Centennial Coal

Noise Management Plan

Western Region

July 2016

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Abbreviations

AEMR	Annual Environmental Monitoring Report
CCL	Consolidated Coal Lease
dB	Decibel
DoP	Former NSW Department of Planning
DP&E	NSW Department of Planning and Environment
EIS	Environmental Impact Assessment
EPA	Environment Protection Authority
EPL	Environment Protection Licence
EMS	Environmental Management System
ML	Mining Lease
Mtpa	Million Tonnes per Annum
POEO Act	Protection of the Environment Operations Act 1997
RBL	Rating background level
ROM	Run of Mine

Glossary

dB	Decibel is the logarithmic unit used for expressing the sound pressure level (SPL) or power level (SWL) in acoustics.
dB(A)	Frequency weighting filter used to measure 'A-weighted' sound pressure levels, which conforms about to the human ear response.
$L_{Aeq\ (period)}$	Equivalent sound pressure level: the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.
$L_{A90\ (period)}$	The sound pressure level exceeded for 90% of the measurement period.
Day	7 am to 6 pm – Monday to Friday, 8 am to 6 pm – Sundays and Public Holidays
Evening	6 pm to 10 pm
Night	10 pm to 7 am – Monday to Saturday, 10 pm to 8 am – Sundays and Public Holidays

1 Introduction

1.1 Commitment and policy

Centennial Coal Company (Centennial) is a coal mining company supplying thermal and coking coal to the domestic and export markets. Centennial is a major fuel supplier to the New South Wales (NSW) energy industry, fuelling approximately 40% of the State's coal-fired electricity.

Centennial is one of the largest underground coal producers in NSW and, as part of Banpu, a member of the largest independent pan-Asian coal group. Centennial's western region operations, located in the Lithgow and Mid-Western Local Government Areas (LGAs), include:

- Airly Mine,
- Angus Place Colliery,
- Clarence Colliery,
- Lidsdale Siding,
- Springvale Mine and
- Western Coal Services.

1.2 Objectives

The purpose of this Noise Management Plan (NMP) is to ensure that operational noise impacts on the local community are minimised, appropriate management measures identified and response protocols detailed should air quality criteria be exceeded. This NMP has been developed to:

- Address the CoA for the western region operations in relation to noise.
- Address the requirements of Environmental Protection Licenses (EPL).
- Identify noise impact pathways from Centennial operations in the western region.
- Provide a description of noise management measures implemented across these operations.
- Outline noise monitoring requirements and standards.
- Provide a procedure to manage and respond to complaints relating to noise or a measured noise incident.

1.3 EMS integration

This NMP is part of the Environmental Management Strategy (EMS) that has been developed for each operation.

1.4 Management plan approach

Noise emissions from Centennial's operations within the western region have, historically, been individually managed. A 'regional' approach has been adopted in preparation of this NMP. The aims of adopting a regional approach to the management and monitoring of noise emissions include the following:

- Provide consistent and consolidated management measures and procedures across all sites.
- Management of cumulative impacts, rather than focusing on individual operations.
- Rationalise monitoring procedures and locations with consideration of cumulative impacts.

A 'short term' and 'long term' approach has also been adopted, acknowledging that some changes will take time and require discussions and approval from the relevant authorities. The short term plans would be implemented immediately, with a transitional period for some operations to achieve the long term approach.

The NMP outlines the management and monitoring measures that will be implemented at all operations. Specific requirements for each operation are provided in **Appendix A** to **Appendix F**.

1.5 Scope

This NMP has been prepared in accordance with the respective operations COA and requirements of the sites Environmental Protection Licence (EPL) to manage noise impacts to sensitive receivers and the wider environment from mining operations and associated mining related activities within Centennial's western region.

1.6 Site operations

Figure 1 shows the location of each operation within the western region.

The six operations within the western region have been considered as three sub-regions, based on their spatial spread and proximity to each other. The operations in each sub-region are:

- Airly Mine
- Clarence Colliery
- Angus Place Colliery, Springvale Mine, Lidsdale Siding and Western Coal Services.

A brief overview of each operation within Centennial's western region is provided in the sub-sections below.

1.6.1 Airly Mine

Airly Mine is an underground coal mine located approximately 40 kilometres north-northwest of Lithgow and approximately 171 kilometres northwest of Sydney. The Mine's CoA allows extraction of 1.8 million tonnes of coal per annum for supply to both domestic and international markets by rail. The key infrastructure at the Airly Mine surface facilities area comprises administration buildings,

bathhouse, workshop, coal handling infrastructure, mine ventilation infrastructure, a rail loop and train loading facilities.

1.6.2 Angus Place Colliery

Angus Place Colliery is an underground coal mine located approximately 15 kilometres to the northwest of Lithgow and approximately 120 kilometres west-northwest of Sydney. Angus Place Colliery commenced production in 1979, after being developed as an extension of the Newcom Mine at Kerosene Vale. Current approvals for the mine authorise the extraction of up to four million tonnes of coal per annum using a combination of continuous miner and longwall mining methods. The key infrastructure at the Angus Place surface facilities area comprises administration buildings, bathhouse, workshop, mine ventilation infrastructure and coal handling infrastructure. Coal is transported by haul road to Mt Piper Power Station for domestic use.

1.6.3 Clarence Colliery

Clarence Colliery is an underground coal mine located approximately 10 kilometres east of Lithgow and approximately 100 kilometres west-northwest of Sydney. Clarence Colliery is a partial pillar extraction mine that commenced operations in 1979. Clarence Colliery has existing development approvals in place enabling extraction of up to three million tonnes of coal per annum for supply to both domestic and international markets by rail. The infrastructure at the Clarence Colliery surface facilities area comprises administration buildings, bathhouse, workshop, mine ventilation infrastructure, coal handling infrastructure, a rail loop and train loading facilities.

1.6.4 Lidsdale Siding

The Lidsdale Siding Rail Loading Facility is located approximately 12 kilometres northwest of Lithgow and approximately 120 kilometres west of Sydney adjacent to the township of Wallerawang.

The principal components of Lidsdale Siding are a rail siding, an overland conveyor which delivers coal from the Centennial Coal Western Coal Services site, coal stockpiles, workshop, office and pollution control dams.

Lidsdale Siding handles thermal coal for distribution to domestic and international markets via the Main Western Railway Line to port facilities on the NSW coast.

1.6.5 Springvale Mine

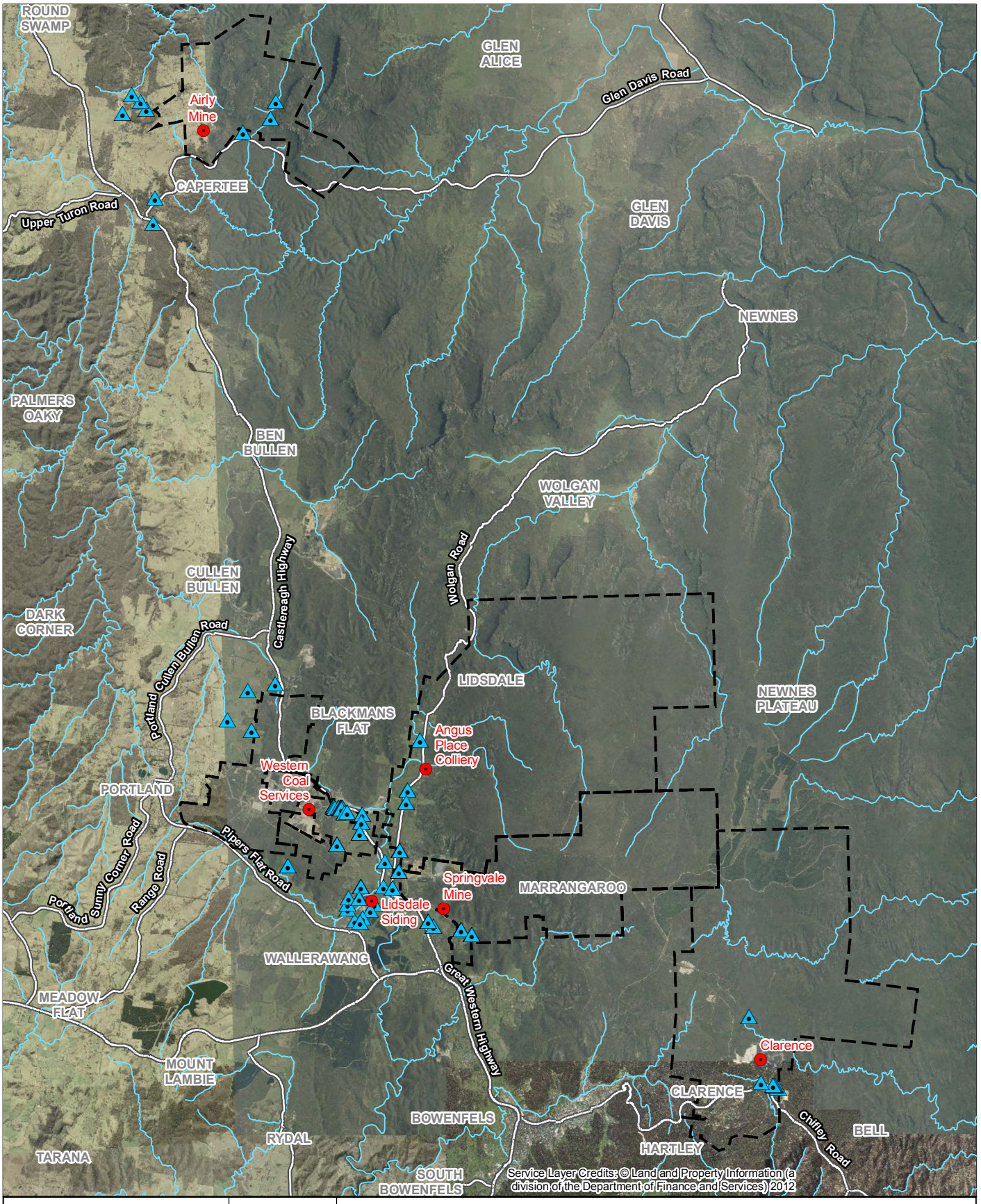
Springvale Mine is an underground coal mine located approximately 15 kilometres to the northwest of Lithgow and approximately 120 kilometres west-northwest of Sydney. Underground coal mining commenced at Springvale Mine in 1995. Springvale Mine has existing development approvals in place enabling extraction of up to 4.5 million tonnes of coal per annum for supply to both domestic and international markets by rail. The main components of Springvale Mine's operations are an underground longwall mine, accessed via the Springvale pit top, and supporting surface infrastructure within the pit top area and on Newnes Plateau within the Newnes State Forest. The

key components of the Springvale surface facilities area comprise administration buildings, bathhouse, workshop, mine ventilation infrastructure and coal handling infrastructure.

1.6.6 Western Coal Services

The Western Coal Services operation comprises the haul roads between Angus Place Colliery and Mount Piper Power Station, an over land conveyor linking Springvale Coal Mine to Mt Piper Power Station, a washery and the Kerosene Vale Coal Stockpile Area. The Western Coal Services site receives coal from both the Springvale and Angus Place Collieries, and sends washed and run of mine coal to customers via Lidsdale Siding.

Western Coal Services has existing development approvals in place enabling up to 9.5 million tonnes of coal to be received per annum and up to seven million tonnes for ROM coal to be processed per annum.



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0 2 4 6 8

Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- Colliery Holding Boundary
- Watercourse
- Roads
- Sensitive receiver

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Operation Locations and Sensitive Receivers

Centennial Coal

DATE 14/01/2016

Figure 1

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1.7 Approvals and licensing requirements

Centennial conducts its operations in accordance with relevant legislation and regulatory requirements. Legislative and regulatory requirements are generally recognised through the imposition of CoA and various licences or mining approvals.

Centennial operates under a number of different approvals including:

- CoA issued by the Department of Planning & Environment (DPE);
- Environmental Protection Licence (EPL) issued by the NSW Environment Protection Authority (EPA);
- A Mining Operations Plan (MOP) approved by the Division of Resources & Energy (DRE);
- Mining tenements issued by the Division of Resources and Energy (DRE); and
- Water Licences and approvals issued by the New South Wales Office of Water (NOW).

1.7.1 Development Consents and Planning Approvals

A summary of the relevant Development Consents and Planning Approvals for each respective western operation is listed in **Table 1-1**.

Table 1-1 - Development Consents/Planning Approvals

Site	Development Consent/Planning Approval ID
Angus Place	PA 06_0021
Airly	SSD 12_5581
Clarence	DA 504-00
Lidsdale Siding	PA 08_0223
Springvale	SSD 5594
Western Coal Services	SSD 12_5579

1.7.2 Environmental Protection Licences

A summary of the relevant EPLs for each respective western operation is listed in **Table 1-2.**

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Table 1-2 - Environmental Protection Licences

Site	EPL ID
Angus Place	EPL 467
Airly	EPL 12374
Clarence	EPL 726
Lidsdale Siding	EPL 5129
Springvale	EPL 3607
Western Coal Services	EPL 3607 and EPL 467

1.7.3 Mining Leases

A summary of the relevant Mining Leases and Exploration Licences for each respective western operation is listed in **Table 1-3**.

Table 1-3 - Mining Leases and Exploration Licences and Mineral Authorities

Site	ML/EL and Mineral Authority ID
Angus Place	CCL704, ML1424, ML1699, CCL756, EL6856, EL7415, EL8188, EL6293,EL5899, EL6294
Airly	ML1331, A232
Clarence	ML1583, CCL705, ML1353, ML1354, A416, EL5072, A451
Lidsdale Siding	MPL314
Springvale	ML1588, CL377, ML1323, ML1303, ML1326, ML1670, ML1537, A460 and EL6974
Western Coal Services	ML1448, ML1319, ML1352, CCL733

1.8 Performance criteria, limits and goals

Noise criteria are provided in the CoA and/or EPL for each operation. A summary of the noise limits is provided below. The site-specific requirements and receiver locations referred to in the CoA are also provided in **Appendix A** to **Appendix F**.

2 Existing environment

2.1 Meteorology

The geographical area of the western region operations is within a 'temperate' climatic zone. Sub-classes of the climatic classification avoid a 'hot summer' (primarily due to elevation) and are a mixture of 'warm summer' classes with either 'no dry season' or 'moderately dry winter'.

While the western region operations straddle the Great Dividing Range, the Newnes Plateau provides some protection from weather systems originating from the east. However, The Great Dividing Ranges themselves are capable of generating enhancement of rain (convective thunderstorm) activity.

Winter westerly winds are a dominate feature as the sub-tropical ridge migrates to the north before spending a greater time to the south for the warmer months. Local winds associated with funnelling through valley systems produces local effects that mask the more regional to synoptic scale weather patterns.

2.2 Sensitive receivers

Sensitive receivers within the western region predominantly consist of residential properties. Other sensitive receivers include recreational areas within the Newnes Plateau.

Isolated rural residential properties are scattered around all operations within the western region, as shown in **Figure 1**. More urbanised residential properties are concentrated in areas such as Blackmans Flat.

A detailed map of residential properties surrounding each operation within the western region is provided in each site appendix – **Appendix A** to **Appendix F**.

2.3 Baseline noise levels

Noise monitoring has been undertaken by Centennial in the western region operations for many years. Long term trends in noise levels have been established around all operations, inclusive of background reference levels. This data is typically summarised in Noise Impact Assessments, monitoring reports and Annual Reviews for each operation.

Baseline noise levels have been measured throughout the planning and approvals phase for each operation. These baseline levels are then used to establish operational noise limits for each operation, which are contained with the CoA.

Ongoing noise monitoring is then undertaken to assess compliance with these CoA.

Noise monitoring locations are discussed further in Section 4 and individual site appendices. Maps showing noise monitoring locations are provided in **Appendix A** to **Appendix F** and **Appendix G**.

3 Management measures

Activities that have been identified as sources of noise within the western region operations include:

- Operation of mobile equipment – e.g. trucks, dozers, loaders
- Coal processing infrastructure (rotary breakers, crushers, screens etc)
- Rail loading operations
- Coal transporting activities – e.g. overland conveyors, haul trucks, rail
- Ventilation shafts.

The sections below outline the noise management measures which are 'common' across all operations within the western region operations.

Noise management or mitigation measures which are specifically required at individual operations in addition to these common measures are provided in **Appendix A** to **Appendix F**.

3.1 "Common measures"

The measures outlined in

Table 3-1 are currently being implemented to minimise noise emissions to the greatest extent practicable. These measures are implemented across all operations, where applicable. Following industry-leading practice, these are a mixture of routine design and operational controls. Any operation-specific measures are provided in the relevant appendix.

Table 3-1 - Common noise management and mitigation measures

Emission source	Control measure
Train loading operations	• Modifying the locations of trains idling while being loaded/waiting to enter the network to minimise offsite noise impacts at sensitive receptors • Establishment of buffer zones between operations and sensitive receptors.
Overland Conveyors	• A combination of partial and fully enclosed conveyors and conveyor drives • Regular inspection of conveyor idlers and prompt replacement of damaged or highly worn idlers during maintenance.

Emission source	Control measure
Mobile Equipment	• Regular maintenance of plant and equipment in accordance with the manufacturer's specifications to ensure optimal operating conditions • Installation of frequency modulated reversing alarms or "quakers" on mobile plant • Switching off vehicles and plant when not in use • Operate mobile plant in a quiet, efficient manner and regular training of operators • Selecting low noise plant for operation on site.
Coal processing infrastructure	• Installing acoustic enclosures around processing plants • Sealing all unnecessary openings • Establishment of buffer zones between operations and sensitive receptors.
Truck haulage	• Regular inspections and maintenance of haul road surfaces. • Limiting truck speeds on private haul roads.

3.2 Proactive planning

A number of measures are implemented to proactively plan and manage noise emissions from the western region operations. Measures implemented by Centennial include:

- A region-wide trend to make more use of real-time noise monitoring to provide more informative data and enable more timely response to elevated noise levels off-site.
- Use of real-time meteorological monitoring data and short-term forecasts to anticipate when noise-enhancing weather conditions (such as temperature inversions) are likely and adjusting operations accordingly.
- Procurement of quieter equipment whenever new items or maintenance work are required.
- Regular (annual) reviews of monitoring and management measures.
- Impact assessments of future changes/expansions.
- Pollution Reduction Programs.

4 Monitoring program

4.1 Objective

The objective of the noise monitoring program is to enable Centennial to assess compliance with the noise limits of the relevant CoA.

The results of the noise monitoring will be used to identify key noise sources and review and improve Centennial's operational noise management practices.

4.2 Monitoring standards

Noise monitoring is undertaken in accordance with the following standards:

- AS 1259.1-1990 : *Acoustics – Sound Level Meters* and AS IEC 61672.1-2004 : *Electroacoustics – Sound level meters – Specifications*
- AS 1055.1-1997 : *Acoustics – Description and measurement of environmental noise – General procedures*

4.3 Monitoring methods

Noise monitoring is undertaken to quantify the noise impact from operations and assess individual operations contribution and cumulative noise levels against regulatory requirements. Monitoring is typically undertaken at sensitive receiver (i.e. residence) locations, or at a representative location.

Off-site noise monitoring locations are selected based on those sensitive receivers predicted to have the highest level of impact (typically based on predictive modelling from impact assessment reports).

The sections below outline the types of noise monitoring utilised by Centennial.

Noise monitoring should be undertaken by a suitably qualified acoustic consultant.

4.3.1 Real time noise monitoring

Continuous real time noise monitoring allows instantaneous feedback of noise levels at the monitoring site. Real time feedback can allow for immediate ameliorative action to be taken if elevated noise levels are recorded and linked back to a source that can be 'managed'.

Real time monitoring is used to guide the level of noise mitigation and management implemented on site. Results from the real time monitoring system will not be used to determine compliance, as noise levels recorded do not represent only noise from the operation, rather noise from all sources.

There is currently one real-time noise monitor in operation within the western region – installed for Western Coal Services. This real-time monitor is configured to measure low-frequency noise (125 Hz, 250 Hz and 500 Hz) only at this stage. Low frequency noise has been identified as a potential issue in the area and can be used as a trigger for potential operational noise impacts against total L_{Aeq} criteria.

Further details of the real time noise monitoring system are provided in the site-specific Western Coal Services **Appendix F**.

4.3.2 Attended monitoring

Attended noise monitoring is used to assess compliance with the relevant noise criteria at sensitive receiver locations.

Attended monitoring allows for the contribution of mining activities to be determined from the total measured noise level. This contribution can be estimated or calculated by the operator by noting measureable noise events and their source throughout each 15-minute noise monitoring period.

Non-mining related noise, such as insect noise, bird noise, road traffic noise, wind noise can also be quantified.

Attended noise monitoring will be conducted in accordance with *NSW Industrial Noise Policy* guidelines and AS 1055.1-1997: *Acoustics – Description and measurement of environmental noise – General procedures*.

If site noise is not measurable due to masking, then suitable methods must be employed as per the *NSW Industrial Noise Policy* (e.g. measure closer to the source and then back calculate to the receptor location) to determine a value for assessment of compliance.

The characteristics of measured site noise must also be considered and modifying factors applied according to the requirements of Section 4 of the *NSW Industrial Noise Policy*, where applicable.

In accordance with the relevant CoA, attended noise monitoring is typically undertaken over multiple periods of 15 minutes duration. Monitoring is typically undertaken during each of the day, evening and night periods. However, compliance monitoring is often most effective during the night period, for a number of reasons, including:

- Operations occur 24-hours per day.
- Extraneous noise from sources such as traffic, farming, nearby industry typically reduces during the night time, making it easier to distinguish mine-related noise.
- Meteorological conditions during the night often produce highest operational noise levels.

Given the above, Centennial will initially undertake day, evening and night monitoring at each operation with a view of reducing to night only once it has been determined that monitoring during the day and evening periods is unnecessary.

The frequency of attended monitoring surveys can vary from monthly, to quarterly to annually, depending on individual site's CoA. For operations where day-to-day activities remain similar, quarterly noise monitoring surveys aim to capture operational noise levels during a range of weather conditions and are generally considered sufficient to assess ongoing compliance with noise criteria.

4.3.3 Unattended monitoring

Unattended noise monitoring is used to:

- Monitor long term trends in ambient noise levels and cumulative mining noise.
- Providing a history that can be used to identify trends and is useful for management, planning and decision-making related to noise control.
- Assist in determining mining noise contribution during attended monitoring when unattended loggers are located near site activities.

Results from the unattended monitoring will not be used to determine compliance, as noise levels recorded do not represent only noise from the operation, rather noise from all sources.

4.3.4 Meteorological monitoring

Meteorological monitoring is used to determine prevailing regional and local weather conditions.

Local meteorological data is required during attended noise monitoring surveys to determine if the noise criteria are applicable. As per the CoA:

"*The noise criteria……are to apply under all meteorological conditions except the following:*

(a) average wind speed at microphone height exceeds 5 m/s;

(b) wind speeds greater than 3 m/s measured at 10 m above ground level; or

(c) temperature inversion conditions greater than 3°C/100 m."

Historical meteorological information provides useful data in assisting in determining the source of noise (e.g. downwind/upwind) especially during the analysis of any noise events.

A standard Automatic Weather Station (AWS) most often measures wind speed and direction, (dry bulb) temperature (optionally with a temperature gradient – typically 2m and 10m) and global solar radiation.

4.4 Monitoring devices

Noise monitoring is typically undertaken using one or more of the following devices:

- real-time noise monitor,
- sound level meter,
- unattended noise logger,

The following sections provide a summary of noise monitoring devices and the standard procedures for use for Centennial operations.

4.4.1 Real time noise monitors

Real-time noise monitors operate continuously. Their location is selected to provide useful information regarding instantaneous noise and to the direction of the source.

An Environmental Noise Compass, developed by Acoustic Research Labs Pty Ltd is currently installed as part of the Western Coal Services operations. An example of the Noise Compass setup is shown in **Figure 2**.

