SOUTH32
Illawarra Coal

Dendrobium Mine
Noise Management Plan

DENMP0041

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VERSION HISTORY

VERSION	DESCRIPTION OF CHANGES	DATE
1.0	Draft Submitted	November 2004
2.0	Incorporating comments on draft	February 2005
3.0	Update following Department of Planning Compliance Audit	October 2006
4.0	Three yearly review as required by Development Consent	March 2008
5.0	Review as required by the revised Development Consent (issued December 8 2008)	April 2009
6.0	Triennial review required by the Development Consent	March 2012
7.0	Review and update of Noise Monitoring Program	July 2014
8.0	The following changes have been made: • Updated roles and responsibilities • References to parent company changed • Update in accordance with Development Consent	January 2018
9.0	• Updated roles and responsibilities • References to parent company changed • Update in accordance with Development Consent	August 2018

PERSONS INVOLVED IN THE REVIEW OF THIS PLAN INCLUDE:

NAME	TITLE	EXP (YRS)
Peter McMillan	Environment Supervisor	9
Michelle Grierson	Environmental Officer	5

REPRESENTATIVES FROM EXTERNAL ORGANISATIONS AND REGULATORY AGENCIES INVOLVED IN THE PREPARATION OF THE ORIGINAL MANAGEMENT PLAN.

ORGANISATION	TITLE
Department of Environment and Climate Change (now NSW EPA)	Head Regional Operations
Department of Environment and Climate Change (now NSW EPA)	Senior Operations Officer

CONTENTS

1 INTRODUCTION

1.1 Background

This Noise Management Plan (NMP) addresses the management of noise associated with operation of Dendrobium Mine and associated infrastructure in accordance with the Development Consent. These activities include ROM coal production and handling, surface activities, coal clearance and rail haulage activities.

A monitoring program is used to verify the effectiveness of the noise controls and the overall performance of the mine from a noise management perspective. The information is periodically supplied to the Community Consultative Committee and the local community (via a webpage) and reported annually via the Annual Review.

1.2 Scope

The scope of this document includes the following sites and facilities:

Dendrobium Pit Top - consists of administration building, workshop, machinery and equipment storage areas, people and materials access to the underground workings via the Dendrobium Tunnel, a sedimentation pond and grey water treatment and Oil Water Separation facility.

Kemira Valley Coal Loading Facility – the KVCLF receives coal from underground via the Kemira Valley Tunnel. Coal is transported from underground to KVCLF via the coal clearance system which is comprised of an extensive conveyor network. The coal is then fed into a rill tower and deposited onto a 150,000 tonne stockpile from which it is loaded into trains via an enclosed rail-loading chute.

Kemira Valley Rail Line - used to transport the coal from KVCLF to the Dendrobium Coal Preparation Plant.

Ventilation Shaft Number 1 - The No.1 ventilation shaft, located within the Metropolitan Special Area administered by Sydney Catchment Authority (SCA), operates as a downcast shaft (i.e. drawing fresh air into the underground workings). The No. 1 vent shaft is on land owned by Illawarra Coal.

Ventilation Shafts Number 2 and 3 – Also located within the Metropolitan Special Area and within Mining Lease ML1566. Construction of the No.2 and 3 ventilation shafts was completed during 2008. The No.2 shaft operates as an additional downcast shaft whilst the No.3 shaft operates as an upcast shaft.

2 OBJECTIVES

The objectives of the NMP are to:

- Comply with all regulatory requirements set out in the Dendrobium Development Consent, and other legislation with regards to noise;
- Ensure that operational noise impact is reduced to the lowest level which is feasible and reasonable to minimise the impact on the local community, thereby reducing the number of complaints received;
- Create an environment where site personnel and contractors are involved in addressing and encouraged to identify and comply with correct noise management practices through education and other programs; and
- Detail the monitoring, auditing and reporting system that has been implemented to measure performance against the noise management objectives.

3 ROLES AND RESPONSIBILITIES

Roles and responsibilities associated with environmental management at Dendrobium Mine are defined and documented in the Dendrobium Mine Environmental Management Strategy. The roles and responsibilities specific to the development, implementation and review of this management plan are outlined in Table 1.

