considered acceptable.

### 3. Noise and Vibration Management Strategy

This section details the proposed approach to minimise potential noise and vibration impacts from the revised Project including:

- Noise and Vibration Mitigation Measures;
- Weather Forecasting System;
- Noise and Vibration Monitoring;
- Complaint Management;
- Reporting;
- Auditing;
- Buffer Zone Strategy; and
- Dispute Resolution.

#### 3.1. Noise and Vibration Mitigation Measures

The following mitigation measures are proposed by NAC as management commitments to reduce the revised Project's potential noise impact.

- NAC will establish a real-time noise monitoring network, which will be used in conjunction with a weather forecasting system and an adaptive management process, to proactively relocate, reduce or stop noisier mining operations and other noise sources.
- Based on ambient conditions (climate and the current mine plan) and feedback from the real-time noise monitoring (warning and alarm protocols), NAC may be required to modify (limit) or stop mining operations in the Manning Vale East pit during the night time period. This requirement is based on the noise assessment work completed for the revised Project's EIS.
- NAC will ensure noisier mining equipment such as excavators, track dozers, loaders and rear dump trucks are fully attenuated. This requirement is based on the noise assessment work completed for the revised Project's EIS.
- If a legitimate complaint is received and/or a noise issue is identified by investigation, where possible NAC will modify mining operations until a satisfactory solution for the noise issue is developed and implemented.
- Where possible, NAC will schedule noisier operations in-pit at night or during daylight hours only. For example, dumping of overburden and dozer activity on overburden dumps at or above ground surface may be restricted during night periods (10pm to 7am).
- If no suitable or acceptable noise amelioration solutions are available for a particular noise issue, NAC will negotiate in good faith with all affected property owners for property purchase or by agreement implement some other form of amicable arrangement (e.g. acoustic treatment of the dwelling, relocation or replacement of the dwelling at another suitable location, relocation of the landowner to another living arrangement for the period of the issue or any other suitable innovative solution).

NAC would be responsible for all reasonable costs associated with any agreed solution to a noise issue.

- NAC will ensure proper maintenance and operational procedures will be undertaken to minimise noise emissions from equipment, including appropriate servicing and maintenance of exhaust systems on mine equipment.
- NAC will ensure all complaints are investigated in a timely manner to determine the source of the nuisance noise. Where appropriate, noise monitoring will be conducted at the affected residence, and as required, noise amelioration solutions will be investigated and implemented by agreement. NAC has purchased a specialist noise logger that can be placed at a complainant's residence for a length of time to record the problem periods. This equipment will be maintained and the results will be interpreted by a qualified professional.
- Where practicable, NAC using the mine planning process will utilise topsoil and other dumps as noise barriers between active mine operations and nearby noise receptor locations.
- NAC will continue to utilise broadband alarms instead of reverse beepers on all mobile equipment.
- NAC will continue to limit the speed of heavy vehicle traffic on haul roads.
- NAC will continue its current proactive monthly noise monitoring program and will expand its coverage around the revised Project area.
- NAC will continue its proactive assessment of possible noise attenuation options for both mobile or stationary noise emitting equipment. Noise emissions with tonal, impulsive and/or intermittent characteristics will be targeted for noise attenuation.

For the management of airblast overpressure and vibration, the following measures will be adopted for the revised Project:

- Field data will be used to best determine blast conditions and the type of stemming required for the area.
- In the event of a blast issue, the maximum instantaneous charge of subsequent blasts will be reduced using delays, reduction of hole diameter, etc. (i.e. until the blast issue is resolved).
- In the event of a blast issue, the burden and spacing of subsequent blasts will be changed by altering the drilling pattern and/or delay layout, or altering the hole inclination (i.e. until the blast issue is resolved).;
- The stemming depth and type will be adequate for each blast event.
- Blast events will only be conducted during favourable weather conditions.
- The monitoring of blasts will continue at the nearest sensitive receivers based on the interpretation of pre-blast weather data.
- The practice of advising near neighbours will continue in advance of each blast. All new near neighbours surrounding the Project area will be proactively invited to join the blast notification contact list.
- A qualified professional with suitable experience will be responsible for the Project's blast management.
- All blast complaints will be investigated in a timely manner to determine the extent of the issue. Where appropriate, blast monitoring will be conducted at the affected

residence, and as required, blast mitigation solutions will be investigated and implemented by agreement.