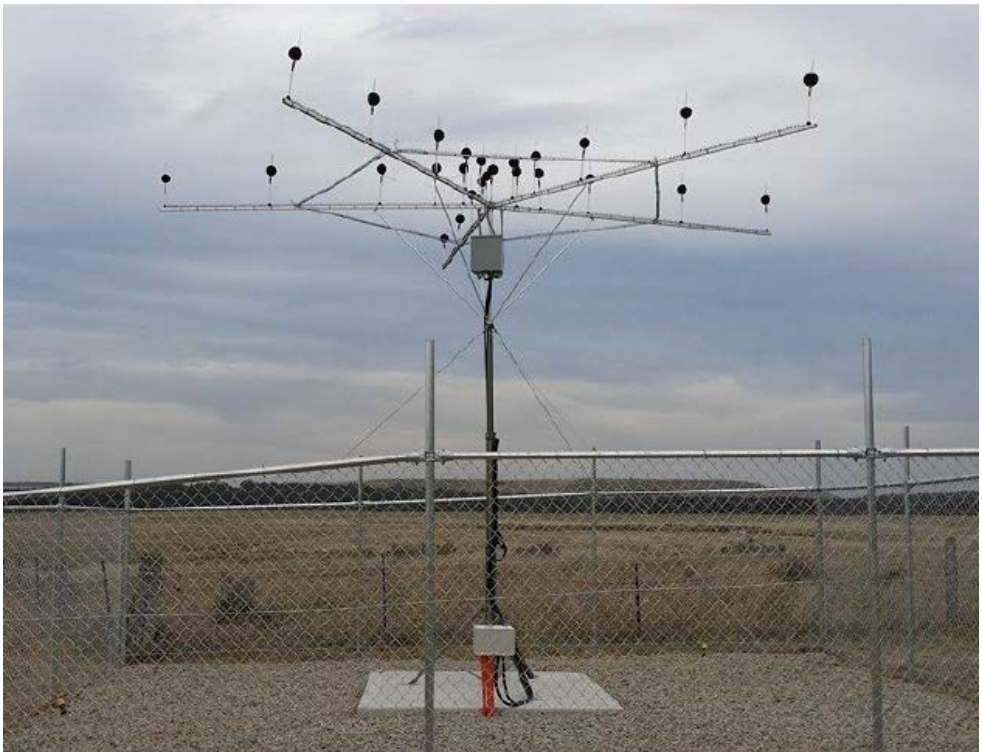


Figure 2 - Environmental Noise Compass (Acoustic Research Labs Pty Ltd)

Microphones are mounted to a five arm array allowing the direction of noise to be derived as it travels through the device. The Noise Compass processes octave bands simultaneously, in 72 different compass bearings.

Statistics are processed and continuously stored to a database. The Nosie Compass can be set up to record different statistical intervals and allows for five different percentiles. The on board data storage capacity can hold up to three months of statistical data, and up to seven days of recorded audio and short term L_{eq} data.

The sound database can be accessed remotely to view the stored data.

4.4.2 Sound level meters

Sound Level Meters (SLM) used for attended noise monitoring shall be Type 1 or Type 2 (Type 1 preferred), and conform to the requirements of Australian Standard AS 1259.1-1990: *Acoustics – Sound Level Meters* and AS IEC 61672.1-2004 *Electroacoustics – Sound level meters - Specifications*

The procedure for undertaking attended noise monitoring is outlined below:

- Attended noise monitoring/measurement shall be conducted during operations of the site that are expected to represent the highest potential for noise impacts.
- The measurement location and microphone height should be representative of the sensitive noise receiver.
- Observations of any apparent tonal, low frequency or impulsive noise will be made during the measurements and the appropriate correction factors will be applied to measured noise levels as per the *NSW Industrial Noise Policy*, where applicable.
- Record the time average A-weighted sound pressure level $L_{Aeq,T}$ (as per Clause 3.5 of AS 1055.1:1997), which represents the noise level measured at an appropriate free-field location.
- Meteorological conditions shall be noted for noise monitoring purposes, as per indicated in Clause 6.3 of AS 1055.1:1997. Meteorological conditions during the time of monitoring should be recorded from the nearest or most representative meteorological station. In addition, a hand held anemometer should also be used to assess the local weather conditions at the noise monitoring location. In accordance with the relevant CoA, noise monitoring should not be conducted (or data should be excluded) when average wind:
    - (a) average wind speed at microphone height exceeds 5 m/s;
    - (b) wind speeds greater than 3 m/s measured at 10 m above ground level; or
    - (c) temperature inversion conditions greater than 3°C/100 m.
- Notes should be taken on the types of noise sources present during monitoring through site observation (especially noise sources from mining operations). Where possible, noise levels from individual sources on site should be quantified, with the aim of determining the mining noise contribution alone to the overall measured noise level.
- Field calibration shall be undertaken immediately pre and post measurement using a Sound Calibrator to the satisfaction Clause 5.6 of AS 1055.1: 1997.
- Where adjustment to the measured noise levels is necessary due to certain nature of noise (e.g. tonality, low-frequency, impulsive and intermittent), it shall be conducted in accordance with Section 4 of the *NSW Industrial Noise Policy*.
- Record measurement details in accordance with Clause 7 of AS 1055.1: 1997, which include:
    - Type of instrumentation, make, model and serial numbers, date of most recent calibration, measurement procedure including results of reference level checking or portable calibrator checks and any calculation employed.

- Description of the time aspect of the measurements, i.e. the reference and measurement time intervals, including details of any sampling used, and the methods of processing data.
- Positions of measurements, and any adjustment made for presence or absence of nearby reflecting surfaces. This shall include a plan identifying structures, noise source locations and measurement positions.
- Results of noise monitoring, including site observations and estimated site contribution.

4.4.3 Unattended noise loggers

Unattended noise loggers typically use Type 1 or Type 2 sound level meters, as per the attended monitoring. The sound level meters are set up in a weather proof case with microphone typically attached to an external pole or similar at a height of 1.2 – 1.5 m above ground.

Figure 3 - Example unattended noise logger setup

4.4.4 Equipment calibration

Monitoring equipment will be maintained and calibrated on a regular basis in accordance with the relevant Australian Standard. The calibration requirements for noise monitoring equipment are summarised below in **Table 4-1**.

- All instrumentation should be NATA calibrated on an annual basis and calibration should be checked before and after each measurement, with a maximum deviation of ±0.5 dB.
- Field calibration shall be undertaken immediately pre and post measurement using a Sound Calibrator to the satisfaction Clause 5.6 of AS 1055.1: 1997.

Table 4-1 - Monitoring equipment calibration requirements

Equipment	Relevant Standard	Calibration frequency	Calibration description
Real-time monitor	AS 1055.1: 1997 AS 1259.1-1990	Annual	NATA laboratory responsible for calibration of measuring equipment used. Regular checks recommended.
Sound Level Meter	AS 1055.1: 1997 AS 1259.1-1990	Annual	NATA laboratory calibration. Field checks pre and post each monitoring round.
Noise logger	AS 1055.1: 1997 AS 1259.1-1990	Annual	NATA laboratory calibration. Field checks pre and post each monitoring round.

4.5 Monitoring program summary

Centennial operate a comprehensive noise monitoring program in the western region involving the use of real-time, attended and unattended monitors as well as meteorological stations. This monitoring program allows Centennial to quantify noise impacts from western region operations at sensitive receiver locations for analysis and comparison of the environmental performance against relevant CoA and EPL's. The monitoring program also allows for the effectiveness of noise management measures to be measured.

A Summary table of all existing (short term program) noise monitoring undertaken in Centennials western region is provided in **Table 4-2** and shown on **Figure 4**.

Table 4-2 - Short term noise monitoring summary – western region

Operation	Attended monitoring	Unattended monitoring	Frequency	Continuous real-time monitor
Airly Mine	4	1	Annual	-
Angus Place Colliery	3	1	Quarterly	-
Clarence Colliery	1	1	Annual	-
Lidsdale Siding	12	-	Monthly	-
Springvale Mine	2	-	Quarterly	-
Western Coal Services	10	-	Monthly	1

The long term noise monitoring program is summarised in **Table 4-3** and shown on **Figure 5.**

Table 4-3 - Long term noise monitoring summary – western region

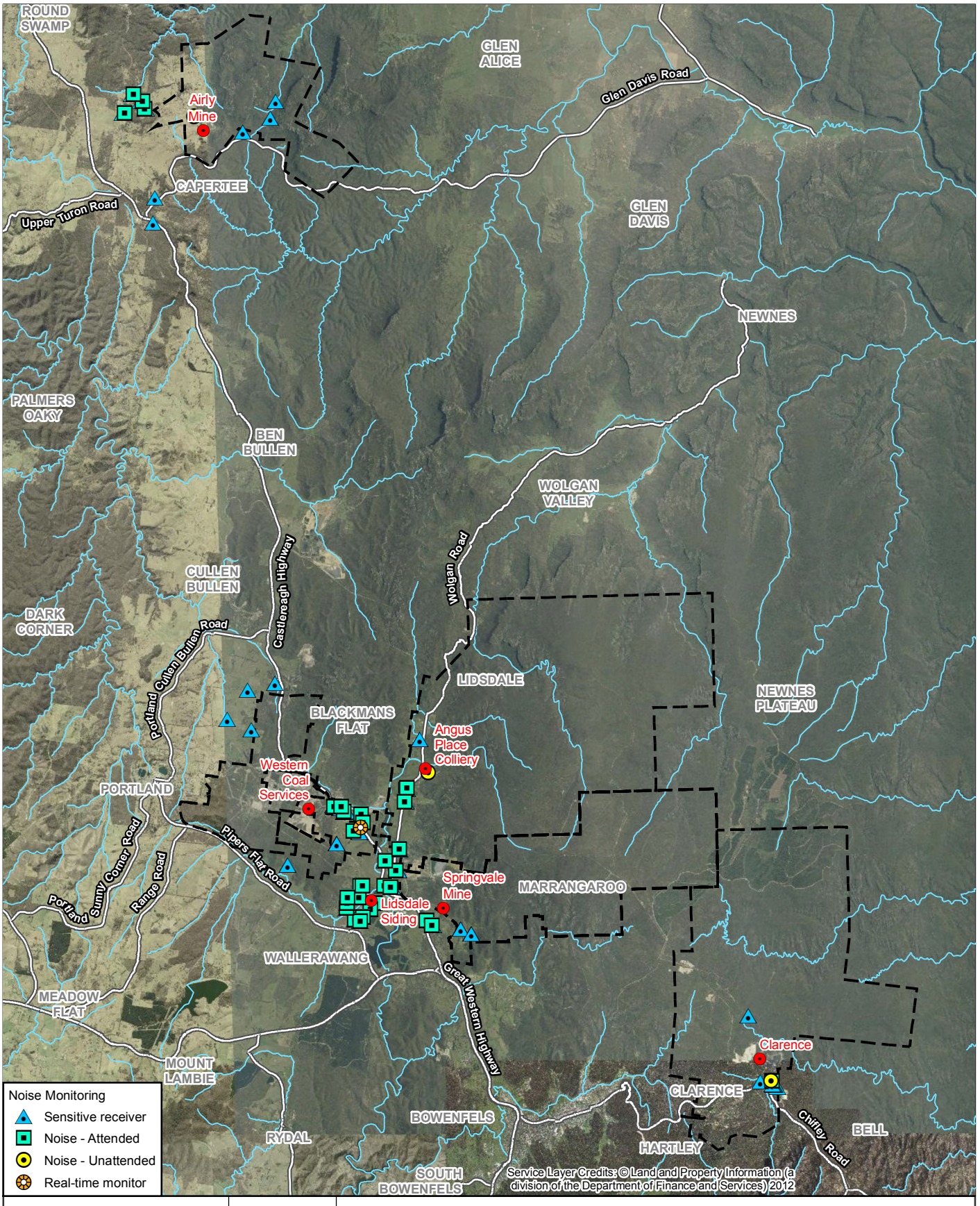
Operation	Attended monitoring	Unattended monitoring	Frequency	Continuous real-time monitor
Airly Mine	4	1	Annual	-
Angus Place Colliery	3	1	Quarterly	-
Clarence Colliery	1	1	Annual	-
Lidsdale Siding	11	-	Quarterly	-
Springvale Mine	3	-	Quarterly	-
Western Coal Services	5	-	Quarterly	1

4.5.1 Monitoring data and trends

Monitoring data will be analysed to establish both short term ($L_{Aeq\ 15\ minute}$) impacts and long term trends and reported annually in the Annual Review.

The primary use of monitoring data is to demonstrate that Centennial operations are complying with the relevant CoA. Secondly, noise monitoring data is used to guide the implementation of mitigation and management measures on site as required.

The effectiveness of this NMP will be reviewed following an incident, non-compliance or complaint and revised as required.



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0 2 4 6 8

Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

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LEGEND

- Centennial Site Location
- Colliery Holding Boundary
- Watercourse
- Roads

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Overview
Short Term Noise Monitoring

Centennial Coal

DATE 14/01/2016

Figure 4

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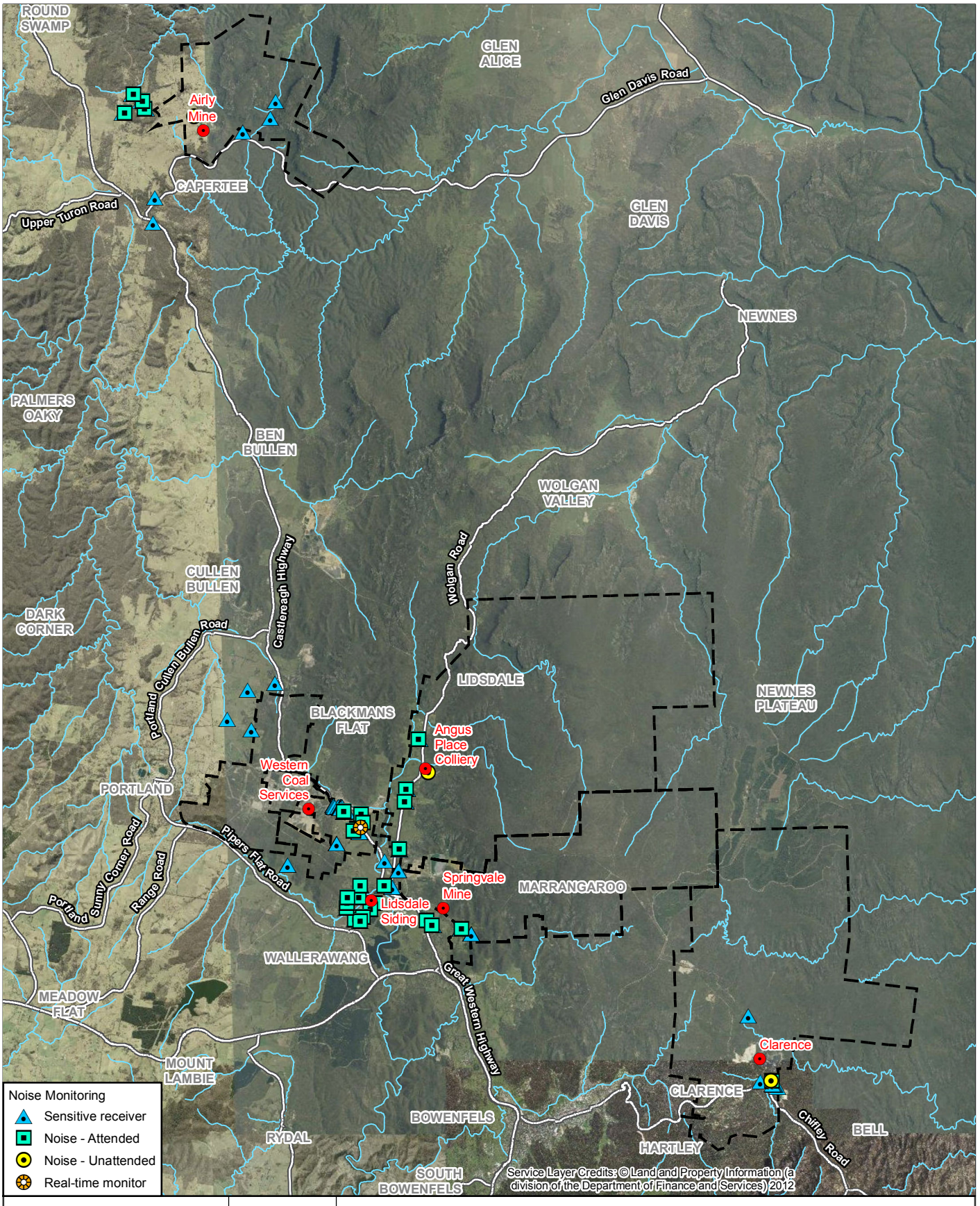

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0 2 4 6 8

Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- Colliery Holding Boundary
- Watercourse
- Roads

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Overview
Long Term Noise Monitoring

Centennial Coal

DATE 14/01/2016

Figure 5

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2218092\2218092_MR013_Noise_Overview_LongTerm_A.mxd

4.6 Reporting

4.6.1 Annual Review

An Annual Review is to be completed in accordance with the requirements of the CoA for each operation. The annual review or Annual Environmental Management Report includes:

- information on the development and activities carried out in the past calendar year,
- information on the activities proposed to be carried out over the current calendar year;
- A comprehensive review of the monitoring results and complaint records of the development over the past calendar year;
- A comparison of monitoring results against:
    - the relevant statutory requirements, limits or performance measures/criteria;
    - the monitoring results of previous years; and
    - the relevant predictions in the EIS.
- Information on any non-compliances over the past year, and what actions were (or are being) taken to ensure compliance;
- An identification of any trends in the monitoring data;
- Identification of any discrepancies between the predicted and actual impacts of the development, and an analysis of the potential cause of any significant discrepancies; and
- A description of what measures will be implemented over the next calendar year to improve the environmental performance of the development.

The Annual Review is to be made available on the Centennial Coal website.

4.6.2 Annual Return

An annual return stating the sites compliance with the conditions of its EPL is completed and submitted to the EPA on an annual basis. This is done in accordance with the EPL conditions and by the due date as stated in the EPL.

4.6.3 Monthly website environmental monitoring report

A monitoring report is published on the website to satisfy the requirements under the Protection of the Environment Legislation Amendment Act 2011 (POELA Act) to publish or make pollution monitoring data available to members of the public.

4.6.4 Community Consultative Committee

The Community Consultative Committee (CCC) meets on a regular basis. Some of the information reported at the CCC includes:

- operational issues;
- monitoring and environmental performance; and
- community complaints and the response to complaints.

5 Contingency measures

5.1 Managing unpredicted impacts

Unpredicted noise impacts may include such things as:

- Maintenance work or malfunction of operating equipment.
- The temporary use of different equipment on site or use of equipment in locations different to 'normal' operations.
- A sudden change in weather conditions which could generate noise enhancing conditions.

When unpredicted impacts are noted, an immediate review of operations would be undertaken to determine potential operational changes to reduce noise generation.

The following procedure will be implemented following recognition of an unexpected noise impact:

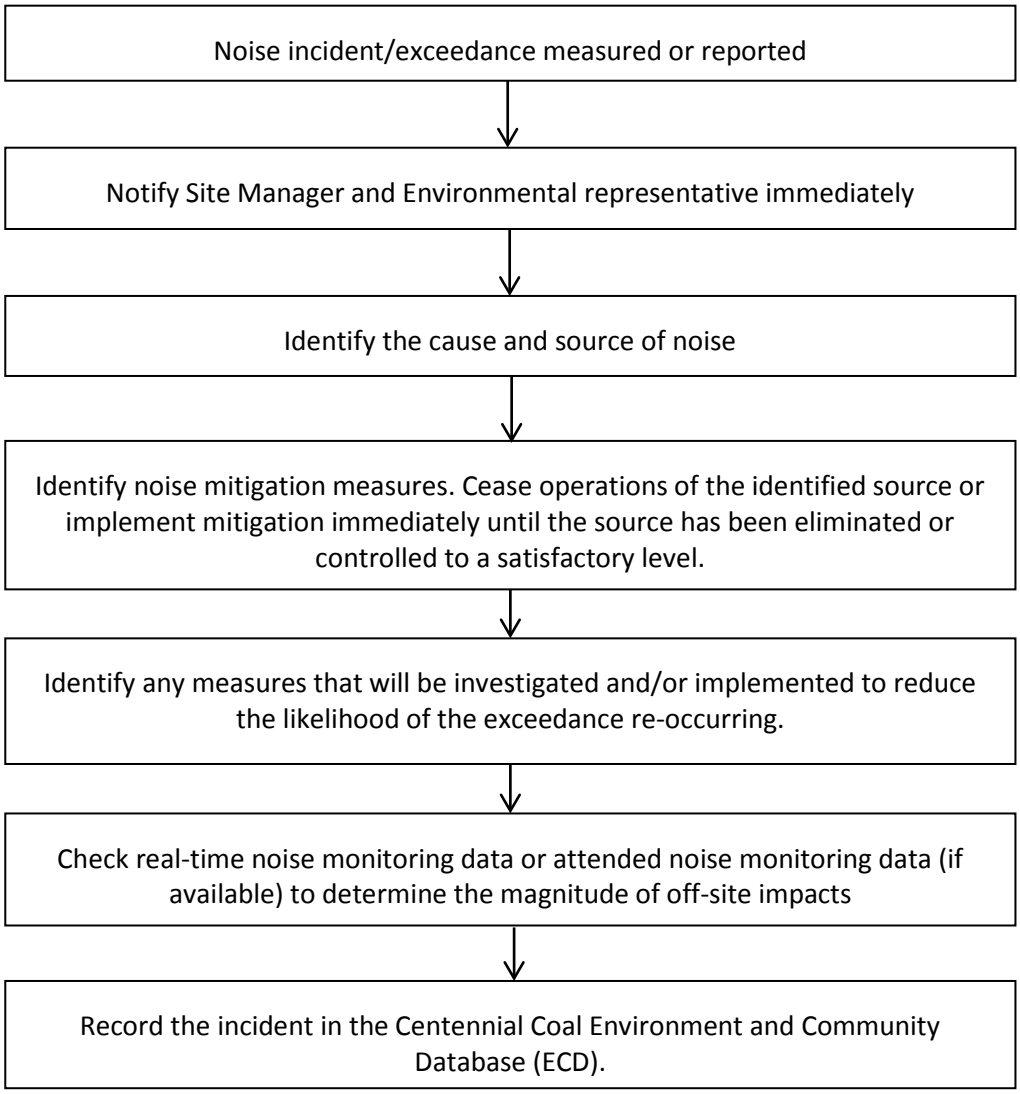


Figure 6 - Unexpected noise exceedance management procedure

5.2 Trigger Action Response Plans

The trigger action response plan (TARP) defines the minimum set of corrective actions that are required by site personnel in response to unpredicted impacts or deviation in the mine conditions from normality.

The TARP defines what is “normal” by way of a set of criteria for a range of aspects and are shown as green in the TARP. Criteria relating to abnormal conditions including trigger values are also defined in the TARP and are rated based on increased risk and potential impact and shown as orange or red. Corresponding corrective actions for each risk level are also clearly defined. The trigger levels are based on previous monitoring, CoA and EPL criteria.

It is important to note that corrective actions do not have to wait until a trigger is exceeded. Site personnel may notice abnormal levels of noise and initiate corrective actions earlier than required under the TARP.

Table 5-1 - TARP - noise

Aspect	Condition Green	Condition Orange	Condition Red
Noise	**Trigger**	**Trigger**	**Trigger**
	Monitoring results within criteria.	Real time monitoring indicates noise levels approaching noise criteria level (within 2 dB(A)).	Monitoring indicates an exceedance of the noise criteria.
	Action	**Action**	**Action**
	No response required. Continue monitoring program.	Review operations to reduce noise emissions. Modify operations if applicable.	Complete incident investigation to determine the cause of the exceedance. Review effectiveness of mitigation measures. Modify operations if applicable. Notify relevant government agencies and impacted landowners in accordance with the procedure in the Management Plan. Consider review of Management Plan if required.

6 Incidents, complaints and exceedances

6.1 Incidents

Non-compliances may be identified during attended noise monitoring. Incidents may arise from an unexpected event such maintenance work or malfunction of equipment.

Any incidents, complaints and non-conformances that occur need to be reported in accordance with the Centennial Incident Reporting Standard (CIMOS-006), logged and corrective and preventable actions identified, including:

- Minor incidents resulting in no off-site impact but requiring immediate mitigation and instigation of any mitigation action(s); and
- Off-site impacts, such those which prompt complaints, requiring notification to the Site Manager or Environment & Community Coordinator.

In the event of an incident or complaint, the following procedure will be followed:

- Investigate the likely source of noise emission, based on current equipment or activities operating within nearby mining operations;
- Mitigate the source immediately through application of mitigation measures, such as relocate noise generating activities or cease the operation if mitigation is not feasible;
- Log the complaint/incident; and
- Create an incident report, including the corrective actions that were taken and who was involved, that documents preventative actions required to prevent a recurrence of the event and includes a sign-off by an authorised person at the site.

6.2 Community enquiries or complaints

Centennial will record and respond to any community enquiries or complaints received as described in the respective sites Community Complaints and Enquiries Procedure and investigate the nature of the complaint / enquiry.

Complaints will be followed up by the Mine Manager or Environment & Community Coordinator as soon as the outcomes of the investigation have been completed.

All community complaints and enquiries will be recorded in the Centennial Coal Environment and Community Database (ECD).