Table 1: Roles and Responsibilities

Responsibilities	Role
Development and periodic review of this Management Plan.	Environmental Supervisor
Meeting the commitments (including monitoring, auditing, investigation and reporting) for the operational areas contained within this management plan.	Environmental Officer
Meeting the commitments contained within this management plan for stakeholder engagement.	Manager External Affairs & Communication
Operation and maintenance of surface infrastructure in accordance with the design specification/s.	Maintenance and Operations Supervisors. Site Maintenance Managers.
Provide the necessary resources and systems to meet the requirements of this Management Plan.	Lead of Health, Safety and Environment (ICH) Environmental Supervisor Mine Site Managers

4 LEGISLATIVE AND OTHER REQUIREMENTS

4.1 Legislative Requirements

Legislation relating to the management of noise includes:

- NSW Industrial Noise Policy (2000)/ Noise Policy for Industry (2017).;
- NSW Road Noise Policy (DECCW, 2011);
- AS 1055.1, AS 1055.2 and 1055.3 Acoustics - Description and measurement of environmental noise;
- AS 2659.1 - Guide to the use of sound measuring equipment; and
- AS 2659 - Sound level meters.

4.2 Development Consent Conditions

This plan has been developed in accordance with Schedule 4 of the Dendrobium Mine Development Consent. A copy of the Development Consent is available on the South32 website (regulatory page), accessible via the following link:

https://www.south32.net/what-we-do/places-we-work/illawarra-metallurgical-coal/documents

4.3 South32 and other Policies

South32 operates in accordance with the South32 Environment and Community Standards which cover all operational aspects and activities within the business.

The Environment Standard prescribes the mandatory environmental performance requirements for all South32 operations. This document is available to all employees via the South32 regulatory website.

Dendrobium Mine's environmental management system has been certified to ISO14001. This Plan has been developed consistent with requirements of both the South 32 Environment Standard and ISO14001.

5 MANAGEMENT STRATEGIES

5.1 Baseline Noise Impact Assessment

An Environmental Noise and Vibration Impact Assessment was undertaken in 2001 by Renzo Tonin and Associates Pty Ltd as part of the original Dendrobium Project Environmental Impact Study (refer to Volume 3 of the EIS). The purpose of the assessment was to assess the potential impacts on the neighbouring residential premises and other noise sensitive receivers through the use of a computer model.

The assessment was used as a basis for the identification and implementation of suitable management strategies to minimise noise emissions associated with the Dendrobium operations. The strategies are outlined below.

5.2 Noise Management and Mitigation

This section describes the activities undertaken at the Dendrobium Mine that have the potential to generate noise emissions and provides a summary of the controls that have been implemented to control the emissions.

Dendrobium Pit Top and Underground Activities

All coal production activities occur beneath the surface and are not expected to present any direct noise issues to residential premises.

Activities on the Dendrobium Pit Top with the potential to generate noise impacts include:

- Materials handling including the use of forklifts;
- Ballast/underground road base materials delivery and transport;
- Vehicles moving around the surface;
- Vehicles accessing the site;
- Compressor operation;
- The periodic construction or upgrading of facilities; and
- Maintenance and cleaning equipment.

The underground workings are accessed via a drift from the Dendrobium Tunnel. Rubber-tyred vehicles transport people and materials into the Mine via this drift. Noise from this activity has been minimised through modification of underground machinery (rubber tyred vehicles) and the introduction of a self-imposed night time curfew from 10pm to 6:15am. During the curfew, surface vehicle movements are minimised where possible except where required for safety, emergency reasons or change of shifts.

One of the key management strategies to reduce the noise impact from vehicle movements around the site has been the introduction of intrinsically safe low frequency alarms. The low frequency alarms have been fitted to all permanent SME and mine vehicles.