### **3.2. Weather Forecasting System**

NAC proposes to implement a weather forecasting system to provide daily predictions of upcoming meteorological conditions and potential risk of noise and vibration impacts from mining operations from the revised Project.

The weather forecasting system predicts potential risk of noise and vibration impacts using dispersion modelling tools for up to two days in advance. The weather forecasts will be updated on a daily basis, generating a daily automated email of forecast meteorological conditions.

Predictions from the weather forecasting system will allow Mine management to identify locations and times of potentially increased risk, and to facilitate appropriate planning to minimise or avoid potential impacts.

Significant noise and vibration issues will be highlighted at shift changes between the Production Supervisors or are and will be conveyed to the general workforce on a regular basis through 'Tool Box Talks'. This approach ensures that the day-to-day business focuses on good work practices to help reduce the potential for noise and vibration impacts from the revised Project.

### **3.3. Adaptive Management Process**

NAC will establish a permanent real-time noise monitor in Acland and a mobile real-time noise monitor to be placed depending on ambient conditions (climate and the current mine plan). This monitoring system will be used in conjunction with the weather forecasting system and will operate on a risk based approach. Warning and exceedance alarms will be used to inform the Mine of the status of the noise limits at the monitoring locations. In the event of an alarm, the Mine will attend the monitoring location as soon as possible to establish if the Mine is the source of the high noise levels. This unattended monitoring system will not always be practical during the warmer months due to other intrusive noise sources (e.g. insect noise). However, it will be ideal during the cooler months when background noise levels are lower and temperature inversions are common. NAC will ensure use of the real-time monitoring equipment is appropriate and practical for the circumstances.

In the event monitoring positively identifies that noise from the Mine is approaching or exceeding the specified noise limits, immediate management actions will be applied at the site that may involve modification or cessation of mining activities at one or more of the revised Project's mine pits.

Based on noise assessment work completed for the revised Project's EIS, the Manning Vale East Pit will most likely require specific management actions under these circumstances. Modification of mining activities may mean reducing the intensity of noisier operations or moving particular noisier equipment to other areas or mine pits within the revised Project site. The actions taken will depend on the mine noise sources identified by the appropriate Mine staff following alert by the real-time monitoring system and the level of exceedance at the time (e.g. warning or alarm)NAC will ensure that the scheduling of the Mine's activities at night proactively considers potential noise issues from the various areas of operational

activities. The weather forecasting system will help guide these mine planning decisions (e.g. wind conditions and temperature inversion conditions).

NAC will continue its proactive assessment of possible noise attenuation options for both mobile or stationary noise emitting equipment. Noise emissions with tonal, impulsive and/or intermittent characteristics will be targeted for noise attenuation.

### **3.4. Noise and Vibration Monitoring**

The current proactive monthly noise monitoring program will continue in an expanded form to cover the broader revised Project area. As explained, a permanent noise monitor will be located in Acland to continuously monitor the noise levels.

All complaints will be investigated to determine the source of the nuisance noise. Where appropriate, noise monitoring will be conducted at the affected residence, and as required, noise amelioration solutions will be investigated and implemented. NAC has purchased a specialist noise logger that can be placed at a complainant's residence for a length of time to record the problem periods. This equipment will be maintained and the results will be interpreted by a qualified professional.

Monitoring of blasts will continue at the nearest sensitive receivers around the revised Project based on climatic conditions (e.g. wind conditions).

### **3.5. Local Stakeholder Engagement**

Concerns and other issues raised will be managed in accordance with the revised Project's Local Stakeholder Management Plan, which is provided in Appendix J.18. A register will record details of the concern, the complainant(s), a summary of the investigations completed, any management actions taken, and the status of the concern.

A twenty four hour telephone number is made available to near neighbours for receiving concerns. This 'fast response' approach is designed to ensure access to the NAC employee on site at the time with the necessary responsibility to take immediate actions if required. NAC's Environmental Team will be available for contact during business hours by email (with the email address available through a web-site), and by telephone through the Mine's reception.

A legible record of all concerns will be kept by NAC's Environmental Team, who are responsible for the revised Project's environmental concerns management. Each concern received in relation to the revised Project will be formally documented and record of the following information is maintained for legal and compliance purposes.