6.3 Non-compliance notification procedure

The following procedure will be implemented following a measured exceedance of CoA or EPL noise criteria:

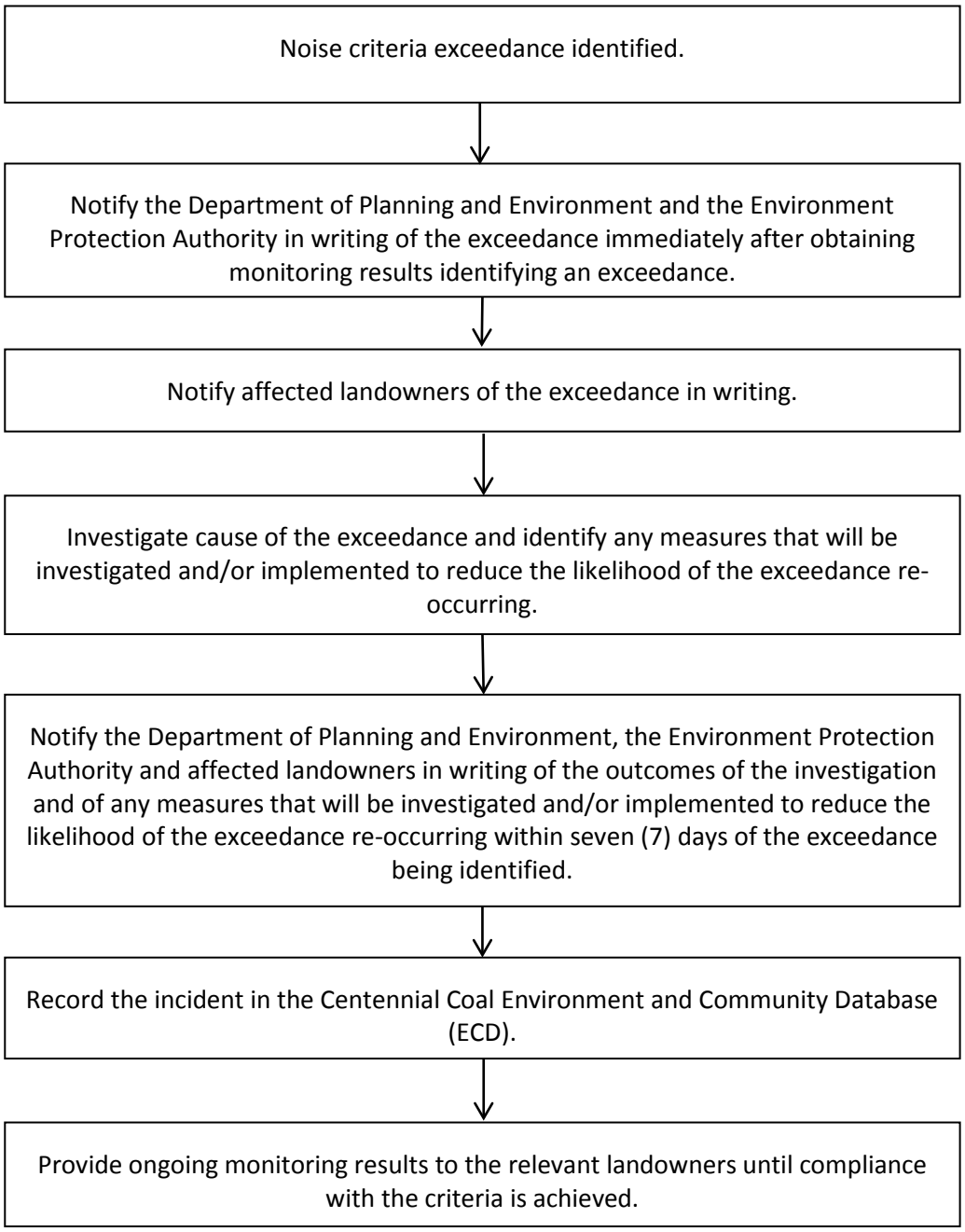


Figure 7 - Noise exceedance notification procedure

7 Roles and responsibilities

Each employee and contactor is responsible for adhering to the Centennial Coal Environmental Policy. Whilst the obligation of complying with the Environmental Policy lies with the entire workforce, further environmental management responsibilities that are considered as a part of the normal functioning of some positions relevant to the EMS are described as follows:

Mine Manager

- Authorisation of the EMS;
- Responsible for approving environmental and community objectives and targets for the operations Annual Strategic Plan;
- Reporting of significant environmental incidents to external stakeholders as required;
- Promoting compliance with the Environmental Policy and fulfilling relevant requirements of the EMS and this Management Plan;
- Compliance with the requirements of the CoA and EPL.
- Delegation of resources to ensure environmental risk mitigation strategies are implemented; and
- Delegation of duties during the absence of the Environment & Community Coordinator.

Mine/Operations Superintendents

- Maintaining the highest possible environmental standards within their designated areas of responsibility;
- Make use of all resources available to prevent or reduce environmental risks; and
- Immediately reporting environmental incidents and non-compliances to the Environment & Community Coordinator.

Environment & Community Coordinator

- Compliance with the Centennial Environmental Policy;
- Reporting of environmental incidents as required to external stakeholders;
- Development and implementation of environmental strategies, plans, and procedures;
- Regulatory and community consultation;
- Registration of community complaints and regulatory liaison in the Environment & Community Database (ECD);
- Development and implementation of environmental work procedures;
- Development and implementation of environmental training and inductions;
- Auditing the effectiveness of the EMS and this Management Plan; and
- Compliance with all licences and approvals for environmental management of the site.

Employees and Contractors

- Compliance with the Centennial Environmental Policy, standards and procedures;
- Immediately reporting of environmental incidents and community complaints or enquiries to the Environment & Community Coordinator;
- Conducting operations in compliance with the Centennial environmental management plans and procedures; and
- Identifying and implementing appropriate controls for environmental risks from any risk assessments and job safety analysis and communicating these with responsible staff.

Health, Safety, Environment & Community Committee

- Promoting environmental awareness within the workforce and contractors; and
- Raising environmental issues and programs that will improve compliance with the Environmental Policy, standards and procedures at committee meetings for appropriate staff to consider.

Delegation of roles or responsibilities may be determined by the Mine Manager at any time.

8 Training

Training of Centennial staff and contractors may include, but need not be limited to:

- Induction training;
- Environmental and community awareness training; and
- Toolbox training.

8.1 Induction training

All Centennial employees and contractors are inducted prior to commencing work on site. The environmental component of the new employees' induction includes:

- The importance of Centennial's Environmental Policy;
- Regulatory requirements;
- Overview of the framework of Centennial's EMS;
- Roles and responsibilities;
- Significant environmental aspects, impacts and consequences; and
- Environmental procedures.

Additionally, site specific issues are incorporated into the new employee and contractor site inductions and the competency of inducted personnel assessed.

Visitors to Centennial operations will undertake a brief visitor induction, with an awareness section on key environment components.

8.2 Targeted environmental training

Targeted environmental training of key staff, workforce and contractors in environmental procedures and programs will also be conducted. Specific environmental training may be delivered in the form of toolbox talks, training and assessment packages and accredited training programs to update personnel on the Centennial procedures and environmental programs.

8.3 Environmental training competence

The Centennial induction and environmental awareness training incorporates a section to assess the competency of employees and contractors against environmental requirements.

9 Management plan review

Revisions of this NMP are to be coordinated by the site Environment & Community Coordinator or delegate. The outcomes of a review will be documented by updating sections of these documents where required. Revised documents will be approved by the Group Environment Manager and submitted to DPE for approval. Once approved, the revised Management Plan will be placed on the Centennial Coal Website.

9.1 Review following an environmental audit

Audits can provide an assessment of compliance with CoA, the EMS and management plans. They also allow for continual improvement and resource allocation.

The objectives of an audit are to:

- Identify compliance with the statutory requirements; and
- To identify opportunities for improvement.

This Management Plan will be reviewed following the completion of an environment audit.

9.2 Review following non compliance

Non-compliances may become evident as a result of inspections, monitoring, through audit findings or complaints. Non-compliances identified shall be investigated and consider:

- the cause of the non-conformance;
- a review of existing controls to identify modifications required to avoid repetition of the non-conformance; and
- identification of the appropriate corrective or preventative action.

This Management Plan will be reviewed following the completion of any non-compliance investigation.

9.3 Event based review

Other events which will trigger a review of this Management Plan include:

- Modifications / improvements to the system;
- Changes in the operation;
- New approvals, guidelines or codes of practice that require a review of the strategy; and
- or as otherwise directed by the Secretary.

Appendix A – Airly Mine

Conditions of Consent – Airly Mine (SSD 5581)

This Noise Management Plan has been prepared to satisfy the conditions of consent for the Airly Mine (SSD 5581). The conditions of consent that relate to this Noise Management Plan and where they have been addressed is provided below.

Table 1 - Conditions of Consent – Airly Mine

Condition No.	Condition of Consent	Where Addressed
Schedule 4 Condition 4	The Applicant shall prepare and implement a Noise Management Plan for the development to the satisfaction of the Secretary.	This Noise Management Plan was approved by the Secretary on 22 July 2016
	This plan must:	
Schedule 4 Condition 4(a)	be prepared in consultation with the EPA, and submitted to the Secretary for approval within three months of the date of this consent, unless otherwise agreed by the Secretary;	This Noise Management Plan was prepared in consultation with the EPA. A consultation log is provided as Appendix H. This Noise Management Plan was submitted to the Secretary on 11 February 2016.
Schedule 4 Condition 4(b)	describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions of this consent;	Section 3
Schedule 4 Condition 4(c)	describe the proposed noise management system in detail;	Section 3
Schedule 4 Condition 4(d	include a monitoring program that evaluates and reports on:	
	the effectiveness of the on-site noise management system;	Section 4
	compliance against the noise criteria in this consent; and	Section 4.3.2
	compliance with the noise operating conditions	Section 4.5.

Condition No.	Condition of Consent	Where Addressed
	in condition 2 above; and	
	defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents; and	Section 6
	outlines procedures to manage responses to any complaints or issues raised by the owners of affected residences.	Section 6.2

Overview

The sections below provide site specific information which supplements the information provided in the NMP around 'common' noise sources, mitigation and management measures.

Site specific sources of noise are identified. Noise mitigation and management measures which are specific to Airly Mine operations are also outlined and discussed.

The noise monitoring network around Airly Mine is also outlined. As discussed in the NMP, a short term and long term approach has been taken when preparing the noise monitoring program for Centennial operations. The short term monitoring has been prepared to satisfy the existing regulatory requirements for Airly Mine. The long term program has been prepared as part of the regional management plan and may require a transitional period where changes from short term and long term are discussed with the relevant authorities, finalised and implemented.

Site specific noise sources

The following sources of noise identified in the NMP are relevant for Airly Mine operations:

- Operation of mobile equipment – e.g. trucks, dozers, loaders
- Coal handling/processing plant – e.g. conveyors, rotary breaker, screens and hopper filling
- Rail loading operations
- Coal transporting activities – e.g. overland conveyors, haul trucks, rail
- Ventilation fans.

There are no additional sources of noise specifically identified for Airly Mine operations.

Site specific noise mitigation and management measures

Airly Mine implements noise mitigation in accordance with the mitigation measures outlined in **Section 3.1** of the NMP.

Key noise mitigation measures for Airly Mine operations include:

- Maintaining all plant and equipment to manufactures specifications.
- Operate mobile plant in a quiet, efficient manner and regular training of operators.
- Installation of frequency modulated reversing alarms or "*quakers*" on mobile plant to replace reversing alarms.
- Installing acoustic enclosures around processing plants.
- Switching off vehicles and plant when not in use.

All mitigation measures identified in the NMP are utilised as required and implementation of noise mitigation measures are triggered by a range of methods, including:

- Noise monitoring results, indicating an exceedance of noise criteria.
- Site inspections and observation of unusually noisy equipment.
- A compliant relating to noise from mining operations.

Airly Mine operates in accordance with the Trigger Action Response Plan (TARP) provided in **Section 5.2** of the NMP.

Noise criteria

EPL 12374 does not contain any requirements relating to noise.

Schedule 4, Condition 2 of SSD_5581 provides operational noise limits for sensitive receivers, as provided in **Table 2**.

Table 2 - Airly Mine noise criteria dB(A)

Land	Day $L_{Aeq\ (15\ min)}$	Evening $L_{Aeq\ (15\ min)}$	Night $L_{Aeq\ (15\ min)}$	Night $L_{A\ (max)}$
R1-R8 inclusive	35	35	35	52
	$L_{Aeq\ (period)}$			
Mugii Murum-ban State Conservation Area	50 (when in use)			N/A
R17 (camp ground)	50 (when in use)			N/A
R18 (Nissen Hut)	50 (when in use)			N/A

SSD_5581 goes on to state:

"*Noise generated by the development is to be measured in accordance with the relevant requirements of the NSW Industrial Noise Policy. Appendix 8 sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.*

However, these criteria do not apply if the Applicant has a negotiated agreement with the owner/s of the relevant residence or land to generate higher noise levels, and the Applicant has advised the Department in writing of the terms of this agreement."

Appendix 8 of SSD_5581 outlines the conditions under which the noise criteria are applicable:

1. *The noise criteria in Tables 4 in Schedule 4 are to apply to a receiver under all meteorological conditions except under:*
   - *(a) wind speeds greater than 3 m/s measured at 10 m above ground level; or*
   - *(b)* stability category F temperature inversions and wind speed greater than 2 m/s at 10 m above ground level; or
   - *(c)* stability category G temperature inversion conditions.
2. *Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station required under condition 8 of Schedule 4.*
3. *Attended monitoring is to be used to evaluate compliance with the relevant conditions of this consent.*
4. *Unless the Secretary agrees otherwise, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the NSW Industrial Noise Policy (as amended from time to time), in particular the requirements relating to:*
   - *(a) monitoring locations for the collection of representative noise data;*
   - *(b) meteorological conditions during which collection of noise data is not appropriate;*
   - *(c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and*
   - *(d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.*

Noise monitoring

Airly Mine has operated a noise monitoring program for several years. A review of this noise monitoring network was undertaken following issue of the Draft Conditions of Approval (SSD_5581) for the Airly Mine Extension Project in 2015. The aim of this review was to identify methods to improve the efficiency and value provided from the noise monitoring network. The review considered:

- changes in the regulatory requirements since the previous Consent and EPL
- changes in operations and predicted noise impacts from environmental assessments

- long term trends in monitoring data from Annual Reviews and monthly monitoring reports
- complaints relating to noise.

A detailed discussion around the rationalisation of the noise monitoring network is provided in *Centennial Western Region Environmental Monitoring Rationalisation, Review and Recommendations* (GHD 2015).

The short term and long term monitoring programs are outlined below. The timing to implement the long term monitoring program depends on many factors, such as regulatory approvals, landholder consultation, procurement of equipment and installation.

Noise monitoring is undertaken annually. Monitoring is undertaken in each of the day, evening and night assessment periods.

Short term

The short term monitoring program consists of four attended noise monitoring locations and one unattended noise monitoring location. Monitoring is conducted at sensitive receptor locations to the west of the surface facilities, where highest operational noise levels are expected.

The short term noise monitoring network is shown in **Figure 1**.

Long term

The long term monitoring network remains unchanged from the short term network.

Monitoring locations and frequency of monitoring will be reviewed in line with the NMP and revised if required. This site-specific NMP will be updated accordingly.

The long term noise monitoring network is shown in **Figure 2**.

A summary of the noise monitoring to be undertaken at Airly Mine is provided in **Table 3** and **Table 4**.

Table 3 - Airly Mine short term noise monitoring locations

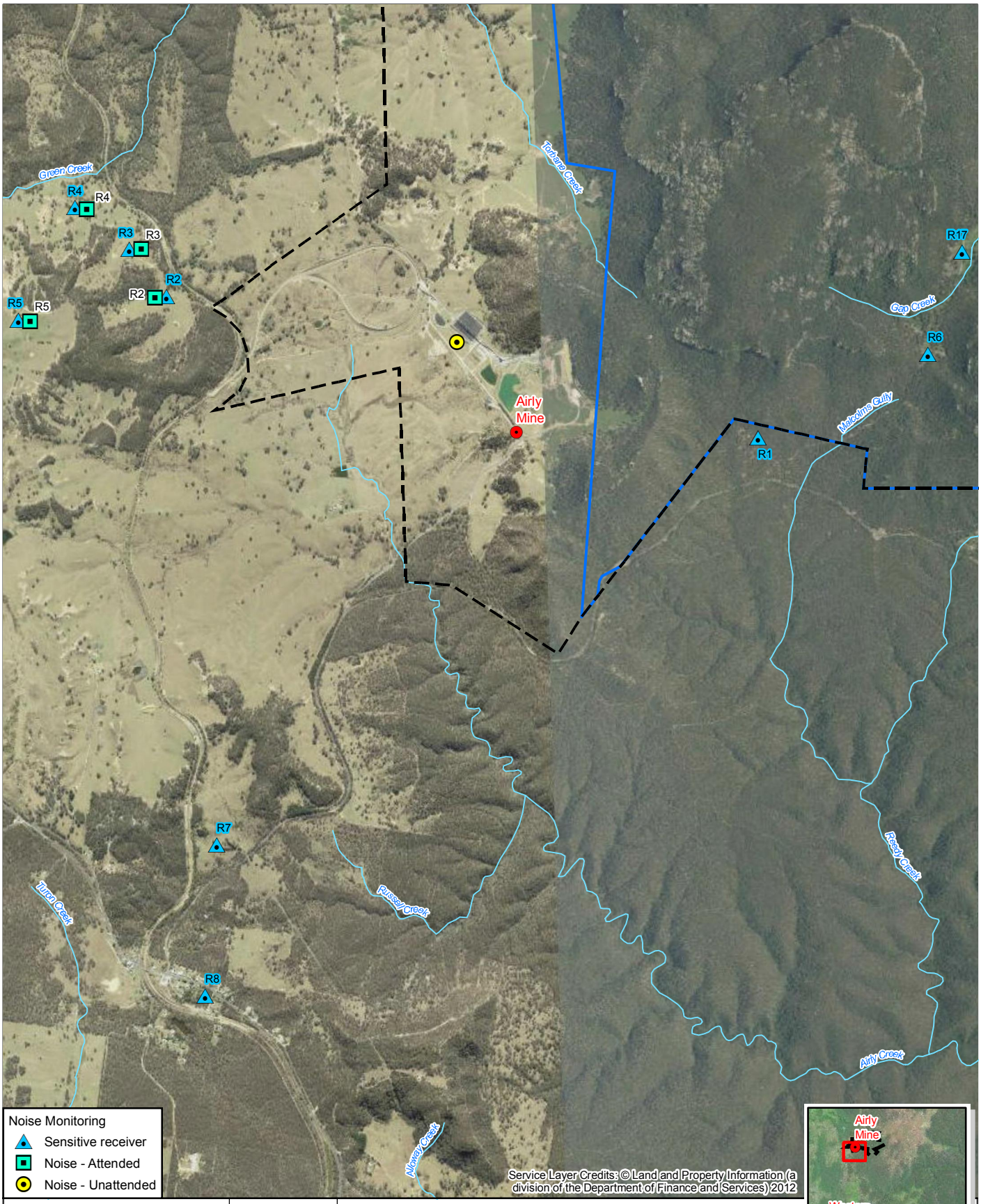
Site ID	Receiver ID	X (m)	Y (m)	Monitor type	Frequency	Purpose
R1	-	220655	6332650	Unattended	Annual	Informative*
R2	R2	218725	6332953	Attended	Annual	Compliance
R3	R3	218480	6333266	Attended	Annual	Compliance
R4	R4	218118	6333545	Attended	Annual	Compliance
R5	R5	217740	6332796	Attended	Annual	Compliance

* Unattended noise monitoring data used to assist in estimating site noise contribution at attended monitoring locations.

Table 4 - Airly Mine long term noise monitoring locations

Site ID	Receiver ID	X (m)	Y (m)	Monitor type	Frequency	Purpose
R1	-	220655	6332650	Unattended	Annual	Informative*
R2	R2	218725	6332953	Attended	Annual	Compliance
R3	R3	218480	6333266	Attended	Annual	Compliance
R4	R4	218118	6333545	Attended	Annual	Compliance
R5	R5	217740	6332796	Attended	Annual	Compliance

* Unattended noise monitoring data used to assist in estimating site noise contribution at attended monitoring locations.



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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- ML1331 Boundary
- A232 Boundary
- Watercourse

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

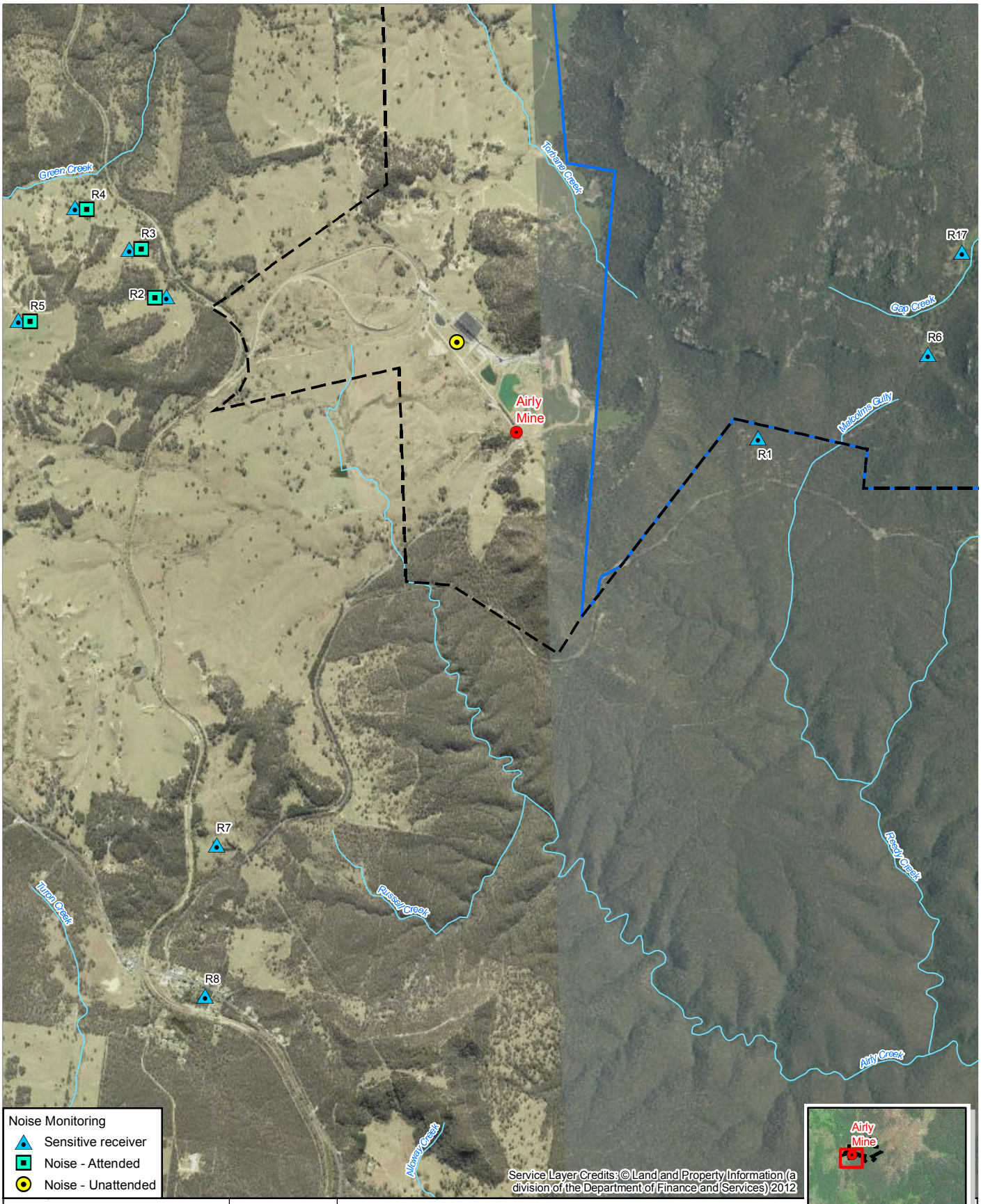
Airly
Short Term Noise Monitoring

Centennial Coal

DATE 14/01/2016

Figure 1

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2218092\2218092_MR003_Noise_ShortTerm_DDP_A.mxd



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0 0.3 0.6 0.9 1.2

Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- ML1331 Boundary
- A232 Boundary
- Watercourse

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Airly
Long Term Noise Monitoring

Centennial Coal

DATE 14/01/2016

Figure 2

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2218092\2218092_MR004_Noise_LongTerm_DDP_A.mxd

Meteorological monitoring

In accordance with Condition 8 of the CoA, meteorological data for Airly Mine is measured from Airly Homestead weather station.

The weather station continuously monitors weather parameters. Monitoring parameter are summarised in **Table 5**.

Supplementary weather data could be obtained through the use of a mobile device by the noise monitoring operator.

Table 5 - Airly Mine meteorological monitoring

Site ID	X (m)	Y (m)	Parameter	Instrument	Frequency	Purpose
Airly Homestead AWS	219674	6330929	Temperature Humidity Barometric Pressure Wind – speed and direction Rainfall Solar radiation	Automatic weather station	10 minute data intervals	Proactive monitoring Weather analysis during noise monitoring Rainfall information

Appendix B – Angus Place Colliery

Conditions of Consent – Angus Place (PA 06_0021)

This Noise Management Plan has been prepared to satisfy the conditions of consent for the Angus Place Colliery (PA 06_0021). The conditions of consent that relate to this Noise Management Plan and where they have been addressed is provided below.