Vehicle access to the Pit Top site is via Cordeaux Road and is controlled through the Drivers' Code of Conduct (refer to the Traffic Management Plan). The Drivers' Code of Conduct, which is communicated to all employees and contractors during the site induction and reinforced through the Environment Awareness Training, is supplied to all transport companies accessing the Dendrobium site. Breaches of the Code, including unnecessarily 'noisy' driving, may result in disciplinary action.

Where possible, plant equipment has been strategically placed to minimise noise escaping from site and contained within suitably designed noise mitigation structures.

Low noise emission mine site equipment has and will continue to be sourced and/or designed where practicable, to assist in meeting site noise limits, or as a noise mitigation measure. Noise barriers may also be utilised where possible to shield sensitive receivers from intrusive noise.

Kemira Valley Coal Loading Facility

KVCLF is located in a valley, generally set apart from residential areas. However, there are several isolated residences potentially affected by its operation. The nearest non-mining residence is located approximately 600 metres to the south and is separated from the KVCLF by a ridge which is approximately 50 metres high.

Coal is brought from the mine to the surface via a coal clearance system consisting of an extensive conveyor network and transfer points. Once on the surface, the coal travels a further 270 metres via a surface conveyor, passing through a coal sizer before being deposited on the 150,000 tonne capacity stockpile via a vertical rill tower. The surface conveyor from the portal to KVCLF has been designed to address noise impacts. This includes the following design aspects:

- The conveyor is partially enclosed;
- The conveyor profile design eliminates the need for any exposed surface transfer points. The system consists of one continuous conveyor with the drive intentionally located underground to reduce noise; and
- Polyurethane coated conveyor rollers.

Coal is transferred from the conveyor onto the 150,000 tonne capacity stockpile via the use of a rill tower. This method of transfer is considered to have a lower noise emission than trip conveyors or other systems. Extensive modifications have been made to the rill tower to modify the impact plates on the coal delivery chute and the exit doors to reduce noise emissions. Polyurethane was placed on the chute work to lower noise levels. Rubber doors have also been installed at all rill tower exit points to minimise ‘ringing’ that occurred when the ROM coal struck the bare steel rill tower doors.

Empty trains arrive at the loader and pass through the tunnel beneath the stockpile. During the loading operation, locomotives are transferred to the opposite end of the wagons ready to pull the loaded wagons back to Port Kembla. Train loading occurs under gravity via a vibratory feeder from the base of the stockpile into trains as they are shunted through a tunnel beneath the stockpile.

A bulldozer and excavator operate on the stockpile to clear blockages and to push coal from those parts of the stockpile from which coal cannot self-load under gravity. The SME have been fitted with low frequency reversing alarms.

Rail Operations

All coal is transported from the Dendrobium Mine via rail along the existing rail line from Kemira Valley to the Dendrobium Coal Preparation Plant located at the Port Kembla Steelworks. Rail movements associated with Dendrobium are controlled by a travel curfew. The curfew restricts train movements to the hours between 6am and 11pm.

The condition of the rolling stock and rail track (and associated infrastructure) are important aspects with regards to controlling rail noise emissions, as poorly maintained or defective rolling stock and/or track can lead to elevated noise levels.

An extensive track maintenance program was implemented in 2006 and continues to be undertaken to ensure that the track is maintained to an acceptable standard. Noise emissions from the rolling stock are controlled through a regular maintenance program targeting brake and wheel condition (i.e. flat spots etc).

In addition to the track and rolling stock maintenance programs, regular track walks are undertaken to identify defects to the rail infrastructure. Any defects identified during these track walks that could either result in safety or environmental issues (i.e. noise generation) are rectified as soon as feasibly possible to minimise potential impacts.

The rail line is located within 200 m of more than 500 receivers within the Mount Kembla, Cordeaux Heights and Unanderra communities. The track geometry consists of relatively tight curves which can increase the likelihood of squeal events caused by the wheel / track interface and / or brake related issues. Noise issues are addressed by the Rail Noise Working Group (RNWG) which meets regularly with the below objectives:

- review noise results and identify rail noise mitigation options;
- improve targeted track maintenance; and
- develop strategy for positive proactive community engagement.