- 1) The date and time of concern.
- 2) The nature of concern (e.g. noise).
- 3) The method by which the concern was received (e.g. telephone).
- 4) The name and title of the person who receives the concern.
- 5) The personal details of the complainant, if made available, or if no details were provided, a note to that effect.
- 6) The action taken in relation to the concern, including any follow-up contact, the outcome of investigations and any required on-going actions.
- 7) If no action was taken, then the reason why no action was taken.
- 8) The final status of the concern (e.g. resolved, continuing or unresolved).

Standard actions taken by NAC's Environmental Team in relation to noise concerns will include reviewing the following:

- meteorological data;
- relevant available noise monitoring data; and
- mine operations.

Follow up actions taken by NAC's Environmental Team in relation to noise concerns may include depending on circumstances:

- a site inspection of the complainant's residence;
- targeted sampling at the complainant's residence;
- an investigation of other potential noise generating sources in the vicinity of the complainant's residence; and
- engagement of an noise and vibration specialist to assist the concerns investigation process.

NAC's Management, in particular the Production Superintendent, Technical Services Superintendent and General Manager, are normally fully apprised of all concerns to ensure the key decision makers for mining operations, mine planning and the Mine, respectively, are involved in the concerns management process. As required, the NHG's Corporate Environmental Team may assist with management of the concern.

NAC is committed to rectifying all noise issues that are legitimately attributed to the revised Project's operations through proper scientific evaluation, in an appropriate timeframe, using accepted and practical mitigation measures, and if reasonably possible, to the satisfaction of the affected party.

### **3.6. Reporting**

#### **Non-compliant Monitoring Results**

NAC will advise the DEHP in a timely manner of all non compliances identified in relation to the revised Project's future EA (e.g. 'exception reporting').

#### **Environmental Incidents**

NAC will be bound to report all environmental incidents as a requirement of its future EA for the revised Project (i.e. based on the same requirement for the current Mine).

#### **General**

As required, NAC will prepare and submit to the DEHP any requested information about environmental management and other related matters in relation to the revised Project's operations, including applicable noise monitoring data.

### **3.7. Auditing and Review**

#### **Auditing**

Over the life of the Project, NAC will regularly audit the performance of its noise management using both internal and third party auditing processes. Internal and third party audits will be conducted on annual and three yearly timeframes, respectively, and will be incorporated into NAC's EMS. The audit process will generally be designed to review noise complaints management and evaluate the overall performance of NAC's noise management

for the Project. The strategy for NAC's audit processes is to ensure compliance and promote continuous improvement as part of the revised Project's noise management regime. In addition, NAC's noise management regime will be subject to potential audit by the DEHP during Compliance Inspections and other site inspections, and as a possible component of a formal noise complaint investigation process.

#### Review

The NVMP will be formally reviewed on an annual basis and updated as required. The NVMP may also be updated based on the findings of internal and third party audit processes, based on the outcomes of a complaint investigation or following a regulatory inspection (i.e. as corrective actions). The DEHP will be advised of all significant revisions of the NVMP.

### **3.8. Buffer zone strategy**

Since acquisition of a majority of the land tenure within the revised Project area, the New Hope Group's Land and Tenures Manager has continued a proactive land acquisition strategy for the revised Project's buffer zone. This land acquisition strategy is an on-going process and is designed to open possible purchase negotiations or the development of other amenable arrangements with nearby sensitive receptors that possess an elevated level of risk of impact from the revised Project's operation (i.e. based on noise modelling results).

NAC undertakes all land purchase negotiations in 'good faith' and ensures that purchase arrangements are 'fair and equitable' and include suitable departure clauses for the former owners to minimise any issues associated with relocation.

NAC may apply this strategy to other nearby landowners over the life of the revised Project, particularly if an issue arises in relation to compliance with one of the revised Project's statutory limits (e.g. EA noise limits).

### 3.9. References

Ecoaccess Guideline: Noise – Assessment of Low Frequency Noise (DRAFT), EPA (QLD), unpublished

Environment Australia 1998, Noise, vibration and airblast control, Environment Australia, Commonwealth of Australia

Queensland Government 2000, *Noise measurement manual*, Environmental Protection Agency, Brisbane, Qld.

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TMR 2008, Road Traffic Noise Management: Code of Practice, Department of Transport and Main Roads, QLD