Table 1 - Conditions of Consent – Angus Place Colliery

Condition No.	Condition of Consent	Where addressed
Schedule 3 Condition 22	The Proponent shall prepare (and following approval implement) a Noise Monitoring Program for the project, to the satisfaction of the Secretary.	The original Air Quality Monitoring Program was approved by the Secretary on 12 June 2007. A revised Air Quality Monitoring Program was approved 22 October 2013. This Noise Management Plan was approved by the Secretary on 22 July 2016.
	This program must include a combination of attended and unattended noise monitoring, and	Section 4 Appendix B
	a noise monitoring protocol for evaluating compliance with the noise impact assessment criteria in this approval.	Section 4
	The program shall be prepared in consultation with EPA, and be submitted to the Secretary within 6 months of the date of this approval.	The original Noise Monitorign Programme was submitted to the Secretary on 4 June 2007. This Noise Management Plan was submitted to the Secretary on 11 February 2016. This Noise Management Plan was prepared in consultation with the EPA. A consultation log is provided as Appendix H.

Overview

The sections below provide site specific information which supplements the information provided in the NMP around 'common' noise sources, mitigation and management measures.

Site specific sources of noise are identified. Noise mitigation and management measures which are specific to Angus Place Colliery operations are also outlined and discussed.

The noise monitoring network around Angus Place Colliery is also outlined. As discussed in the NMP, a short term and long term approach has been taken when preparing the noise monitoring program for Centennial operations. The short term monitoring has been prepared to satisfy the existing regulatory requirements for Angus Place Colliery. The long term program has been prepared as part of the regional management plan and may require a transitional period where changes from short term and long term are discussed with the relevant authorities, finalised and implemented.

Site specific noise sources

The following sources of noise identified in the NMP are relevant for Angus Place Colliery operations:

- Operation of mobile equipment – e.g. trucks, dozers, loaders
- Coal handling/processing plant – e.g. conveyors, rotary breaker, screens and truck loading
- Coal transporting activities – e.g. conveyors, haul trucks
- Ventilation fans.

There are no additional sources of noise specifically identified for Angus Place Colliery operations.

Site specific noise mitigation and management measures

Angus Place Colliery implements noise mitigation in accordance with the mitigation measures outlined in **Section 3.1** of the NMP.

Key noise mitigation measures for Angus Place Colliery operations include:

- Maintaining all plant and equipment to manufactures specifications.
- Operate mobile plant in a quiet, efficient manner and regular training of operators.
- Installation of frequency modulated reversing alarms or "*quakers*" on mobile plant to replace reversing alarms.
- Installing acoustic enclosures around processing plants.
- Speed limits on haul routes.
- Switching off vehicles and plant when not in use.

All mitigation measures identified in the NMP are utilised as required and implementation of noise mitigation measures are triggered by a range of methods, including:

- Noise monitoring results, indicating an exceedance of noise criteria.
- Site inspections and observation of unusually noisy equipment.
- A compliant relating to noise from mining operations.

Angus Place Colliery operates in accordance with the Trigger Action Response Plan (TARP) provided in **Section 5.2** of the NMP.

Noise criteria

Project Approval 06_0021 and Condition L4.1 of the EPL 467 specifies noise limits for three identified locations, as provided in **Table 2**.

Table 2 - Angus Place Colliery noise criteria dB(A) $L_{Aeq\ (15\ min)}$

Land	Day (7 am to 6 pm)	Evening (6 pm to 10 pm)	Night (10 pm to 7 am)
Sharpe	42	38	36
Mason (West) and other Wolgan Road rural properties	41	37	35
Lidsdale village residents	44	40	35

Notes:

a) *For more information on the references to land in this condition, see 'Property Details' figure of the EA.*

b) *The noise criteria do not apply where the Proponent and the affected landowner have reached a negotiated agreement in regard to noise, and a copy of the agreement has been forwarded to the Secretary and EPA.*

c) *Noise from the project is to be measured at the most affected point or 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, to determine compliance with the LAeq(15 minute) noise limits in the above table. Where it can be demonstrated that direct measurement of noise from the project is impractical, the EPA 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.*

d) *The noise emission limits identified in the above table apply under meteorological conditions of:*

- *Wind speeds of up to 3 m/s at 10 metres above ground level; or*

- *Temperature inversion conditions of up to 3ºC/100m, and wind speeds of up to 2 m/s at 10 metres above ground level.*

Noise monitoring

Angus Place Colliery has operated a noise monitoring program for several years. A review of this noise monitoring network was undertaken in 2015. The aim of this review was to identify methods to improve the efficiency and value provided from the noise monitoring network. The review considered:

- changes in the regulatory requirements
- changes in operations and predicted noise impacts from environmental assessments
- long term trends in monitoring data from Annual Reviews and monthly monitoring reports
- complaints relating to noise.

A detailed discussion around the rationalisation of the noise monitoring network is provided in *Centennial Western Region Environmental Monitoring Rationalisation, Review and Recommendations* (GHD 2015).

The short term and long term monitoring programs are outlined below. The timing to implement the long term monitoring program depends on many factors, such as regulatory approvals, landholder consultation, procurement of equipment and installation.

Noise monitoring is undertaken quarterly. Monitoring is undertaken in each of the day, evening and night assessment periods.

Short term

The short term monitoring program will remain unchanged from what is currently undertaken, with three attended monitoring locations and one unattended monitoring location. Attended monitoring is conducted at sensitive receptor locations to the south of the surface facilities, where highest operational noise levels are expected.

Monitoring location R3 was selected to quantify noise from the Wallerawang Power Station Haul Road. This haul road is no longer in operation and therefore this monitoring location serves limited value. While monitoring at R3 will continue in the short term to satisfy Project Approval 06_0021, it is proposed to relocate this location in the long term.

The short term noise monitoring network is shown in **Figure 1**.

Long term

The long term noise monitoring network remains largely unchanged from the current network, with the exception of monitoring at location R3, which is proposed to cease and move to the north of Angus Place Colliery to be representative of sensitive receiver WR3.

The long term noise monitoring network is shown in **Figure 2**.

The long term monitoring program will require approval from DPE and EPA prior to it being implemented.

A summary of the noise monitoring to be undertaken at Angus Place Colliery is provided in **Table 2** and **Table 3**.

Table 2 - Angus Place Colliery short term noise monitoring locations

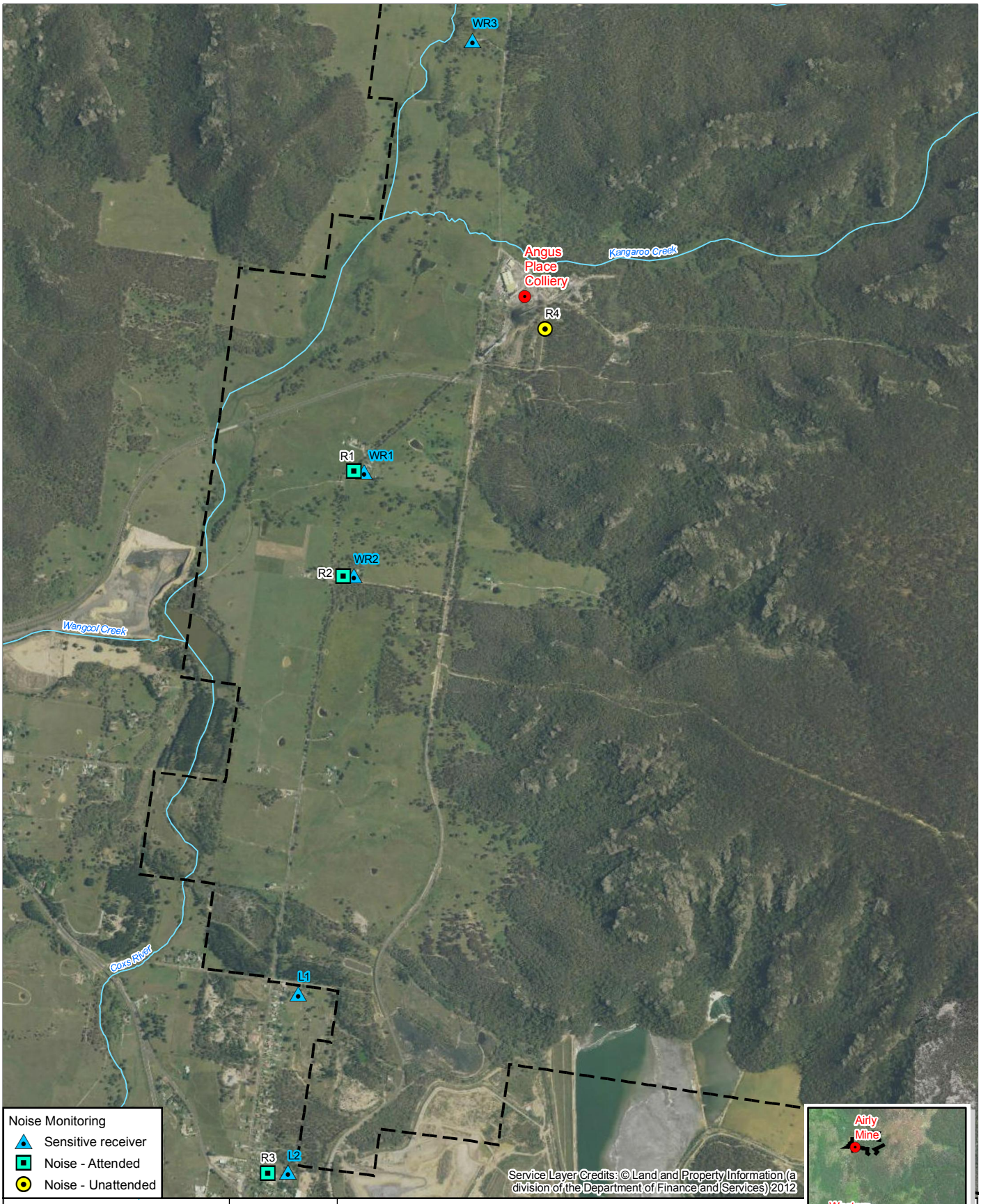
Site ID	Receiver ID	X (m)	Y (m)	Monitor type	Frequency	Purpose
R1	WR1	229398	6305139	Attended	Quarterly	Compliance
R2	WR2	229346	6304626	Attended	Quarterly	Compliance
R3	L2	229028	6301777	Attended	Quarterly	Compliance
R4	-	230250	6305782	Unattended	Quarterly	Informative*

* Unattended noise monitoring data used to assist in estimating site noise contribution at attended monitoring locations.

Table 3 - Angus Place Colliery long term noise monitoring locations

Site ID	Receiver ID	X (m)	Y (m)	Monitor type	Frequency	Purpose
R1	WR1	229398	6305139	Attended	Quarterly	Compliance
R2	WR2	229346	6304626	Attended	Quarterly	Compliance
R3	WR3	229905	6307154	Attended	Quarterly	Compliance
R4	-	230250	6305782	Unattended	Quarterly	Informative*

* Unattended noise monitoring data used to assist in estimating site noise contribution at attended monitoring locations.



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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- Colliery Holding Boundary
- Watercourse

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Angus Place Short Term Noise Monitoring

Centennial Coal

DATE 14/01/2016

Figure 1

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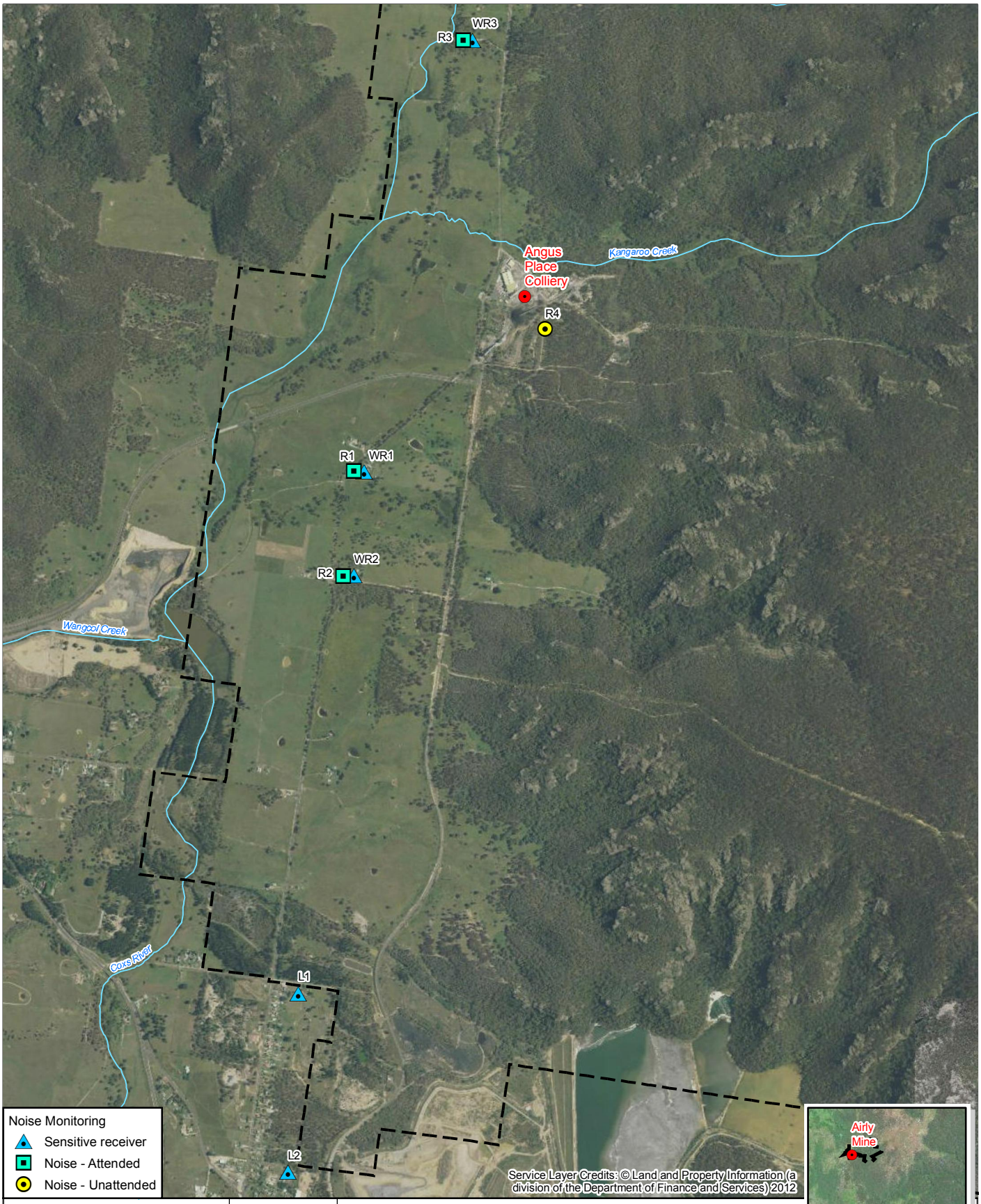

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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- Colliery Holding Boundary
- Watercourse

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Angus Place Long Term Noise Monitoring

Centennial Coal

DATE 14/01/2016

Figure 2

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2218092\2218092_MR004_Noise_LongTerm_DDP_A.mxd

Meteorological monitoring

Meteorological data for Angus Place Colliery is measured at two locations, from Angus Place AWS and Angus Place Vent Facility AWS.

The weather stations continuously monitor weather parameters. Monitoring parameter are summarised in **Table 4**.

Supplementary weather data could be obtained through the use of a mobile device by the noise monitoring operator.

Table 4 - Angus Place meteorological monitoring

Site ID	X (m)	Y (m)	Parameter	Instrument	Frequency	Purpose
Angus Place AWS	229846	6306001	Temperature Humidity Barometric Pressure Wind – speed and direction Rainfall Solar radiation Sigma-theta	Automatic weather station	10 minute data intervals	Proactive monitoring Weather analysis during noise monitoring Rainfall information
Angus Place Vent Facility AWS	237198	6305700				

Appendix C - Clarence Colliery

Conditions of Consent – Clarence Colliery (DA 504-00)

This Noise Management Plan has been prepared to satisfy the conditions of consent for the Clarence Colliery (DA 504-00). The conditions of consent that relate to this Noise Management Plan and where they have been addressed is provided below.

Table 1 - Conditions of Consent – Clarence Colliery

Condition No.	Condition of Consent	Where addressed
Schedule 3 Condition 16	Within 6 months of the date of this consent, the Applicant shall prepare and subsequently implement a Noise Management Plan for the development, in consultation with EPA, and to the satisfaction of the Secretary.	This Noise Management Plan was prepared in consultation with the EPA. A consultation log is provided as Appendix H. The original Noise Monitoring Program was approved by the Secretary on 19 September 2006. A revised Noise Monitoring Program was submitted to the DPE on the 30 October 2014. No formal approval of this Monitoring Program was received. This Noise Management Plan was submitted to the DPE on 11 February 2016 and approved by the Secretary on 22 July 2016.
	The plan shall include:	
Schedule 3 Condition 16(a)	a noise monitoring protocol for evaluating compliance with the noise impact assessment criteria;	Section 4
Schedule 3 Condition 16(b)	a plan for the management and minimisation of noise emissions associated with train-loading and rail operations, including consideration of all feasible and reasonable noise mitigation measures; and	Section 3 Appendix C
Schedule 3 Condition 16(c)	a protocol for the investigation, notification, and mitigation of identified exceedances of the noise impact assessment criteria.	Section 6.

Schedule 3 Condition 16A	The Applicant shall prepare and implement a revised Noise Management Plan for the development, with a particular focus on reducing rail noise, to the satisfaction of the Secretary.	A revised Noise Monitoring Program was submitted to the DPE on the 30 October 2014. No formal approval of this Monitoring Program was received.
	This plan must be prepared in consultation with EPA	This Noise Management Plan was prepared in consultation with the EPA. A consultation log is provided as Appendix H.
	provide for the implementation of the Applicant's commitments in Appendix 4, and	Appendix C
	be submitted to the Secretary for approval by 31 October 2014.	A revised Noise Management plan was submitted to the Secretary on 30 October 2014. This Noise Management Plan was submitted to the Secretary on 11 February 2016.

Overview

The sections below provide site specific information which supplements the information provided in the NMP around 'common' noise sources, mitigation and management measures.

Site specific sources of noise are identified. Noise mitigation and management measures which are specific to Clarence Colliery operations are also outlined and discussed.

The Noise monitoring network around Clarence Colliery is also outlined. As discussed in the NMP, a short term and long term approach has been taken when preparing the noise monitoring program for Centennial operations. The short term monitoring has been prepared to satisfy the existing regulatory requirements for Clarence Colliery. The long term program has been prepared as part of the regional management plan and may require a transitional period where changes from short term and long term are discussed with the relevant authorities, finalised and implemented.

Site specific noise sources

The following sources of noise identified in the NMP are relevant for Clarence Colliery operations:

- Operation of mobile equipment – e.g. trucks, dozers, loaders
- Coal handling and preparation plant (CHPP)
- Train loading operations and rail loop

- Coal transporting activities – e.g. overland conveyors, haul trucks, rail
- Ventilation fans.

There are no additional sources of noise specifically identified for Clarence Colliery operations.

Site specific noise mitigation and management measures

Clarence Colliery implements noise mitigation in accordance with the mitigation measures outlined in **Section 3.1** of the NMP.

Key noise mitigation measures for Clarence Colliery include:

- Maintaining all plant and equipment to manufactures specifications.
- Operate mobile plant in a quiet, efficient manner and regular training of operators.
- Installation of frequency modulated reversing alarms or "*quakers*" on mobile plant to replace reversing alarms.
- Installing acoustic enclosures around processing plants.
- Switching off vehicles and plant when not in use.

All mitigation measures identified in the NMP are utilised as required and implementation of noise mitigation measures are triggered by a range of methods, including:

- Noise monitoring results, indicating an exceedance of noise criteria.
- Site inspections and observation of unusually noisy equipment.
- A compliant relating to noise from mining operations.

Clarence Colliery operates in accordance with the Trigger Action Response Plan (TARP) provided in **Section 5.2** of the NMP.

Train loading and rail operations

In addition to the management of noise from mining operations, DA 504-00 requires a specific plan for the "*management and minimisation of noise emissions associated with train-loading and rail operations, including consideration of all feasible and reasonable noise mitigation measures*". This plan is required to address the Statement of Commitments for Clarence Colliery.

Clarence has consulted with Pacific National regarding practically feasible measures to reduce noise while rail loading. This consultation and options invested are noted below in **Table 2**.

Table 2 - Rail noise mitigation feasibility assessment

Option	Potential mitigation option identified	Mitigation type	Comments	Implementation feasibility
1	Locomotion engine noise	Engineering	Locomotives currently meet Rail Corp noise emissions guidelines	No further engineering mitigation options feasible
2	Use of horn	Administrative	Use of horn not	Not required

Option	Potential mitigation option identified	Mitigation type	Comments	Implementation feasibility
			identified as an issue by residents	
3	Review the location of relief points and signals on the departure side, as well as idling location of the rail loop to minimise idling noise near residential Receivers	Administrative	Communication protocols could be implemented to limit and/or prevent idling while waiting to depart at the Newnes Junction Station	Feasible

Out of the potential mitigation options identified, option number 3 is considered feasible and effective to reduce noise levels during rail loading activities at nearby residents. To implement this option an agreement between Clarence Colliery, Pacific National and Sydney Trains has been entered into. Centennial is currently in consultation with Sydney Trains to implement this control measure.

Further options to minimise noise associated with rail loading and rail operations on the Clarence Colliery loop that have been considered in past Noise Management Plans include:

- Scheduling coal train movements within day time hours, where practical;
- Scheduling coal train movements within evening hours in preference to night hours, where practical;
- Instructing coal train operators to decelerate and accelerate slowly and smoothly when approaching rounding and departing the rail loop;
- Filling the train loading bin during daylight hours and maintaining the bin at greater than 60% during train loading operations (so as not to create excess noise from filling the bin), where practical; and
- Maintaining the train loading infrastructure to include regular inspections to detect wearing and noisy rollers, early detection of failing parts, and structural inspections on the belt gantry and associated infrastructure to detect and repair loose components potentially leading to noise. Corrective action required as a result of these inspections is managed through the mine planning corrective action system.

Noise criteria

Condition 15 of Development Approval DA 504-00 provides noise impact assessment criteria. The noise limits are applicable to noise "*generated from the premises, excluding train loading and rail operations*". EPL 726 provides the same noise limits for site operations.

Table 3 - Clarence Colliery noise criteria dB(A) $L_{Aeq\ (15\ min)}$

Location	Day	Evening	Night
Residences on privately owned land	38	36	35

Notes:

(a) *For the purpose of these noise criteria, 5dB(A) must be added to the measured level if the noise is substantially tonal or impulsive in character.*

(b) *The noise criteria do not apply where the Applicant and the affected landowner have reached a negotiated agreement in regard to noise, and a copy of the agreement has been forwarded to the Secretary and EPA.*

(c) *Noise from the development is to be measured at the most affected point or 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, to determine compliance with the LAeq(15 minute) noise limits in the above table. Where it can be demonstrated that direct measurement of noise from the development is impractical, the EPA 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.*

(d) *The noise criteria apply under prevailing meteorological conditions (winds up to 3m/s), except under conditions of temperature inversions. Noise impacts that may be enhanced by temperature inversions must be addressed by:*

- *documenting noise complaints received to identify any higher level of impacts or patterns of temperature inversions; and*
- *where levels of noise complaints indicate a higher level of impact then actions to quantify and ameliorate any enhanced impacts under temperature inversion conditions shall be developed and implemented.*

Condition M4 of EPL 726 also specifies requirements relating to noise monitoring:

M4.1 *The licensee must undertake yearly (in-line with the reporting period) noise monitoring as outlined below, to determine compliance with the noise limits stipulated by condition L5.1:*

a) 1 day attended noise monitoring covering the day, evening and night time periods; and

b) 5 days unattended noise monitoring (monitor and logger) covering each day, evening and night time periods.

M4.2 The results of the noise monitoring required by condition M4.1, and an interpretation of these results, must be provided as an attachment to each corresponding years Annual Return.

M4.3 The licensee, following the receipt of a noise related complaint and if required by the EPA, must undertake noise monitoring as required by the EPA to determine compliance with the noise limits stipulated by condition L5.1.

M4.4 The results of the noise monitoring required by condition M4.3, and an interpretation of these results, must be provided to the EPA within 21 days of the completion of the noise monitoring.

Noise monitoring

Clarence Colliery has operated a noise monitoring program for several years. A review of this noise monitoring network was undertaken in 2015. The aim of this review was to identify methods to improve the efficiency and value provided from the noise monitoring network. The review considered:

- changes in the regulatory requirements
- changes in operations and predicted noise impacts from environmental assessments
- long term trends in monitoring data from Annual Reviews and monthly monitoring reports
- complaints relating to noise.