Illawarra Coal's RNWG consists of Illawarra Coal employees (operational, community and environmental personnel) and our rail contract partners. During the reporting period, the RNWG has undertaken numerous rail trials and noise monitoring campaigns to identify noise sources and minimise the rail noise generated in the local area.

Illawarra Coal has conducted an Environmental Improvement Program / Rail Noise Investigation during FY16 and FY17.The investigations identified that a non-conforming brake shoe fit was a contributing factor for nuisance noise (squeal) and a program of works was developed to complete on track testing of conforming brake shoes.

Modified Brake Shoes (larger version) with a more conforming fit were fitted to an entire train (22 wagons) in FY17 to allow for comparison of modified and unmodified trains. Track side and onboard monitoring of the modified and unmodified trains have shown that the conforming fit brake shoe is successful at reducing duration, loudness and frequency (number of squeal occurrences), all trains have now been fitted with the modified brake shoe. Complaints have significantly reduced since the modification.

Ventilation Operations

Mine ventilation is provided through a series of inlet and outlet shafts and openings in combination with fans that remove stale air and draw fresh air into the Mine. The fans, located on the surface, have the potential to cause noise impacts however due to their remote locations (in WaterNSW land) they are unlikely to impact on any residences.

The No. 3 Ventilation Shaft is currently operating as an upcast shaft whilst the No.1 and No.2 shafts operate as downcast shafts.

Ventilation fans are required to operate continuously 24 hours a day, 7 days a week. The design of all ventilation fans is carried out to ensure compliance with Dendrobium's Conditions of Consent

5.3 Management Strategy Effectiveness

The effectiveness of the existing controls are reviewed annually as part of the Environmental Aspects and Impacts Register review. The effectiveness of controls is also assessed as part of the Triennial Independent Environmental Audit.

Additional internal and/or external reviews are undertaken periodically to target specific noise issues (as determined by analysis of data and/or community concerns) and drive continual improvement. Details of specific noise investigations/reviews will be reported to key stakeholders via the Community Consultative Committee or the Annual Review as they occur.

6 MONITORING AND REVIEW PROGRAM

The objectives of the monitoring program are to:

- Verify the effectiveness of the noise management controls;
- Assess the noise impact on the local communities surrounding Dendrobium operations; and
- Assess compliance against the Noise Impact Criteria outlined in the Development Consent.

Ongoing refinement of the monitoring programs, including monitoring locations, may be necessary as a result of monitoring result analysis or following a review of operational activities.

6.1 Noise Impact Criteria

The noise criteria applicable to the Dendrobium operations, as outlined in Schedule 4 of the Development Consent, are outlined below.

Noise Impact Assessment Criteria

The Applicant shall ensure that the noise generated at the surface facilities does not exceed the noise impact assessment criteria in Table 2 at any residence on privately-owned land, or on more than 25% of any privately-owned land. The applicable criteria for any residence not listed in Table 2 shall be the criteria applying to the nearest residence.

Table 2: Noise Impact Assessment Criteria dB(A)

Day	Evening	Night		Residence
LAeq (15min)	LAeq(15min)	LAeq(15min)	LA1(1min)	
42	42	38	48	R2
41	41	40	50	R22
40	40	39	49	R1
				R9
				R15a
40	40	37	47	R3a
				R5a
				R6a&b
37	35	35	45	R39a

Land Acquisition Criteria

If noise generated at the surface facilities exceeds the relevant criteria in Table 3 at any residence on privately-owned land or on more than 25% of any privately-owned land, the Applicant shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 8 - 10 of schedule 4. The applicable criteria for any residence not listed in Table 3 shall be the criteria applying to the nearest residence.

Table 3: Noise Acquisition Criteria dB(A)

Day LAeq(15min)	Evening LAeq(15min)	Night LAeq(15min)	Residence
47	47	43	R2
46	46	45	R22
45	45	44	R1
			R9
			R15a
45	45	42	R3a
			R5a
			R6a&b
42	40	40	R39a

Rail Haulage Impact Assessment Criteria

The Applicant shall ensure that noise generated by locomotives using the Kemira Valley rail line does not exceed the rail noise impact assessment criteria in Table 4.