A detailed discussion around the rationalisation of the noise monitoring network is provided in *Centennial Western Region Environmental Monitoring Rationalisation, Review and Recommendations* (GHD 2015).

Receivers 1 to 5 are located in Newnes Junction of which one is owned by the adjacent Newnes Kaolin Pty Ltd and the remainder are private residential properties. Receiver 6 is located to the south of the Main Western Line on the north-eastern outskirts of Clarence village. Receiver 7 represents the nearest likely passive recreation area within the Newnes Plateau.

The short term and long term monitoring programs are outlined below. Based on the review, no changes are recommended from the existing noise monitoring network.

Noise monitoring is undertaken annually. Monitoring is undertaken in each of the day, evening and night assessment periods.

Short term

The short term monitoring program will remain unchanged from what is currently undertaken, consisting of one attended noise monitoring location and one unattended noise monitoring location.

The monitoring location has been selected to be representative of the most affected receivers.

The short term dust monitoring network is shown in **Figure 1**.

Long term

The long term monitoring network remains unchanged from the short term network.

Monitoring locations and frequency of monitoring will be reviewed in line with the NMP and revised if required. This site-specific NMP will be updated accordingly.

The long term noise monitoring network is shown in **Figure 2**.

A summary of the noise monitoring to be undertaken at Clarence Colliery is provided in **Table 4** and **Table 5**.

Table 4 - Clarence Colliery short term noise monitoring locations

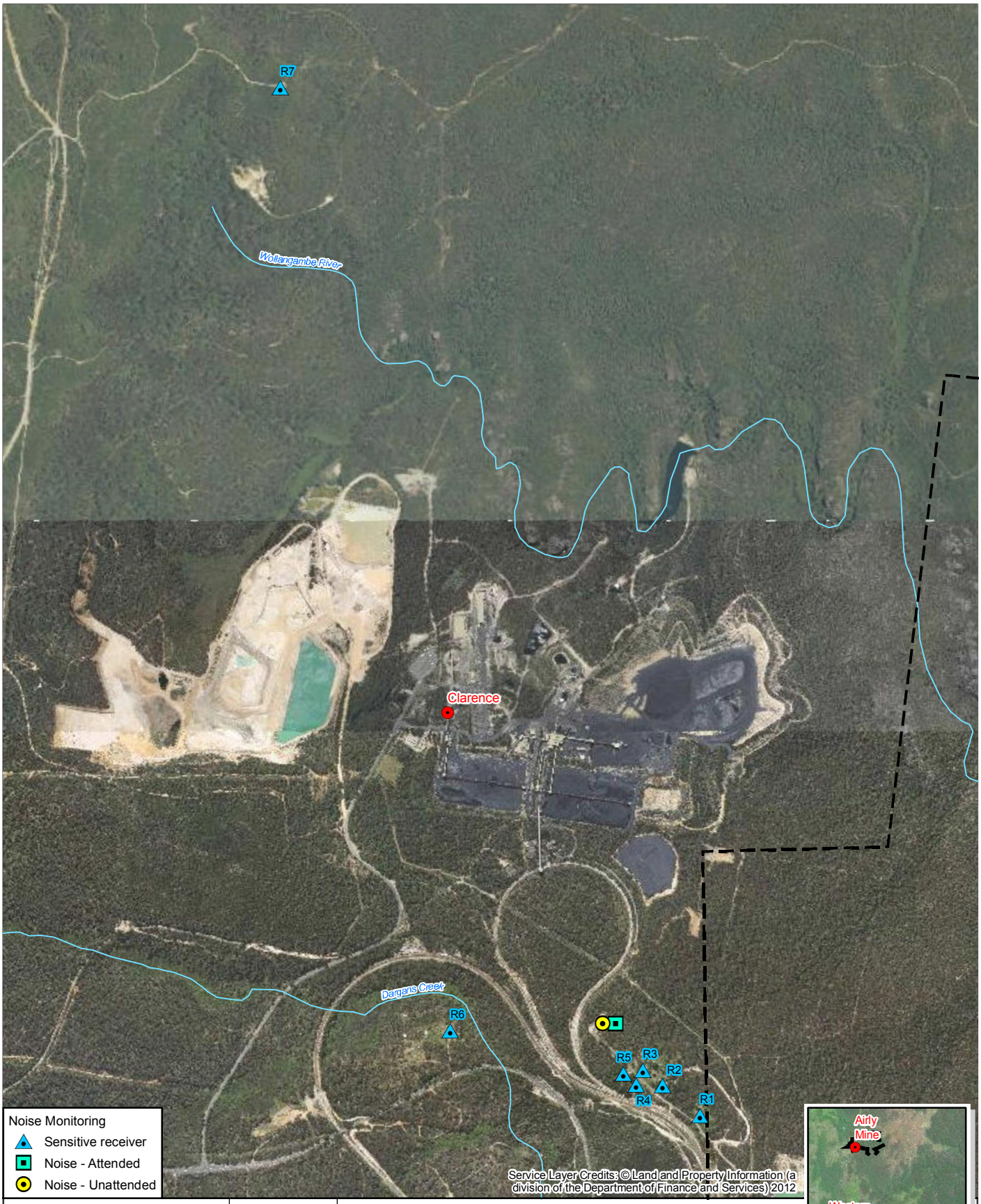
Site ID	Receiver ID	X (m)	Y (m)	Monitor type	Frequency	Purpose
M1	R1, R2, R3, R4, R5, R6	244276	6293167	Attended	Annual	Compliance
M1	-	244276	6293167	Unattended	Annual	Informative*

* Unattended noise monitoring data used to assist in estimating site noise contribution at attended monitoring location and provide data for assessing the long term trends in ambient noise levels.

Table 5 - Clarence Colliery long term noise monitoring locations

Site ID	Receiver ID	X (m)	Y (m)	Monitor type	Frequency	Purpose
M1	R1, R2, R3, R4, R5, R6	244276	6293167	Attended	Annual	Compliance
M1	-	244276	6293167	Unattended	Annual	Informative*

* Unattended noise monitoring data used to assist in estimating site noise contribution at attended monitoring location and provide data for assessing the long term trends in ambient noise levels.



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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- Colliery Holding Boundary
- Watercourse

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Clarence
Short Term Noise Monitoring

Centennial Coal

DATE 14/01/2016

Figure 1

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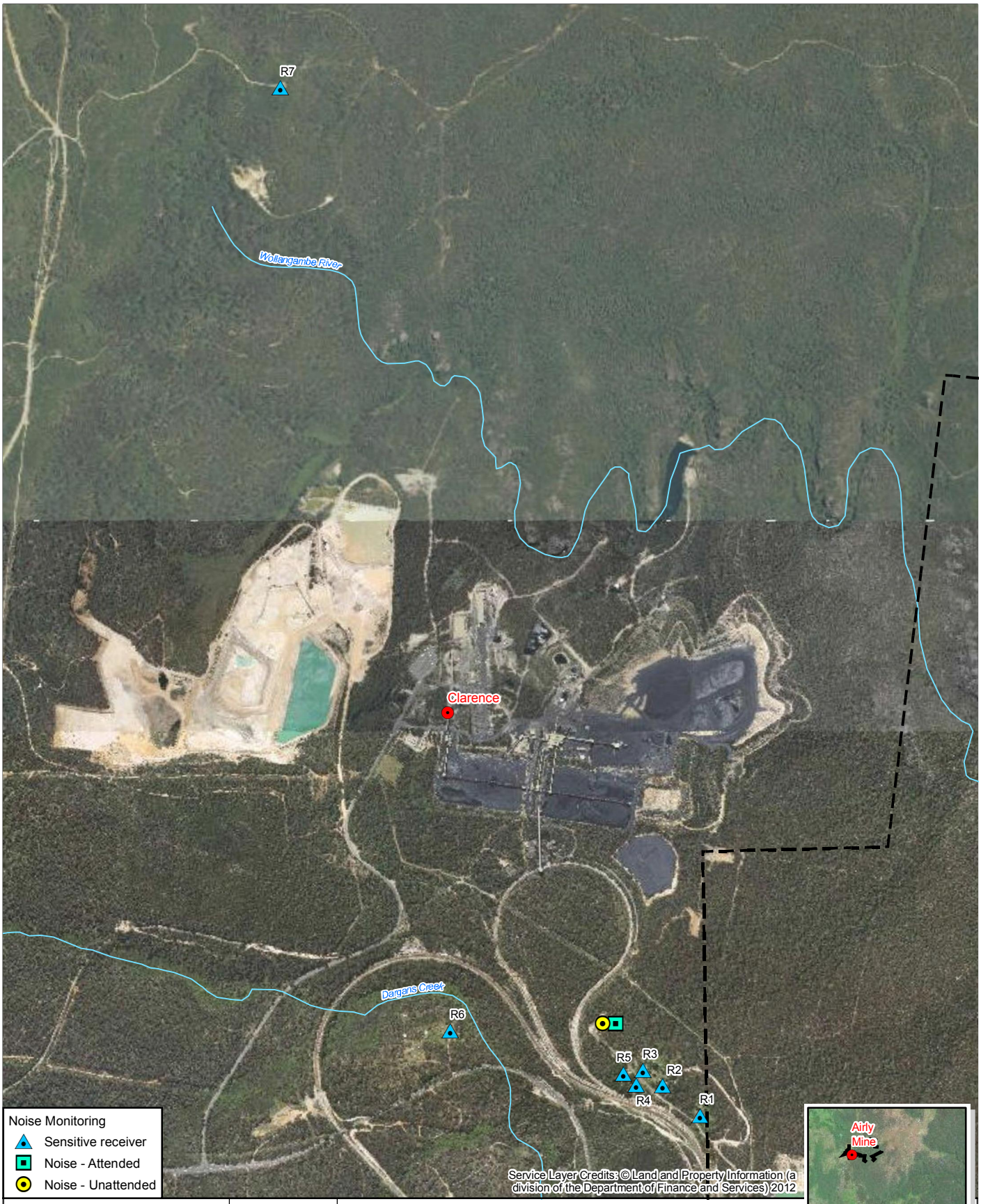

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Kilometres

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N

LEGEND

- Centennial Site Location
- Colliery Holding Boundary
- Watercourse

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Clarence
Long Term Noise Monitoring

Centennial Coal

DATE 14/01/2016

Figure 2

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Meteorological monitoring

Meteorological data for Clarence Colliery is measured from the Pit Top weather station in accordance with EPL 726.

The ALS Global web portal has a link to "CLAWS001 Clarence Colliery WS". The required parameters are measured with addition of pressure, solar radiation and a secondary temperature at 10 m.

Supplementary weather data could also be obtained through the use of a mobile device by the noise monitoring operator.

Monitoring parameter are summarised in **Table 6**.

Table 6 - Clarence Colliery meteorological monitoring

Site ID	X (m)	Y (m)	Parameter	Instrument	Frequency	Purpose
Clarence Colliery Pit Top	243874	6294261	Temperature Humidity Barometric Pressure Wind – speed and direction Rainfall Solar radiation Sigma-theta	Automatic weather station	10 minute data intervals	Proactive monitoring Weather analysis during noise monitoring Rainfall information

Appendix D – Lidsdale Siding

Conditions of Consent – Lidsdale Siding (PA 08_0223)

This Noise Management Plan has been prepared to satisfy the conditions of consent for the Lidsdale Siding (PA 08_0223). The conditions of consent that relate to this Noise Management Plan and where they have been addressed is provided below.

Table 1 - Conditions of Consent – Lidsdale Siding

Condition No.	Condition of Consent	Where Addressed
Schedule 3 Condition 7	The Applicant shall prepare and implement a Noise Management Plan for the development to the satisfaction of the Director-General.	The original Noise Management Plan was approved by the Director-General on 15 November 2013. This Noise Management Plan was approved by the Secretary on 22 July 2016.
	This plan must:	
Schedule 3 Condition 7(a)	be prepared in consultation with the EPA, and submitted to the Director-General within 6 months of the date of this Approval;	This Noise Management Plan was prepared in consultation with the EPA. A consultation log is provided as Appendix H. The original Noise Management Plan was submitted to the Secretary on 12 November 2013. This Noise Management Plan was submitted to the Secretary of the Department of Planning and Environment on 11 February 2016.
Schedule 3 Condition 7(b)	describe the noise mitigation measures that would be implemented to ensure compliance with the noise criteria in Table 1, including the specific measures that would be implemented to minimise train loading and rail noise generated by the project, including noise associated with:	Section 3 Appendix D

Condition No.	Condition of Consent	Where Addressed
	• loading coal onto trains; • braking and accelerating of trains; • train warning horns; and • idling locomotives, particularly during the night;	
Schedule 3 Condition 7(c)	outline procedures to manage responses to any complaints or issues raised by the owners of affected residences; and	Section 6
Schedule 3 Condition 7(d)	include a noise monitoring program that:	
	incorporates monthly attended noise monitoring to evaluate the performance of the project against the noise criteria in Table 1 (unless otherwise agreed with the Director-General);	Section 4 Appendix D
	includes a protocol for determining exceedences of the relevant conditions of this approval; and	Section 4.5
	includes a program to monitor the actual sound power levels of the equipment on site, compare it with the benchmark levels used in the EA, and evaluate the effectiveness of any attenuation.	Appendix D

Schedule 3 and Schedule 4 of PA 08_0223 provide a number of conditions relating to noise, in addition to the project-specific noise limits at identified receivers. These are copied for reference below.

ACQUISITION ON REQUEST

1. *Upon receiving a written request for acquisition from the owner of Lot 2, Main Street, Wallerawang, the Proponent shall acquire the land in accordance with the procedures in Conditions 5 - 6 of Schedule 4.*

Additional Noise Mitigation On Request

2. *Upon receiving a written request from the owner of any residence on land listed as Locations 1-4, 6-7, 10 or 11 in Table 1 (or at an existing residence within 200 m of Location 6 in Table 1) the Proponent shall implement additional noise mitigation measures (such as double glazing, insulation, and/or air conditioning) at the residence in consultation with the owner. These measures must be reasonable and feasible.*

   If within 3 months of receiving this request from the owner, the Proponent and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution.

INDEPENDENT REVIEW

3. *If an owner of privately-owned land considers the project to be exceeding the relevant criteria in Schedule 3, then he/she may ask the Director-General in writing for an independent review of the impacts of the project on his/her land.*

   If the Director-General is satisfied that an independent review is warranted, then within 2 months of the Director-General's decision the Proponent shall:

   (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to:

   - *consult with the landowner to determine his/her concerns;*
   - *conduct monitoring to determine whether the project is complying with the relevant criteria in Schedule 3; and*
   - *if the project is not complying with these criteria, then identify the measures that could be implemented to ensure compliance with the relevant criteria; and*

   (b) give the Director-General and landowner a copy of the independent review.

Overview

The sections below provide site specific information which supplements the information provided in the NMP around 'common' noise sources, mitigation and management measures.

Site specific sources of noise are identified. Noise mitigation and management measures which are specific to Lidsdale Siding operations are also outlined and discussed.

The noise monitoring network around Lidsdale Siding is also outlined. As discussed in the NMP, a short term and long term approach has been taken when preparing the noise monitoring program for Centennial operations. The short term monitoring has been prepared to satisfy the existing regulatory requirements for Lidsdale Siding. The long term program has been prepared as part of the regional management plan and may require a transitional period where changes from short term and long term are discussed with the relevant authorities, finalised and implemented.

Site specific noise sources

The following sources of noise identified in the NMP are relevant for Lidsdale Siding operations:

- Operation of mobile equipment – e.g. trucks, loaders
- Rail loading operations
- Coal transporting activities – e.g. overland conveyors, rail

There are no additional sources of noise specifically identified for Lidsdale Siding operations.

Site specific noise mitigation and management measures

Lidsdale Siding implements noise mitigation in accordance with the mitigation measures outlined in **Section 3.1** of the NMP.

Key noise mitigation measures for Lidsdale Siding operations include:

- Maintaining all plant and equipment to manufactures specifications.
- Operate mobile plant in a quiet, efficient manner and regular training of operators.
- Installation of frequency modulated reversing alarms or "*quakers*" on mobile plant to replace reversing alarms.
- Switching off vehicles and plant when not in use.
- Low-noise design for transfer chutes on conveyor systems.
- Low-noise idlers fitted to conveyors.
- Limiting sound power levels for key noise sources such as conveyor drives and the stockpile dozer.
- Partial enclosures on conveyors.
- Noise shielding on the loading bin.

Additional noise management measures specific to train operations on site were outlined in the *Lidsdale Siding Noise Impact Assessment* (Hatch, 2012) and include:

- The coal bin will be operated such that it will not be empty before being refilled to minimise noise emission from coal falling into an empty bin and impacting on the lower metal conical section.
- A training program will be undertaken with the relevant train operators for all drivers attending the Project site.
- If a locomotive is positioned at the southern end of the site it will not operate while on the Project site. Rather, the locomotives positioned at the northern end of the train will push the wagons while loading is occurring.

All other mitigation measures identified in the NMP are utilised as required and implementation of noise mitigation measures are triggered by a range of methods, including:

- Noise monitoring results, indicating an exceedance of noise criteria.
- Site inspections and observation of unusually noisy equipment.
- A compliant relating to noise from mining operations.

Lidsdale Siding operates in accordance with the Trigger Action Response Plan (TARP) provided in **Section 5.2** of the NMP.

Noise criteria

Schedule 3, Condition 2 of PA 08_0233 provides noise criteria for 12 identified locations. Condition L4.1 of EPL 5129 specifies noise limits at the same 12 locations, consistent with PA 08_0233.

Table 2 - Lidsdale Siding noise criteria dB(A)

Location	Day $L_{Aeq\ (15\ min)}$	Evening $L_{Aeq\ (15\ min)}$	Night $L_{Aeq\ (15\ min)}$	Night $L_{A1\ (1\ min)}$
1- Lot 2 Main St, Wallerawang	50	50	50	55
2 – Black Gold Cabins, Main St, Wallerawang	46	46	46	49
3 – "Killarney", Brays Lane, Wallerawang	47	47	47	56
4 – "Fairview", Brays Lane, Wallerawang	43	43	43	54
5 – Duncan Street, Lidsdale	46	46	46	57
6 – Old Castlereagh Highway, Lidsdale	43	43	43	56
7 – Royal Hotel, Main St, Wallerawang	41	41	41	49
8 – Cnr Heel St & Cripps Ave, Wallerawang	40	40	40	45
9 – Cnr Cripps Ave & Pindari Pl, Wallerawang	39	39	39	45
10 – Brays Lane South, Wallerawang	45	45	45	50
11 – "Tara" Brays Lane, Wallerawang	45	45	45	51
12 – Brays Lane Corner, Wallerawang	43	43	43	51

Schedule 3 Condition 2 also states that "*these criteria do not apply if the Proponent has a written agreement with the relevant landowner to exceed the criteria, and the Proponent has advised the Department in writing of the terms of this agreement".*

Conditions L4.2 to L4.7 of EPL 5129 specify the conditions under which the noise criteria are applicable:

L4.2 For the purpose of condition L4.1;

- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holidays.

- Evening is defined as the period 6pm to 10pm.

- Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and Public Holidays.

L4.3 The noise limits set out in condition L4.1 apply under all meteorological conditions except for the following:

a) During periods of rain or hail;

b) Average wind speeds at microphone height exceeds 5 metres/second;

c) Wind speeds greater than 3 metres/second at 10 metres above ground level; or

d) Temperature inversion conditions greater than 3 degrees C/100 m.

L4.4 For the purpose of condition L4.3, the meteorological data to be used for determining meteorological conditions is the data recorded by the meteorological weather station identified as EPA identification Point 9 in condition P1.1.

L4.5 To determine compliance:

a) With the Leq(15 minute) noise limits in condition L4.1, the noise measurement equipment must be located:

i) approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or

ii) within 30 metres of a dwelling façade, but not closer than 3 metres where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises.

b) With the LA1(1 minute) noise limits in condition L4.1, the noise measurement equipment must be located within 1 metre of a dwelling façade.

c) With the noise limits in condition L4.1, the noise measurement equipment must be located:

i) at the most affected point at a location where there is no dwelling at the location; or

ii) at the most affected point within an area at a location prescribed by conditions L4.5(a) or L4.5(b).

L4.6 A non-compliance of condition L4.1 will still occur where noise generated from the premises in excess of the appropriate limit is measured:

a) at a location other than an area prescribed by conditions L4.5(a) and L4.5(b); and/or

b) at a point other than the most affected point at a location.

L4.7 For the purpose of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

Noise monitoring

Lidsdale Siding has operated a noise monitoring program for several years. Significant changes to site operations occurred during 2014 when operations became automated.

A review of the noise monitoring network was undertaken in 2015. The aim of this review was to identify methods to improve the efficiency and value provided from the noise monitoring network. The review considered:

- changes in the regulatory requirements
- changes in operations and predicted noise impacts from environmental assessments
- long term trends in monitoring data from Annual Reviews and monthly monitoring reports
- complaints relating to noise.

A detailed discussion around the rationalisation of the noise monitoring network is provided in *Centennial Western Region Environmental Monitoring Rationalisation, Review and Recommendations* (GHD 2015).

Attended noise monitoring is currently undertaken on a monthly basis, in line with Schedule 3, Condition 7 of the PA, which states:

"*It is expected that monthly attended noise monitoring will be required for at least 12 months following the completion of the construction of the upgraded coal loader. After 12 months, the Director-General may agree to reduce the frequency of attended noise monitoring provided the operational noise performance of the project is acceptable*".

Upgrades to the coal loader and automated operations of Lidsdale Siding commenced operations in September 2014. Monthly operational noise monitoring also commenced in September 2014. Therefore, a review of the requirement for monthly noise monitoring is due from October 2015.

The short term and long term monitoring programs are outlined below. The timing to implement the long term monitoring program depends on many factors, such as regulatory approvals, landholder consultation, procurement of equipment and installation.

Short term

Short-term, the noise monitoring program will continue as it is currently.

Monthly attended noise surveys will be undertaken at 12 locations, which have been selected to be representative of identified receiver locations.

The short term noise monitoring network is shown in **Figure 1**.

Long term

Long term, the frequency of attended noise monitoring surveys will be reduced from monthly to quarterly. Compliance with noise criteria at all receivers will be required (or negotiated agreements where this cannot be achieved) to justify this reduction.

There is also potential to identify low-risk receivers, once long-term trends have been established, however, with the exception of R6, no changes to the monitoring network are provided at this stage. R6 is located over 1 km to the north of Lidsdale Siding and in line with R5, which is substantially closer to site noise sources.

The long term noise monitoring network is shown in **Figure 2**.

The long term monitoring program will require approval from DPE and EPA prior to it being implemented.

A summary of the noise monitoring to be undertaken at Lidsdale Siding is provided in **Table 3** and **Table 4**.

Table 3 - Lidsdale Siding short term noise monitoring locations

Site ID	Receiver ID	X (m)	Y (m)	Monitor type	Frequency	Purpose
R1	R1	228037	6300443	Attended	Monthly	Compliance
R2	R2	227869	6300193	Attended	Monthly	Compliance
R3	R3	227440	6300681	Attended	Monthly	Compliance
R4	R4	227496	6301171	Attended	Monthly	Compliance
R5	R5	228419	6301150	Attended	Monthly	Compliance
R6	R6	228461	6302189	Attended	Monthly	Compliance
R7	R7	227229	6299757	Attended	Monthly	Compliance
R8	R8	227555	6299870	Attended	Monthly	Compliance
R9	R9	227447	6299711	Attended	Monthly	Compliance
R10	R10	226941	6300255	Attended	Monthly	Compliance
R11	R11	226944	6300460	Attended	Monthly	Compliance
R12	R12	226973	6300685	Attended	Monthly	Compliance

Table 4 - Lidsdale Siding long term noise monitoring locations

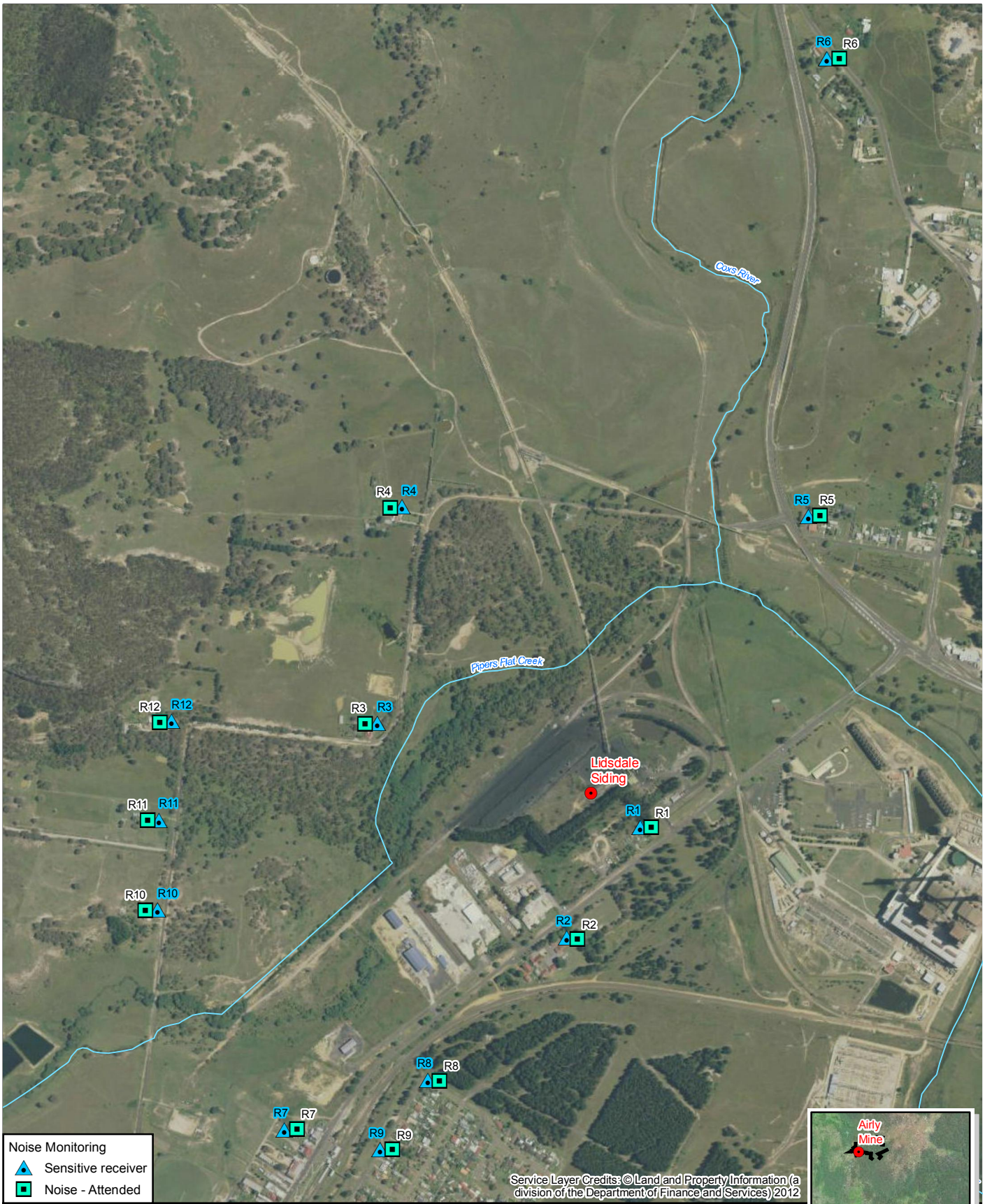
Site ID	Receiver ID	X (m)	Y (m)	Monitor type	Frequency	Purpose
R1	R1	228037	6300443	Attended	Quarterly	Compliance
R2	R2	227869	6300193	Attended	Quarterly	Compliance
R3	R3	227440	6300681	Attended	Quarterly	Compliance
R4	R4	227496	6301171	Attended	Quarterly	Compliance
R5	R5	228419	6301150	Attended	Quarterly	Compliance
R7	R7	227229	6299757	Attended	Quarterly	Compliance
R8	R8	227555	6299870	Attended	Quarterly	Compliance
R9	R9	227447	6299711	Attended	Quarterly	Compliance
R10	R10	226941	6300255	Attended	Quarterly	Compliance
R11	R11	226944	6300460	Attended	Quarterly	Compliance
R12	R12	226973	6300685	Attended	Quarterly	Compliance

Sound power monitoring

To satisfy Condition 7 (d) of Schedule 3, the sound power levels of equipment on site will be monitored on an annual basis.

Near-field sound pressure measurements will be made of key noise sources on site in order to determine their sound power levels. Sound power levels will then be compared to the benchmark levels used in the *Noise Impact Assessment* (Hatch 2012).

Where measured sound power levels are more than 2 dBA above those assumed in the *Noise Impact Assessment* (Hatch 2012), the potential impact at nearby noise sensitive receivers will be investigated and evaluated through the monthly operator-attended noise monitoring program, computer noise modelling or a combination of these methods.



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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- Watercourse

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Lidsdale Siding Short Term Noise Monitoring

Centennial Coal

DATE 14/01/2016

Figure 1

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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- Watercourse

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Lidsdale Siding Long Term Noise Monitoring

Centennial Coal

DATE 14/01/2016

Figure 2

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2218092\2218092_MR004_Noise_LongTerm_DDP_A.mxd

Meteorological monitoring

Meteorological data for Lidsdale Siding is managed by contractor and available through the ALS Global web portal as 'LSAWS001 AWS at Lidsdale'.

The weather stations continuously monitor weather parameters. Monitoring parameter are summarised in **Table 5**. Supplementary weather data could be obtained through the use of a mobile device by the noise monitoring operator.

Table 5 - Lidsdale Siding meteorological monitoring

Site ID	X (m)	Y (m)	Parameter	Instrument	Frequency	Purpose
Lidsdale AWS	228019	6300768	Temperature – 2 m and 10 m Wind – speed and direction Rainfall Relative humidity	Automatic weather station	10 minute data intervals	Proactive monitoring. Weather analysis during noise monitoring. Rainfall information

Appendix E – Springvale Mine

Conditions of Consent – Springvale Mine (SSD 5594)

This Noise Management Plan has been prepared to satisfy the conditions of consent for the Springvale Mine (SSD 5594). The conditions of consent that relate to this Noise Management Plan and where they have been addressed is provided below.

Table 1 - Conditions of Consent – Springvale Mine

Condition No.	Condition of Consent	Where Addressed
Schedule 4 Condition 4	The Applicant shall prepare and implement a Noise Management Plan for the development to the satisfaction of the Secretary.	This Noise Management Plan was approved by the Secretary on 22 July 2016.
	This plan must:	
Schedule 4 Condition 4(a)	be prepared in consultation with EPA, and submitted to the Secretary for approval within three months of the date of this consent, unless otherwise agreed by the Secretary;	This Noise Management Plan was prepared in consultation with the EPA. A consultation log is provided as Appendix H. This Noise Management Plan was submitted to the Secretary of the Department of Planning and Environment on 11 February 2016.
Schedule 4 Condition 4(b)	describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions of this consent;	Section 3
Schedule 4 Condition 4(c)	describe the proposed noise management system in detail;	Section 3
Schedule 4 Condition 4(d)	include an investigation into the generation and perception of low frequency noise by the project;	Appendix E
Schedule 4	include a noise monitoring program that evaluates and reports on:	

Condition No.	Condition of Consent	Where Addressed
Condition 4(e)	the effectiveness of the on-site noise management system;	Section 4
	compliance against the noise criteria in this consent; and	Section 4.3.2
	compliance against the operating conditions in condition 3 above;	Section 4.5
	defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents; and	Section 6
	outlines procedures to manage responses to any complaints or issues raised by the owners of affected residences	Section 6.2

Schedule 4 of SSD 5594 provides environmental performance conditions relating to noise from Springvale Mine. Conditions 1 and 2 outline noise impact assessment criteria, which is provided in Section 0. Condition 3 provides operating conditions applicable to Springvale Mine as follows:

The Applicant shall:

> *(a) implement best management practice to minimise the construction, operational and road noise of the development;*
>
> *(b) minimise the noise impacts of the development during meteorological conditions under which the noise limits in this consent do not apply (see Appendix 5); and*
>
> *(c) carry out regular monitoring to determine whether the development is complying with the relevant conditions of this consent,*
>
> *(d) regularly assess noise monitoring data and modify and/or stop operations on site to ensure compliance with the relevant conditions of this consent, to the satisfaction of the Secretary.*

Overview

The sections below provide site specific information which supplements the information provided in the NMP around 'common' noise sources, mitigation and management measures.

Site specific sources of noise are identified. Noise mitigation and management measures which are specific to Springvale Mine operations are also outlined and discussed.

The noise monitoring network around Springvale Mine is also outlined. As discussed in the NMP, a short term and long term approach has been taken when preparing the noise monitoring program for Centennial operations. The short term monitoring has been prepared to satisfy the existing regulatory requirements for Springvale Mine. The long term program has been prepared as part of the regional management plan and may require a transitional period where changes from short term and long term are discussed with the relevant authorities, finalised and implemented.

Site specific noise sources

The following sources of noise identified in the NMP are relevant for Springvale Mine operations:

- Operation of mobile equipment – e.g. trucks, dozers, loaders
- Coal handling/processing plant – e.g. conveyors, washery, screens and hopper filling
- Coal transporting activities – e.g. overland conveyors, haul trucks
- Ventilation fans.

Site specific noise mitigation and management measures

Springvale Mine implements noise mitigation in accordance with the mitigation measures outlined in **Section 3.1** of the NMP.

Key noise mitigation measures for Springvale Mine operations include:

- Maintaining all plant and equipment to manufactures specifications.
- Operate mobile plant in a quiet, efficient manner and regular training of operators.
- Installation of frequency modulated reversing alarms or "*quakers*" on mobile plant to replace reversing alarms.
- Installing acoustic enclosures around processing plants.
- Switching off vehicles and plant when not in use.

Noise reduction measures implemented at Springvale Mine have been implemented in response to previous development consent requirements. Condition 22 A(d) of Project Approval DA 11_92_Mod4 required a program of noise mitigation actions and/or works to reduce noise emissions from the Springvale Pit Top facilities that included:

- installation of improved mufflers and reversing alarm on the stockpile dozer;
- use of flashing reversing warning signals for use during the night for the stockpile dozer;
- restriction of the stockpile dozer to the use of second gear while reversing;
- improved inspection conveyor idlers, and consequent prompt replacement of defective idlers identified by these inspections;
- installation, prior to the end of December 2014 of effective noise attenuation measures for the Run of Mine conveyor drive building to the satisfaction of the Director-General.

All mitigation measures identified in the NMP are utilised as required and implementation of noise mitigation measures are triggered by a range of methods, including:

- Noise monitoring results, indicating an exceedance of noise criteria.
- Site inspections and observation of unusually noisy equipment.
- A compliant relating to noise from mining operations.

Springvale Mine operates in accordance with the Trigger Action Response Plan (TARP) provided in **Section 5.2** of the NMP.

Noise criteria

Schedule 4 of SSD 5594 specifies noise criteria for mine operations. Noise criteria in **Table 2** are applicable until 30 June 2016.

Table 2 - Springvale Mine noise criteria dB(A)

Location Receiver number	Day	Evening	Night	
	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{A1\ (1\ min)}$
S1	44	44	46	52
S2	43	43	46	53
S3	35	35	35	60
All other privately-owned land	35	35	35	45

From 1 July 2016, the noise criteria in **Table 3** are applicable. Lower noise limits during the night period have been set, compared to current limits.

Table 3 - Springvale Mine noise criteria – from 1 July 2016 dB(A)

Location Receiver number	Day	Evening	Night	
	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{A1\ (1\ min)}$
S1	44	44	42	52
S2	43	43	43	53
S3	35	35	35	60

Location Receiver number	Day	Evening	Night	
	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{A1\ (1\ min)}$
All other privately-owned land	35	35	35	45

Appendix 5 of SSD 5594 outlines the conditions under which the noise criteria are applicable:

1. *The noise criteria in Tables 3 and 4 in Schedule 4 are to apply to a receiver under all meteorological conditions except under:*
   - *(a) wind speeds greater than 3 m/s at 10 m above ground level; or*
   - *(b) stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level; or*
   - *(c) stability category G temperature inversion conditions.*
2. *Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station required under condition 8 of Schedule 4.*
3. *Attended monitoring is to be used to evaluate compliance with the relevant conditions of this consent.*
4. *This monitoring must be carried out at least 4 times in each calendar year (ie at least once in every quarter), unless the Secretary directs otherwise.*
5. *Unless the Secretary agrees otherwise, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the NSW Industrial Noise Policy (as amended from time to time), in particular the requirements relating to:*
   - *(a) monitoring locations for the collection of representative noise data;*
   - *(b) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment;*
   - *(c) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration; and*
   - *(d) the use of an appropriate modifying factor for low frequency noise to be applied during compliance testing at any individual residence if low frequency noise is present (in accordance with the INP) and before comparison with the specified noise levels in the consent.*

Noise monitoring

Springvale Mine has operated a noise monitoring program for several years. Data from noise monitoring is used to determine compliance with noise criteria at identified sensitive receivers and

to quantify the effectiveness of noise mitigation and management measures from Springvale pit top and associated infrastructure.

A review of the noise monitoring network was undertaken in 2015 in response to SSD 5594. The aim of this review was to identify methods to improve the efficiency and value provided from the noise monitoring network. The review considered:

- changes in the regulatory requirements
- changes in operations and predicted noise impacts from environmental assessments
- long term trends in monitoring data from Annual Reviews and monthly monitoring reports
- complaints relating to noise.

A detailed discussion around the rationalisation of the noise monitoring network is provided in *Centennial Western Region Environmental Monitoring Rationalisation, Review and Recommendations* (GHD 2015).

Attended noise surveys are undertaken on a quarterly basis during each of the day, evening and night time periods. As discussed in the NMP, night time noise monitoring typically provides conditions where the contribution of noise from Springvale Mine can be most accurately measured.

The short term and long term monitoring programs are outlined below. The timing to implement the long term monitoring program depends on many factors, such as regulatory approvals, landholder consultation, procurement of equipment and installation.

Short term

The short term monitoring program consists of two attended noise monitoring locations. Monitoring is conducted at sensitive receptor locations to the south of the pit top surface facilities, where highest operational noise levels are expected.

The short term noise monitoring network is shown in **Figure 1**.

Long term

The long term noise monitoring locations have been selected based on the rationalisation of the short term monitoring network.

Sensitive receiver S3 is located over 2 km from the pit top and has been predicted to have very low operational noise impacts from Springvale Mine. Attended compliance monitoring has confirmed this. Sensitive receiver S3 is also listed on Western Coal Services CoA (as NM6) and Lidsdale Siding CoA (as R5). To avoid overlaps, monitoring at sensitive receiver S3 has been included in the Lidsdale Siding NMP only, where cumulative mine noise should be measured and assessed.

Although not specifically listed in the CoA, sensitive receiver S4 will be added as an attended noise monitoring location to Springvale Mine in the long term. This location has been predicted to have higher operational noise impacts than receiver S3 and should therefore be included in the monitoring network to determine compliance at "*All other privately-owned land*".

The long term noise monitoring network is shown in **Figure 2**.

The long term monitoring program will require approval from DPE and EPA prior to it being implemented.

A summary of the noise monitoring to be undertaken at Springvale Mine is provided in **Table 4** and **Table 5**.

Table 4 - Springvale Mine short term noise monitoring locations

Site ID	Receiver ID	X (m)	Y (m)	Monitor type	Frequency	Purpose
S1	S1	230230	6299725	Attended	Quarterly	Compliance
S2	S2	230456	6299541	Attended	Quarterly	Compliance

Table 5 - Springvale Mine long term noise monitoring locations

Site ID	Receiver ID	X (m)	Y (m)	Monitor type	Frequency	Purpose
S1	S1	230230	6299725	Attended	Quarterly	Compliance
S2	S2	230456	6299541	Attended	Quarterly	Compliance
S4	*	231589	6299387	Attended	Quarterly	Compliance

* receiver S4 not listed in CoA. Added to monitoring program to determine compliance at "*All other privately-owned land*".

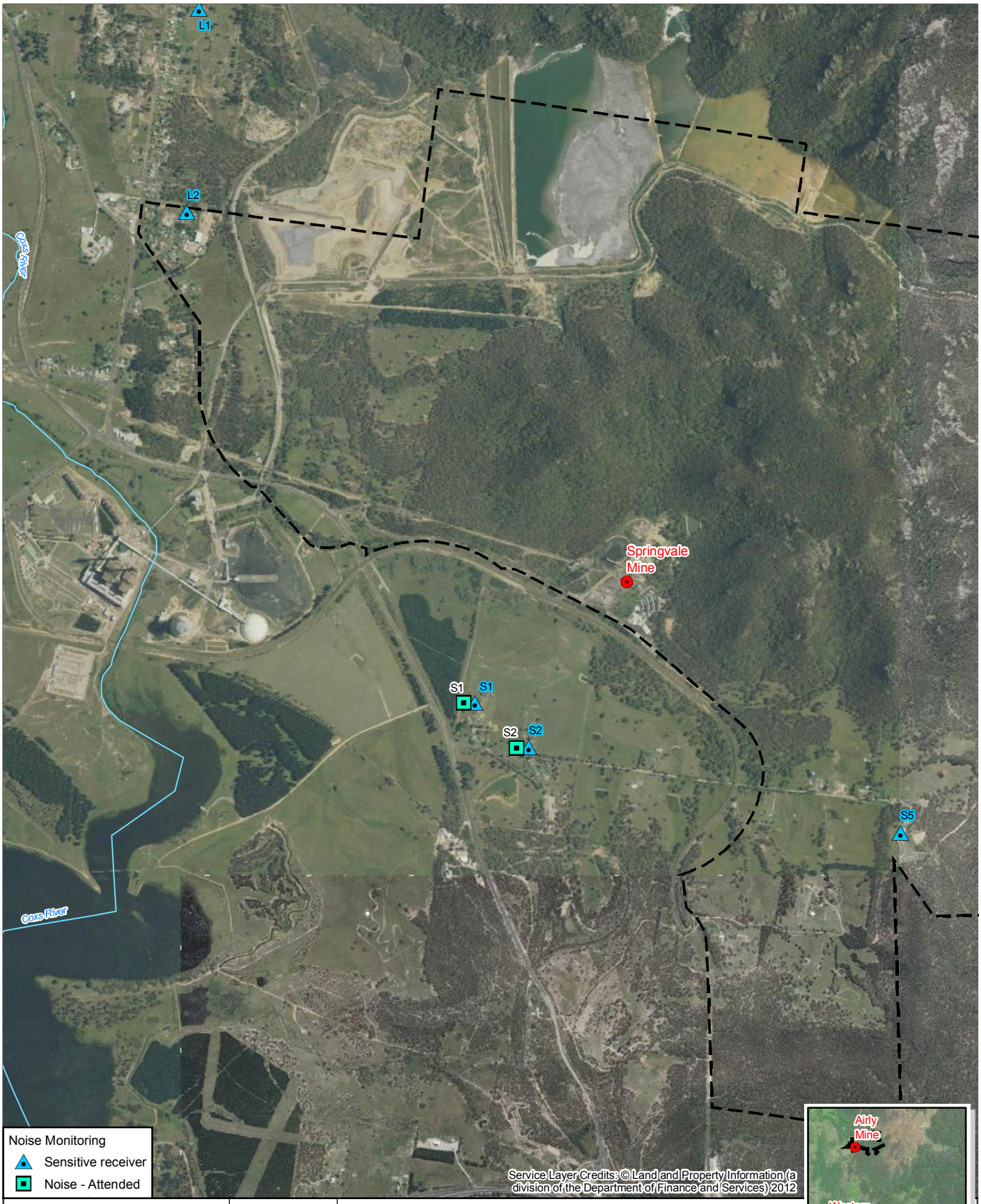
Low frequency noise

SSD 5594 requires the NMP for Springvale Mine to "*include an investigation into the generation and perception of low frequency noise by the project*".

Section 4.1 of the 2014 Springvale Mine AEMR provides a discussion around low frequency noise:

> "*There were two community complaints during the reporting period. Both these complaints were in relation to low frequency noise. A specialist was engaged by Centennial to investigate the source of the noise causing concern in addition to consultation with relevant community members, Lithgow City council and EPA. There is an overlap with this complaint with Clarence Colliery therefore the two operations have been working together on the investigation. The specialist report is currently being prepared to outline key findings*".

In 2015, a series of independent investigations into the potential source of low frequency noise from Springvale Mine was undertaken. These investigations into the source of the low frequency noise are continuing and are the subject of separate reports that do not form part of this Management Plan. This Management Plan will be reviewed and revised if necessary to take into consideration the outcomes of the investigations and any recommended management or mitigation measures.



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Kilometres

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Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- Colliery Holding Boundary
- Watercourse

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Springvale Short Term Noise Monitoring

Centennial Coal

DATE 14/01/2016

Figure 1

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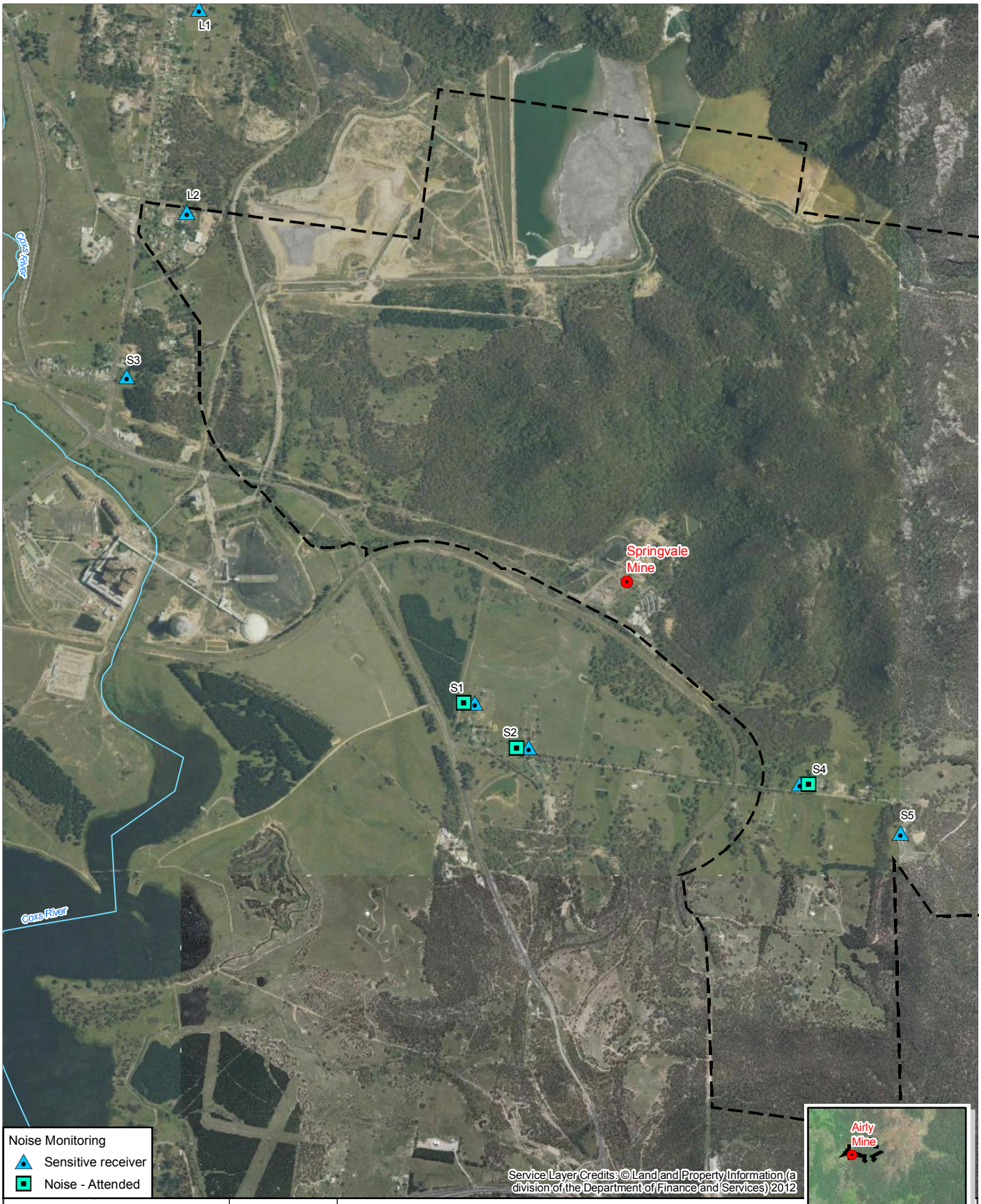

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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- Colliery Holding Boundary
- Watercourse

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Springvale Long Term Noise Monitoring

Centennial Coal

DATE 14/01/2016

Figure 2

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Meteorological monitoring

Meteorological data for Springvale Mine is measured at Springvale AWS, located near the pit top.

The weather stations continuously monitor weather parameters. Monitoring parameter are summarised in **Table 6**.

Supplementary weather data could be obtained through the use of a mobile device by the noise monitoring operator.

In addition, the weather station will be capable of continuous real-time measurement of the atmospheric stability category determined by the sigma theta method in accordance with the NSW Industrial Noise Policy.