Table 4: Rail Noise Impact Assessment Criteria

Operating Conditions	Measurement Conditions	Criteria *LA1(1min)*
Locomotive at idle, with compressor radiator fans and air conditioning operating at maximum load	Stationary 15 metre contour	70 dB(A)
All other throttle settings under self-load, with compressor radiator fans and air conditioning operating at maximum load	Stationary 15 metre contour	87 dB(A) 95 dB(Lin)
All service conditions	Up to 50 km/hr, 15 metres from the centerline of rail track	87 dB(A) 95 dB(Lin) Must be non-tonal, Linear noise must not exceed A-weighted noise levels by more than 15dB

In addition to these noise level limit requirements, there are conditions relating to potential tonal / low frequency noise from locomotives. All locomotives used on the Kemira Valley Rail Line (KVRL) for the Dendrobium Coal operation must comply with the tonality emission requirements specified below:

- All measured noise levels must be assessed for tonality unless otherwise specified;
- Assessment of tonality is to be based on one-third octave analysis. To comply with the requirements of non-tonality the sound pressure level in each one-third octave band must not exceed the level of the adjacent bands on both sides by:
    - 5dB if the centre frequency of the band containing the tone is above 400Hz;
    - 8dB if the centre frequency of the band containing the tone is between 160 and 400Hz, inclusively; and

- 15dB if the centre frequency of the band containing the tone is below 160Hz; and
- In addition, the overall linear noise level must not exceed the overall A weighted noise level by more than 15dB. (This relates to low frequency noise).

The noise limits specified above must be assessed at 15 metres from the centreline of the track with a sound level meter operated with a fast time weighting. The assessment of tonality for this condition (part b) and the comparison between linear and A-weighted levels in this condition (part c) are to be conducted using all one-third octave bands between 10 Hz and 20 kHz.

6.2 Noise Monitoring Program – Receiver Noise

Attended Noise Monitoring

Quarterly attended noise monitoring occurs at three locations as outlined in Table 5 and Figure 1. Additional monitoring may be required based on community complaints, additional investigations/studies and/or unplanned events. The monitoring program is carried out in accordance with "*AS1055-1997: Acoustics – Measurement and Description of Environmental Noise*" and the NSW Office of Environment and Heritage (OEH) "*Industrial Noise Policy*" (2000).

Table 5: Noise Monitoring Program – Dendrobium Mine

Location	GPS Coordinates		Address	Description
	Easting	Northing		
R1*	298990	6188274	17 High Street	South-western corner of driveway, next to parking shed
R6a**	298965	6187725	374 Cordeaux Road	Next to dust monitor at the boundary of No. 374
R39a**	300793	6188421	Figtree Farm	On the western end of the house with direct line of site to the KVCLF site

** Located on company owned land*
*** Located on private property*

At each monitoring location, the following parameters will be measured:

LAeq.15min	The equivalent continuous A-weighted sound level over the measurement interval of 15-minutes
LA90.15min	The A-weighted sound level exceeded for 90% of the time in the measurement interval of 15 minutes;
LAmax	The range of maximum A-weighted sound level in the measurement interval and identification of likely source where obvious.

The location of monitoring sites allow noise levels from the high potential areas (from a noise perspective) of the Pit Top and Kemira Valley sites to be monitored, the impact on the surrounding communities to be assessed, and compliance against the Noise Impact Criteria to be determined. Refer to Table 6 below for more detail.

Table 6: High Potential Areas

Site	Relevant Site	High Potential Area/s	Community
R1	Pit Top	Main Portal Ballast Movements Compressor Shed Portal Road movements	Kembla Heights
R6a	Pit Top	Workshop Area Bulk Store General Yard Area Carpark	Mt Kembla
R39	Kemira Valley	All of site, including: Rail Line and train movements Train loading operations Stockpile SME movements Compressor Shed General site movements	Mt Kembla / Figtree

* As per Noise Impact Criteria in Development Consent

Sound levels, which can be associated with specific sources at the operations, shall be captured and recorded via attended monitoring. This is to identify sources contributing to the overall noise environment in the monitoring area and to calculate the LA_{eq},15min contribution and LA_{max} from Dendrobium operations.