Table 6 - Springvale Mine meteorological monitoring

Site ID	X (m)	Y (m)	Parameter	Instrument	Frequency	Purpose
Springvale AWS	230746	6300147	Temperature Wind – speed and direction Rainfall Relative humidity Evaporation	Automatic weather station	10 minute data intervals	Proactive monitoring. Weather analysis during noise monitoring. Rainfall information

Appendix F – Western Coal Services

Conditions of Consent – Western Coal Services (SSD 5579)

This Noise Management Plan has been prepared to satisfy the conditions of consent for the Western Coal Services (SSD 5579). The conditions of consent that relate to this Noise Management Plan and where they have been addressed is provided below.

Table 1 - Conditions of Consent – Western Coal Services

Condition No.	Condition of Consent	Where Addressed
Schedule 3 Condition 9	The Applicant shall prepare and implement a Noise Management Plan for the development to the satisfaction of the Director-General.	The original Noise Management Plan was submitted to the Secretary on 4 August 2014 and approved by the Director-General on 5 September 2014. This Noise Management Plan was approved by the Secretary on 22 July 2016.
	This plan must:	
Schedule 3 Condition 9(a)	be prepared in consultation with the EPA, and submitted to the Director-General for approval within 4 months of the date of this consent, unless otherwise agreed by the Director-General;	This Noise Management Plan was prepared in consultation with the EPA. A consultation log is provided as Appendix H. The original Noise Management Plan was submitted to the Secretary on 4 August 2014. This Noise Management Plan was submitted to the Secretary of the Department of Planning and Environment on 11 February 2016.
Schedule 3 Condition 9(b)	describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions in this consent;	Section 3
Schedule 3	describe the proposed noise management	Section 3

Condition No.	Condition of Consent	Where Addressed
Condition 9(c)	system in detail; and	
Schedule 3 Condition 9(d)	include a monitoring program that evaluates and reports on:	
	the effectiveness of the on-site noise management system;	Section 4
	compliance against the noise criteria in this consent; and	Section 4.3.2
	compliance with the noise operating conditions;	Section 4.5.
	includes a program to calibrate and validate real-time noise monitoring results with attended monitoring results over time (so the real-time noise monitoring program can be used as a better indicator of compliance with the noise criteria and as a trigger for further attended monitoring); and	Appendix F
	defines what constitutes a noise incident, and includes a protocol for identifying and notifying P&I and relevant stakeholders of any noise incidents.	Section 6

Overview

The sections below provide site specific information which supplements the information provided in the NMP around 'common' noise sources, mitigation and management measures.

Site specific sources of noise are identified. Noise mitigation and management measures which are specific to Western Coal Services operations are also outlined and discussed.

The noise monitoring network around Western Coal Services is also outlined. As discussed in the NMP, a short term and long term approach has been taken when preparing the noise monitoring program for Centennial operations. The short term monitoring has been prepared to satisfy the existing regulatory requirements for Western Coal Services. The long term program has been prepared as part of the regional management plan and may require a transitional period where changes from short term and long term are discussed with the relevant authorities, finalised and implemented.

Site specific noise sources

The following sources of noise identified in the NMP are relevant for Western Coal Services operations:

- Operation of mobile equipment – e.g. trucks, dozers, loaders
- Coal handling and preparation – e.g. conveyors, washery
- Coal transporting activities – e.g. overland conveyors, haul trucks

There are no additional sources of noise specifically identified for Western Coal Services operations.

Site specific noise mitigation and management measures

Western Coal Services implements noise mitigation in accordance with the mitigation measures outlined in **Section 3.1** of the NMP.

Key noise mitigation measures for Western Coal Services operations include:

- Maintaining all plant and equipment to manufactures specifications.
- Operate mobile plant in a quiet, efficient manner and regular training of operators.
- Installation of frequency modulated reversing alarms or "*quakers*" on mobile plant to replace reversing alarms.
- Installing acoustic enclosures around fixed equipment.
- Switching off vehicles and plant when not in use.
- Installation of sound walls/barriers adjacent to conveyors where feasible.
- Installation of low noise idlers along conveyors where feasible.

In addition to the above measures, Western Coal Services proactively limit some aspects of their operations to the least-sensitive day time period only, in accordance with Schedule 3, Condition 6 of SSD 5579. Limiting some activities to day and evening operations only eliminates the potential for adverse noise impacts during the night time period, when the community is most sensitive.

The restricted hours of operation as outlined in Schedule 3, Condition 6 are reproduced in **Table 2**.

Table 2 - Operating hours restrictions – Western Coal Services

Activity	Operating hours
Coal transportation operations on the Angus Place to Wallerawang power station haul road*	No truck movements to take place during the Night
Coal transportation operations on the Angus Place to Mount Piper power station haul road	No truck movement to occur during adverse meteorological conditions during the Night
Kerosene Vale Coal Stockpile operations	During the Day only

Activity	Operating hours
All other operational activities	24 hours a day, 7 days per week

* Note that Wallerawang Power Station has been decommissioned and therefore this activity no longer applies.

All other mitigation measures identified in the NMP are utilised as required and implementation of noise mitigation measures are triggered by a range of methods, including:

- Compliance noise monitoring results, indicating an exceedance of noise criteria.
- Proactive noise planning through the use of real time noise monitoring. This is best achieved, when planning each shift, by using a comparison of short-term meteorological forecasts with pre-prepared noise model outputs.
- Site inspections and observation of unusually noisy equipment.
- The onset (measured or forecast) of noise enhancing weather conditions e.g. temperature inversion.
- A compliant relating to noise from mining operations.

Western Coal Services operates in accordance with the Trigger Action Response Plan (TARP) provided in **Section 5.2** of the NMP.

Noise criteria

Condition 7 of Development Consent SSD-5579 provides noise criteria at 11 sensitive receiver locations as well as "*All other privatively-owned residences*". These criteria are presented below in Table 3.

Table 3 - Western Coal Services noise criteria dB(A)

Land	Day	Evening	Night	Night
	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{A1\ (1\ min)}$
B12	40	35	35	47
B13	41	36	36	50
B14	41	35	3	55
B15	36	35	35	45
B16	35	35	36	45

Land	Day	Evening	Night	Night
	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{A1\ (1\ min)}$
B17	42	44	45	45
W1	37	37	41	45
W2	35	35	36	45
L1	42	35	35	45
L2	40	39	35	45
WR1	41	38	36	57
WR2	38	37	35	48
S3	36	36	39	45
All other privately-owned residences	35	35	35	45

Appendix 5 of SSD-5579 outlines the conditions under which the noise criteria are applicable:

1. *The noise criteria in Tables 3 in Schedule 3 are to apply to a receiver under all meteorological conditions except the following:*

   (a) average wind speed at microphone height exceeds 5 m/s;

   (b) wind speeds greater than 3 m/s measured at 10 m above ground level; or

   (c) temperature inversion conditions greater than 3°C/100 m.

2. *Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station required under condition 18 of Schedule 3.*

3. *Attended monitoring is to be used to evaluate compliance with the relevant conditions of this consent.*

4. *This monitoring must be carried out at least 12 times in each calendar year (ie at least once in every calendar month), unless the Director-General directs otherwise.*

5. *Unless the Director-General agrees otherwise, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the NSW Industrial Noise Policy (as amended from time to time), in particular the requirements relating to:*

   (a) monitoring locations for the collection of representative noise data;

   (b) meteorological conditions during which collection of noise data is not appropriate;

(c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and

(d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

Condition 8 of SSD-5579 also requires that the applicant shall:

(a) implement best management practice to minimise the construction, operational and road noise of the development;

(b) operate a comprehensive noise management system that uses a combination of predictive meteorological forecasting and real-time noise monitoring data to guide the day-to-day planning of coal transport and processing operations, and the implementation of both proactive and reactive noise mitigation measures to ensure compliance with the relevant conditions of this consent;

(c) minimise the noise impacts of the development during meteorological conditions under which the noise limits in this consent do not apply (see Appendix 5);

(d) co-ordinate noise management on site with the noise management of other approved developments and/or projects on or in the vicinity of the site to minimise cumulative noise impacts; and

(e) carry out regular monitoring to determine whether the development is complying with the relevant conditions of this consent, to the satisfaction of the Director-General.

Noise monitoring

Western Coal Services has operated a noise monitoring program for several years. A review of this noise monitoring network was undertaken in 2015. The aim of this review was to identify methods to improve the efficiency and value provided from the noise monitoring network. The review considered:

- changes in the regulatory requirements
- changes in operations and predicted noise impacts from environmental assessments
- long term trends in monitoring data from Annual Reviews and monthly monitoring reports
- complaints relating to noise.

A detailed discussion around the rationalisation of the noise monitoring network is provided in *Centennial Western Region Environmental Monitoring Rationalisation, Review and Recommendations* (GHD 2015).

Attended noise surveys are undertaken on a monthly basis during each of the day, evening and night time periods. As discussed in the NMP, night time noise monitoring typically provides conditions where the contribution of mine noise can be most accurately measured.

The short term and long term monitoring programs are outlined below. The timing to implement the long term monitoring program depends on many factors, such as regulatory approvals, landholder consultation, procurement of equipment and installation.

Short term

The short term monitoring program will consist of 10 attended noise monitoring locations and one real-time noise monitoring location.

The short term noise monitoring network is shown in **Figure 1**.

Long term

The long term monitoring network is provided based on the rationalisation of the short term noise monitoring network.

Based on this rationalisation, a number of monitoring locations will be removed from the Western Coal Services monitoring network in the long term. Justification for their removal is provided below:

- The former Lamberts Gully open cut mine also falls under the Western Coal Services Development Consent. "*The Lamberts Gully Extension Project Approval (06-0017) conditions applied at the site for the entire Annual Review period, as this Project Approval has not yet been surrendered*" (2014 WCS AEMR). Lamberts Gully operations ceased in 2010 and the site has been under rehabilitation since mid-2010.

  PA 06-0017 provides noise criteria for seven residential receivers (R1 – R7). Noise monitoring for Lamberts Gully is undertaken bi-monthly at two locations, being monitoring locations R2 and R7. Since Lamberts Gully mine is no longer operational, it is not relevant to compare measured noise levels to project criteria. The Lambert Gully Consent will be surrendered.

- Monitoring location NM5 has been identified as duplicating with monitoring location R1 (receiver WR1) under Angus Place Colliery. To avoid overlaps, sensitive receiver WR1 has been included in the Angus Place Colliery NMP only, where cumulative mine noise should be measured and assessed. Therefore monitoring location NM5 will be removed in the long term.

- Sensitive receiver S3 is listed on Western Coal Services CoA (as NM6) and Lidsdale Siding CoA (as R5). To avoid overlaps, sensitive receiver S3 has been included in the Lidsdale Siding NMP only, where cumulative mine noise should be measured and assessed. Therefore monitoring location NM6 will be removed in the long term.

- Monitoring location NM7 has been identified as duplicating with monitoring location R4 (receiver W1) under Lidsdale Siding. To avoid overlaps, sensitive receiver W1 has been included in the Lidsdale Siding NMP only, where cumulative mine noise should be measured and assessed. Therefore monitoring location NM7 will be removed in the long term.

Long term, the frequency of attended noise monitoring surveys will be reduced from monthly to quarterly. Compliance with noise criteria at all receivers will be required (or negotiated agreements where this cannot be achieved) to justify this reduction.

Monitoring locations and frequency of monitoring will be reviewed in line with the NMP and revised if required. This site-specific NMP will be updated accordingly.

The long term noise monitoring network is shown in **Figure 2**.

A summary of the noise monitoring to be undertaken at Western Coal Services is provided in **Table 4** and **Table 5**.

Table 4 - Western Coal Services short term noise monitoring locations

Site ID	Receiver ID	X (m)	Y (m)	Monitor type	Frequency	Purpose
R2*	B1 – B3	226403	6304381	Attended	Monthly	Compliance
R7*	B4 – B7	226681	6304392	Attended	Monthly	Compliance
NM1	B12 – B13	226798	6304207	Attended	Monthly	Compliance
NM2	B14	227504	6304076	Attended	Monthly	Compliance
NM3	B15	227584	6303728	Attended	Monthly	Compliance
NM4	B16	227297	6303400	Attended	Monthly	Compliance
NM5	WR1	229375	6305146	Attended	Monthly	Compliance
NM6	S3	228706	6301100	Attended	Monthly	Compliance
NM7	W1	227502	6301156	Attended	Monthly	Compliance
NM11**	L1	229065	6302656	Attended	Monthly	Compliance
Real-time	-	227493	6303523	Unattended (Noise Compass)	Continuous	Proactive management

* Monitoring location R2 and R7 was to assess compliance under the superseded consent PA 06-0017.

**Monitoring location NM11 is applicable to Kerosene Vale Stockpile operations, which occur during the day period only.

Table 5 - Western Coal Services long term noise monitoring locations

Site ID	Receiver ID	X (m)	Y (m)	Monitor type	Frequency	Purpose
NM1	B12 – B13	226798	6304207	Attended	Monthly	Compliance
NM2	B14	227504	6304076	Attended	Monthly	Compliance
NM3	B15	227584	6303728	Attended	Monthly	Compliance
NM4	B16	227297	6303400	Attended	Monthly	Compliance
NM11*	L1	229065	6302656	Attended	Monthly	Compliance
Real-time	-	227493	6303523	Unattended (Noise Compass)	Continuous	Proactive management

* Monitoring location NM11 is applicable to Kerosene Vale Stockpile operations, which occur during the day period only.

Real time monitoring

As required by Schedule 3, Condition 8 (b), the noise management system will use a combination of predictive noise and meteorological forecasting and real time noise monitoring data to guide day to day planning of the Western Coal Services operations.

The real-time monitor is configured primarily to assess low frequency noise.

The real-time noise monitor should be capable of determining the direction of noise, as such it is possible to allocate measured operational noise to Western Coal Services using data returned with sufficient detail to allow management of operations to minimise noise in the surrounding environment.

This location has been selected with consideration of a number of factors, with the primary focus being on the suitability of the location to be representative of the noise impacts that would be experienced from the adjacent area and privately owned residences nearby. The installation of monitoring infrastructure on mine owned land is also beneficial to ensure the security of the equipment, as well as unimpeded ease of access for planned or unplanned maintenance. It also minimises disturbance to landowners and the local community.

Real-time noise data will be collected and stored on site for a minimum period of 4 years to allow a data trend analysis to be completed as required.

The following data parameters (as returned from the real-time monitoring site and the site weather station) will be trended in real time and display available in the operation dispatch area as a management tool:

- omnidirectional and directional low pass LA90 and LAeq;
- wind speed;
- wind direction;
- atmospheric stability class;
- the relevant impact criterion; and
- the relevant cumulative criterion.

The data trend display will be highlighted where a noise parameter value exceeds the relevant criterion for any period. This noise notification will be triggered when the:

- average wind speed is less than 3 metres per second;
- time is between 19:00 and 08:00 hours; and
- the low pass L_{Aeq} is 33 dB or above.

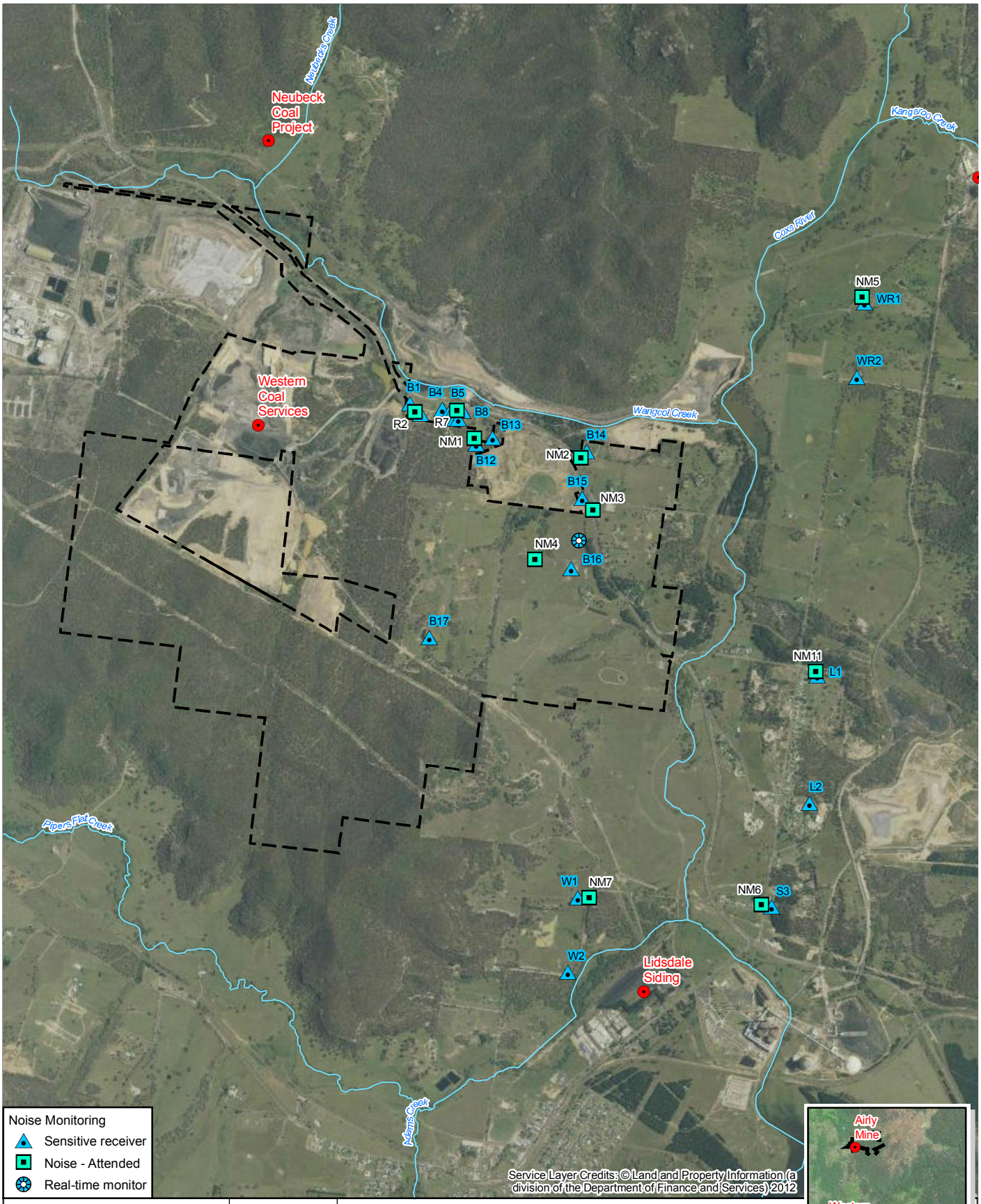
In addition to the above, noise notifications will not be triggered where:

- the low pass L_{Aeq} exceeds the L_{A90} by more than 5 dB;
- the low pass L_{Aeq} is greater than the L_{A10}; or
- the low pass L_{Aeq} exceeds the previous low pass L_{Aeq} by more than 7 dB.

These triggers will be reviewed annually and updated as required following reviews of monitoring results and/or community complaints.

Once a noise notification is triggered, the system will send an SMS to the Western Coal Services Coal Distribution Manager and Environmental Coordinator. A data evaluation will be undertaken as soon as practical upon notification receipt.

Implementation of management and control measures will then be undertaken with consideration to the NMP.



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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- Colliery Holding Boundary
- Watercourse

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

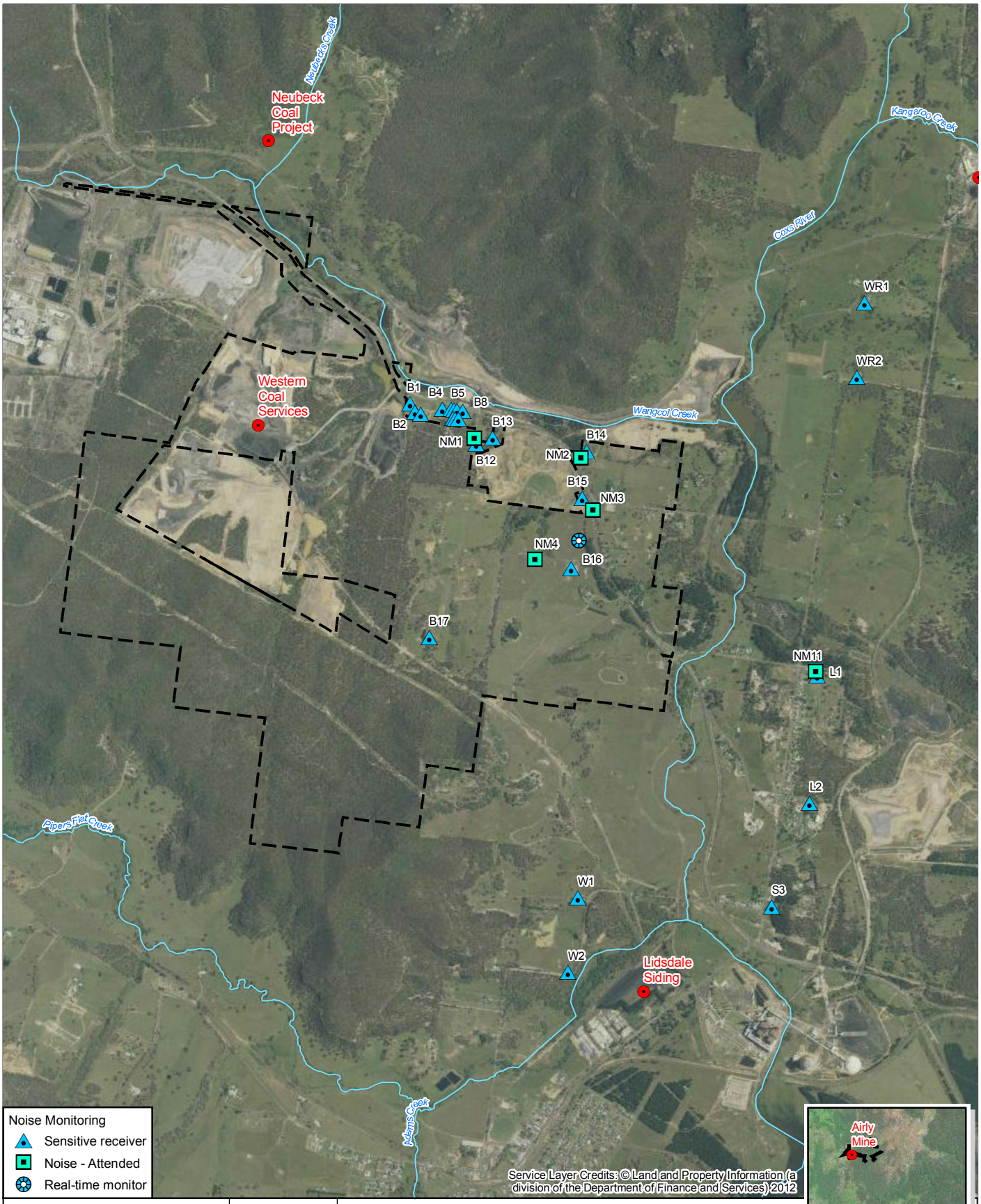
Western Coal Services Short Term Noise Monitoring

Centennial Coal

DATE 14/01/2016

Figure 1

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2218092\2218092_MR003_Noise_ShortTerm_DDP_A.mxd



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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- Colliery Holding Boundary
- Watercourse

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Western Coal Services Long Term Noise Monitoring

Centennial Coal

DATE 14/01/2016

Figure 2

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2218092\2218092_MR004_Noise_LongTerm_DDP_A.mxd

Meteorological monitoring

Meteorological data for Western Coal Services is shared with Pinedale Mine at a weather station to the northeast of the site.

The Carbon Based web portal has links to a WCS AWS.

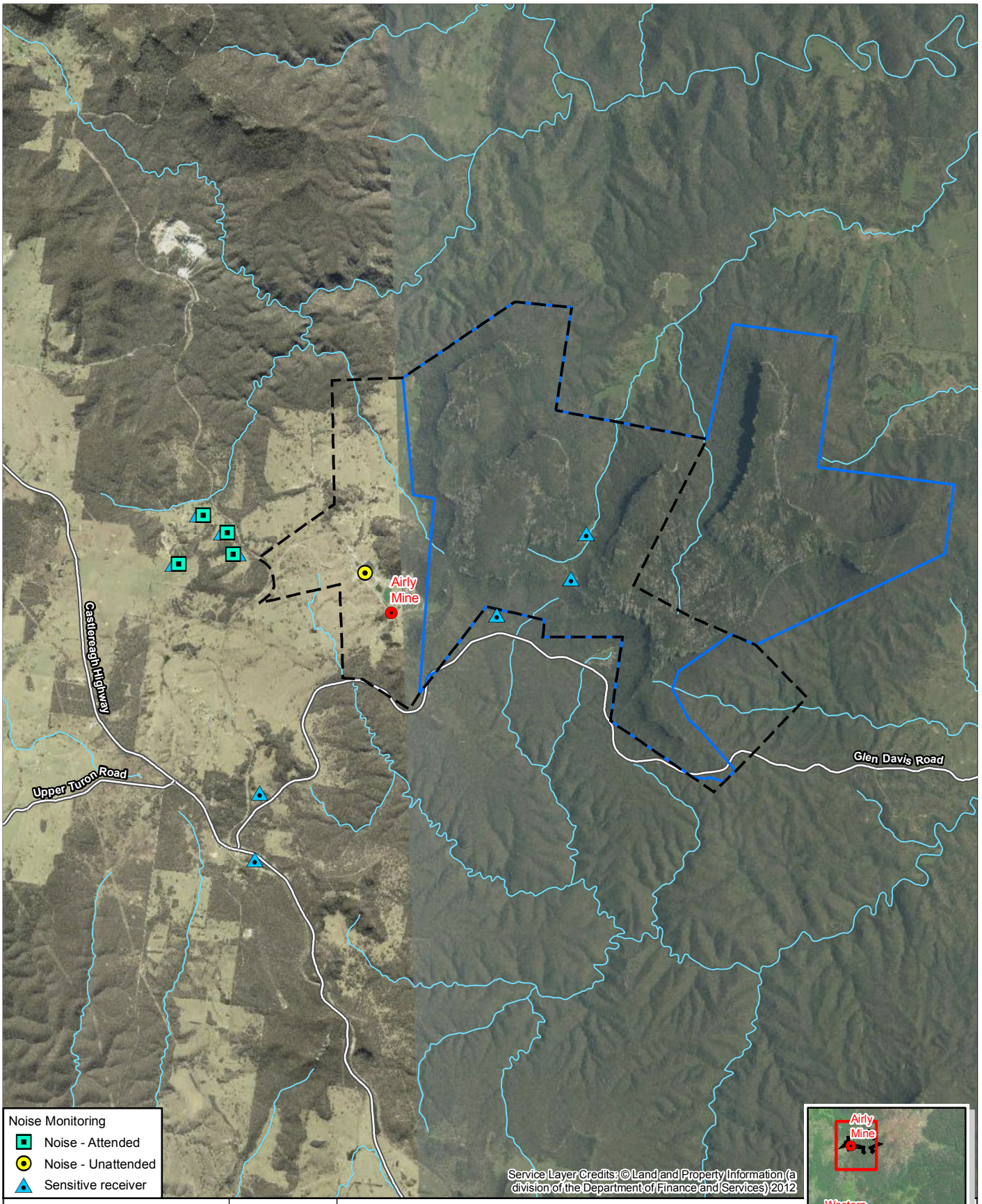
The weather stations continuously monitor weather parameters. Monitoring parameter are summarised in **Table 6**.

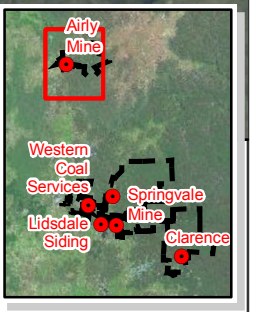
Supplementary weather data could be obtained through the use of a mobile device by the noise monitoring operator.

Table 6 - Western Coal Services meteorological monitoring

Site ID	X (m)	Y (m)	Parameter	Instrument	Frequency	Purpose
Western Coal Services AWS	229275	6302754	Temperature Wind – speed and direction Rainfall Relative humidity Sigma-theta Evaporation	Automatic weather station	10 minute data intervals	Proactive monitoring. Weather analysis during noise monitoring. Rainfall information

Appendix G - Maps





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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- ML1331 Boundary
- A232 Boundary
- Watercourse
- Roads

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Short Term Noise Monitoring Network

Airly Noise Monitoring Regional Overview

Centennial Coal

DATE 14/01/2016

Appendix G1

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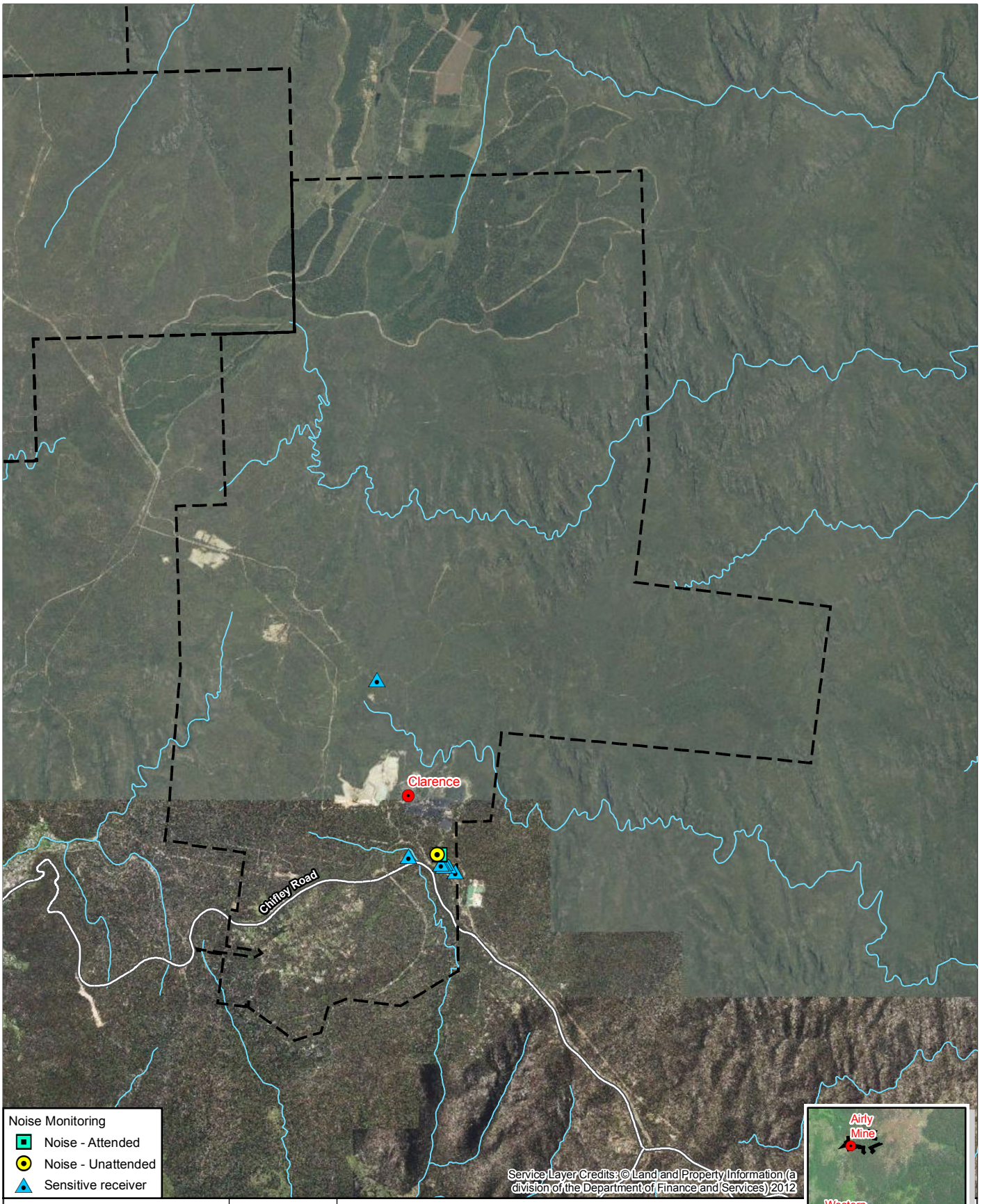

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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- Colliery Holding Boundary
- Watercourse
- Roads

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region
Short Term Noise Monitoring Network

Clarence
Noise Monitoring Regional Overview

Centennial Coal

DATE 14/01/2016

Appendix G1

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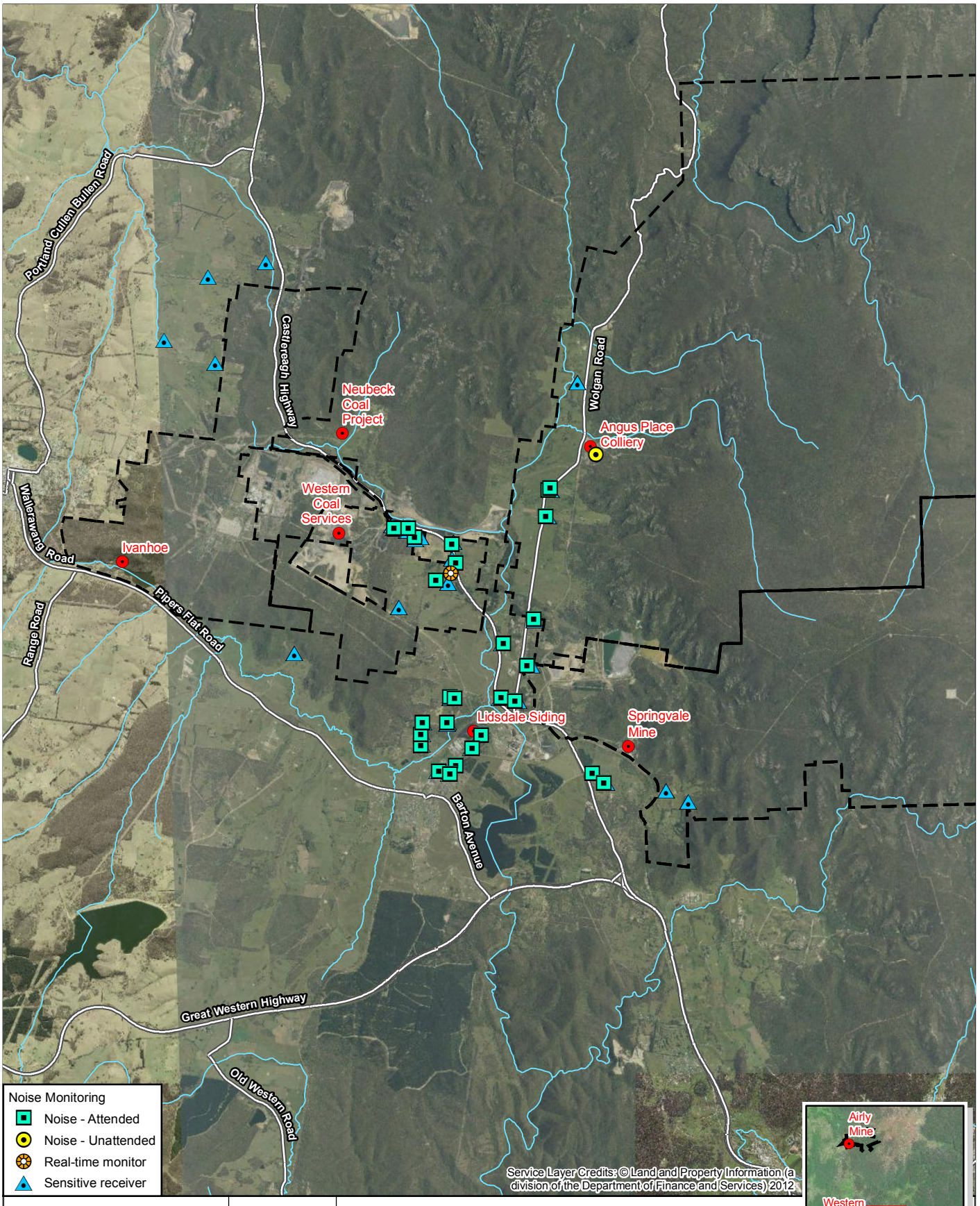

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Kilometres

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Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- Colliery Holding Boundary
- Watercourse
- Roads

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Short Term Noise Monitoring Network
Angus Place, Springvale, Lidsdale Siding and Western Coal Services
Noise Monitoring Regional Overview

Centennial Coal

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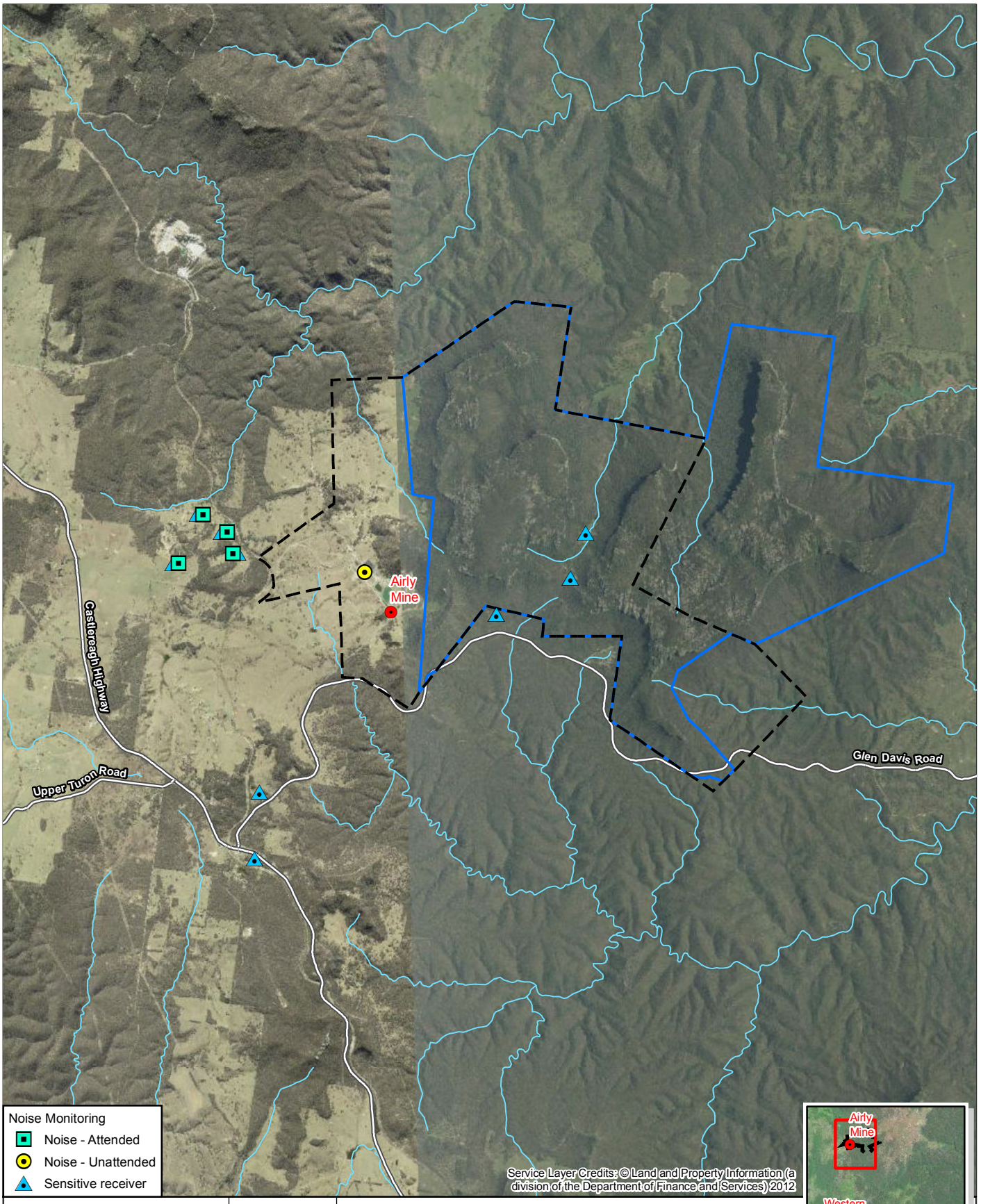
Appendix G1

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2218092\2218092_MR002_Noise_RegionalMap_ShortTerm_DDP_A.mxd



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Kilometres

Map Projection: Universal Transverse Mercator
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Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- ML1331 Boundary
- A232 Boundary
- Watercourse
- Roads

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Long Term Noise Monitoring Network

Airly Noise Monitoring Regional Overview

Centennial Coal

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Appendix G2

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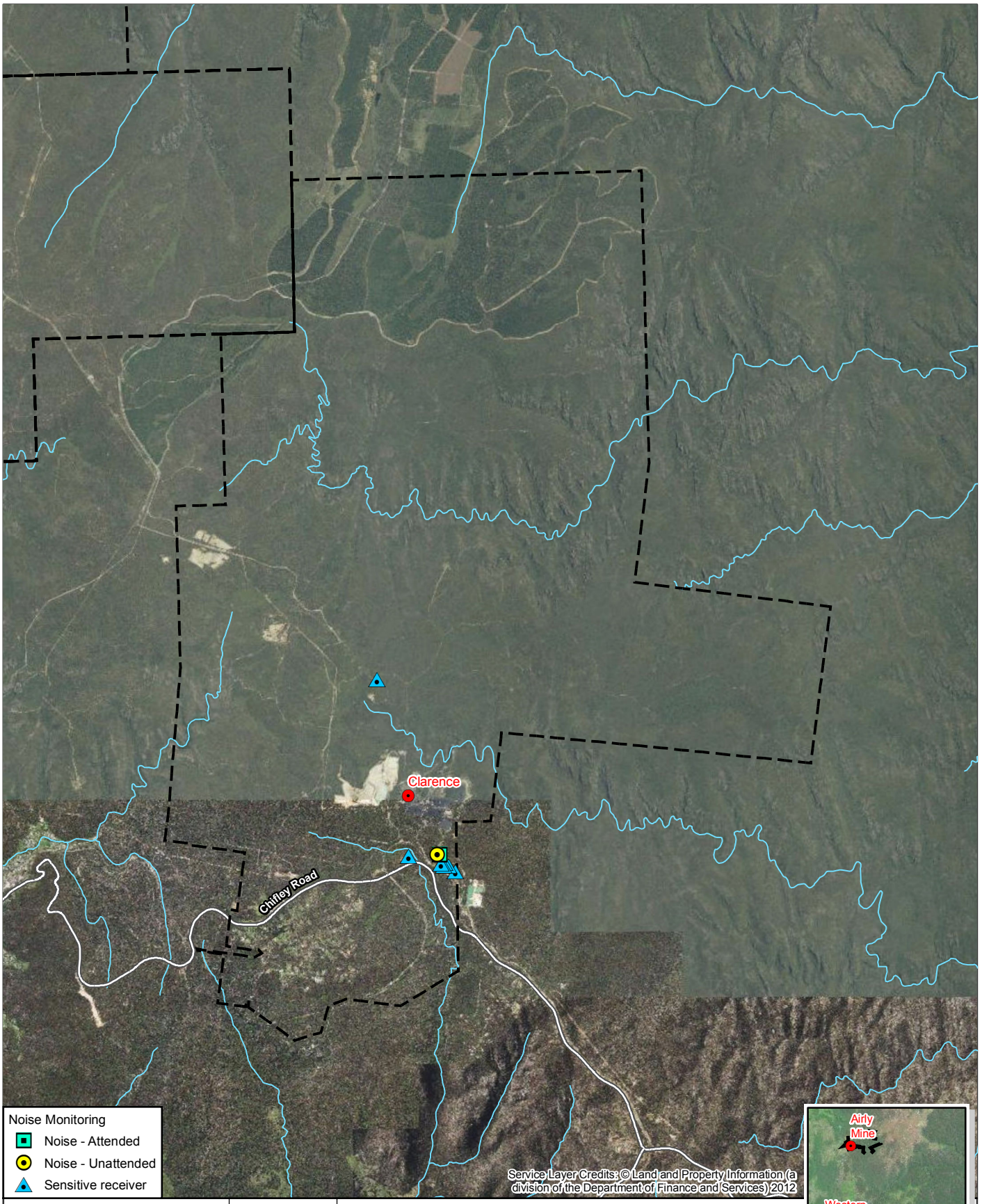

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Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND

- Centennial Site Location
- Colliery Holding Boundary
- Watercourse
- Roads

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Long Term Noise Monitoring Network

Clarence Noise Monitoring Regional Overview

Centennial Coal

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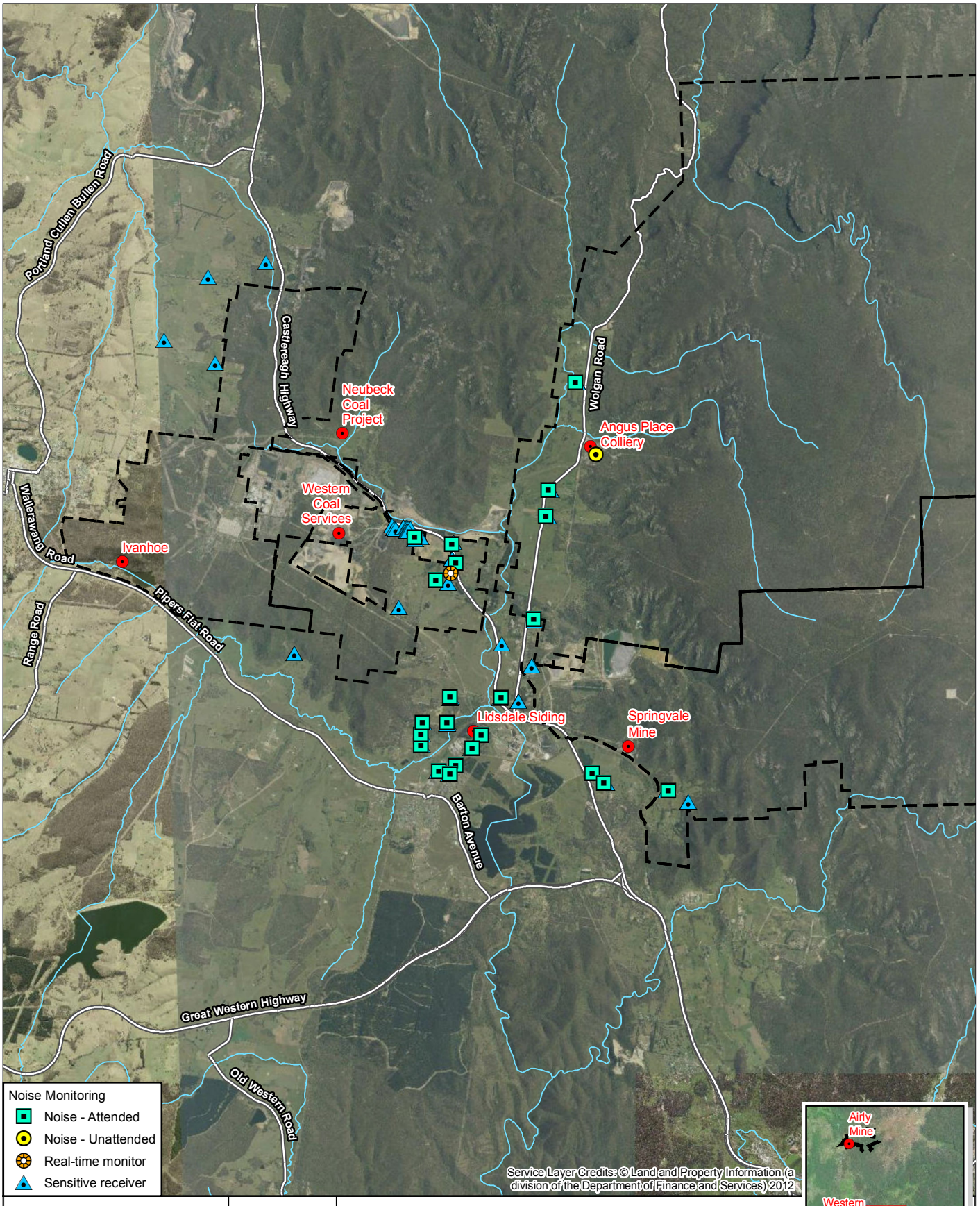
Appendix G2

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2218092\2218092_MR011_Noise_RegionalMap_LongTerm_DDP_A.mxd



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Kilometres

Map Projection: Universal Transverse Mercator
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N

LEGEND

- Centennial Site Location
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- Roads

LOCATION	-
SEAM	NA
DRAWN	F.Mackay
CHECKED	T.G
APPROVED	LH
SCALE	Refer to scalebar

Centennial Western Region Long Term Noise Monitoring Network

Angus Place, Springvale, Lidsdale Siding and Western Coal Services Noise Monitoring Regional Overview

Centennial Coal

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Appendix G2

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2218092\2218092_MR011_Noise_RegionalMap_LongTerm_DDP_A.mxd

Appendix H – Consultation log

Consultation Date	Description
20 October 2015	Letter sent to the Department of Planning and Environment detailing the regional approach to the development of the Noise Management Plan and requesting a 2 month extension to the timeframe for submission.
30 October 2015	Letter sent to the Department of Planning and Environment requesting approval to consolidate the Noise Management Plan into a regional Management Plan.
2 November 2015	Approval received from the Department of Planning and Environment on the 2 month extension to the timeframe for submission with the Management Plan required to be submitted by 21 February 2016.
17 November 2015	Meeting with the EPA (Sydney) discussed regional approach being undertaken for the development of the Management Plans.
19 November 2015	Approval received from the Department of Planning and Environment to consolidate the Management Plans into regional Management Plans.
15 January 2016	Draft Noise Management Plan submitted to the EPA for review and comment.
11 February 2016	Final draft Noise Management Plan submitted to the DPE for review and approval
22 July 2016	Noise Management Plan approved by the Secretary