Instruments used for attended monitoring shall be of Type 1 – Precision grade, in accordance with the requirements of AS1055:1997 and ASIEC61672: 2004 Electroacoustic - Sound level meters and within the calibration requirements of both standards. A calibration check shall be performed regularly using a calibrated field sound level source.

For each site, the following details will be collected/noted while carrying out the monitoring:

- Location, date and time, and attendant;
- Type of Instrument used and calibration status;
- Parameters measured and their results;
- Weather conditions; and
- Sound levels from specific identifiable sources.

During adverse weather conditions (e.g., rain, wind > 3 m/s) valid noise monitoring data cannot be collected.

Should community advice indicate a specific noise issue with the operations, an investigation will be undertaken to determine the cause/s of the issue and identify if any further noise emission controls are required. These investigations may include monitoring and modelling of the noise. Details of these investigations will be provided in Annual Review.

Real Time Monitoring

Noise from Dendrobium at surrounding receivers is dependent on activities occurring on site at the time, and also the prevailing weather conditions (wind and temperature inversions). The deployment of a real time noise monitoring system to supplement attended data can assist in the identification of activities or equipment that contribute to offsite noise impacts. Once the diagnostic phase of the real time noise monitoring program is undertaken, improvement opportunities can be implemented to reduce the noise signature from mine site equipment or activities that may impact on nearby residents.

The steep and heavily vegetated topography around the mine can make the deployment of sophisticated unattended noise monitoring systems difficult. In addition, the amount and volume of non-mining related low

frequency noise in the local areas is substantial, therefore making discrimination of noise sources more challenging compared to relatively sparsely populated areas adjacent to open cut or more remote mines.

Given that noise emissions from the mine are generally in compliance with regulatory limits and do not attract a high number of community complaints, real time noise monitoring will only be deployed on an as needed basis. Examples include:

- In response to a significant increase in community complaints relating to a specific area of the site;
- Following a significant change in the operation or activity at the mine that may cause an increase or change in noise emissions from the mine; or
- For the purpose of complementing attended noise monitoring to demonstrate that Dendrobium Mine is a minimising noise).

6.3 Noise Monitoring Program – Rail Noise

Monitoring of rail noise will predominantly cover operational noise from the locomotives used on the Kemira Rail Line. The relevant criteria for rail noise emissions associated with the Kemira Rail Line are specified in the Development Consent (refer to Section 6.1 of this management plan for a summary of the rail noise impact criteria).

The rail noise monitoring program includes a combination of attended monitoring of locomotives and unattended monitoring at specific locations dependent on train performance, operational characteristics and community concern in relation to wheel squeal.

Attended Noise Monitoring (Locomotive)

Attended noise monitoring of the locomotives used on the Kemira Rail Line is completed annually, with one of the 3 locomotives tested each campaign to minimise disruption to the rail haulage operations.

Instruments used for attended monitoring shall be of Type 1 – Precision grade, in accordance with the requirements of *AS1055:1997* and *ASIEC61672: 2004* - Sound level meters and within the calibration requirements of both standards. A calibration check shall be performed before and after the measurements at each site using a calibrated field sound level source.

For each site, the following shall be reported:

- Location, date and time, and attendant;
- Type of Instrument used and the calibration status;
- Parameters measured and their results; and
- Weather conditions.

Real-time Monitoring

An unattended rail noise monitoring system was implemented in 2010 to allow the performance of the rail haulage fleet to be monitored when required. The system provided ‘slightly delayed’ real time noise monitoring for each train movement along the line. The system was designed to monitor several variables, including LA_{max} and LA_{eq}, and is also able to automatically detect squeal events via a frequency distribution analysis.

Following the implementation of the Modified Brake Shoe findings, the use of the unattended Real-Time monitor will be on an as needed basis dependent on community complaints. reporting and review process

7 REPORTING

Annual Review

The performance of the mine from a noise perspective, will be reported in the Dendrobium Mine Annual Review (AR) with regular updates provided to the Community Consultative Committee. The AR will include:

- Noise monitoring results and comparison against the Noise Impact Criteria;
- Noise related complaints and details of management/mitigations activities undertaken;
- Management/mitigation measures undertaken in the event of any confirmed exceedances of the Noise Impact Criteria; and
- Review of the performance of the management/mitigation measures and the monitoring program.

The AR will be submitted to the relevant agencies in September each year. A copy of the report will also be made publicly available via the South32 website.

Public Reporting of Results (via website)

A summary of the noise monitoring results, including details of exceedance, will be provided on the South32 website. A summary of the monitoring results will also be provided to the Community Consultative Committee on an 'as requested' basis.

7.1 Notification of Potential Significant Noise Events

Where a planned operational activity has the potential to create significant noise in the local community, the following notification procedure (all or a combination of) will apply prior to the event occurring:

- Notification of the planned activity to potentially affected residences via a letter box drop;
- Notification of the planned activity to the community representatives on the Community Consultative Committee either at the meeting prior to the event, or, in the case that a meeting is not scheduled close to the event, an email will be sent to the community representatives; and
- Notification of the planned activity to relevant government authorities such as DoPE, EPA and Wollongong City Council.

Notification will generally include the scheduled date, time and length of the planned operational activity, a description of the activity to be undertaken and the associated noise character and company contact details for further information.

7.2 Landowner Notification of Non-Conformance

If Dendrobium receives notification from a landowner who considers the operations to be exceeding the noise criteria detailed in Schedule 4 of the Development Consent, the applicable conditions outlined in Schedule 7 of the Consent will be followed.

7.3 Noise Monitoring Program Review

The noise monitoring program is generally reviewed on a triennial basis as part of the Triennial Independent Environmental Audit process.

In addition, detailed reviews of the noise data and associated community complaints were undertaken in 2009 and 2014 respectively. This review consisted of an assessment of compliance levels achieved at each of the noise receiver locations for the preceding three or five-year period. The reviews recommended the removal of several monitoring sites.

The sites that have been removed from the program are outlined in Table 7.

Table 7: Locations removed from the Noise Monitoring Program

Location	GPS Coordinates		Address	Date removed	Reason
	Easting	Northing			
R2	300062	6188449	20 Stones Road	February 2009	Refer to WM Report: dated 23/01/2009
R3	299545	6188132	30 Avon Parade	February 2009	Refer to WM Report: dated 23/01/2009
R5a	299437	6187910	8 Benjamin Road	July 2014	Refer to ICH Report: dated July 2014
R6b	299099	6187622	1 Araluen Avenue	February 2009	Refer to WM Report dated 23/01/2009
R9	308477	6187948	View Street	2005/06	Refer to WM Report dated 23/01/2009
R15a	298588	6187903	View Street	July 2014	Refer to ICH Report: dated July 2014
R22	298797	6188120	Central Avenue	February 2009	Refer to WM Report dated 23/01/2009
R40	298720	6189798	No.1 Ventilation Shaft	February 2009	Refer to WM Report dated 23/01/2009

8 REFERENCES

Department of Planning (2008) Notice of Modification – Dendrobium Development Consent

KADENZ (2011). “Independent Environmental Audit for The Dendrobium Mine” Prepared by KADENZ Pty Ltd - Environmental Consultancy 1 Fairweather Street, Bellevue Hill, NSW 2023

Renzo Tonin and Associates Pty Ltd (2001), “BHP Dendrobium Coal Project – Illawarra, Environmental Noise and Vibration Impact Assessment”. Prepared by Renzo Tonin and AssociatesPty Ltd, Level 1, 418A Elizabeth Street, Surry Hills NSW 2010.

Wilkinson Murray (2009), “Quarterly Noise Monitoring Review – Summer 2006 to Spring 2008”, prepared for BHP Billiton (now South32) by Wilkinson Murray Pty Ltd, January 2009.

Review of Noise Monitoring Program July 2014 v2.pdf (ICH Report: Dated July 2014)

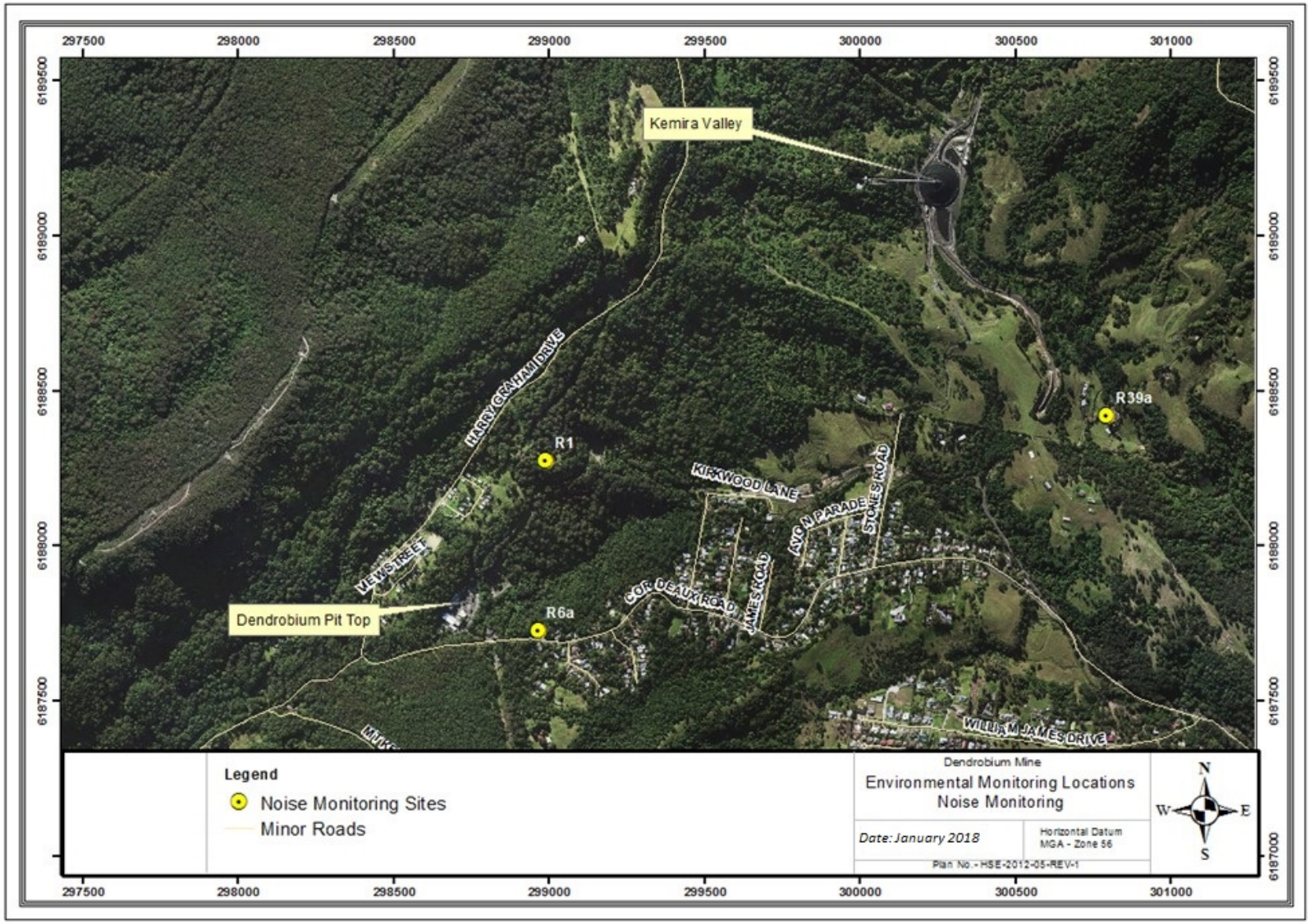

Figure 1: Noise Monitoring Locations