CENTENNIAL

Noise Management Plan

Western Region

November 2021

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	2	SSD 5581 Approval	Inclusion of Airly
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	4	MP 08_0223 MOD-3 Approval	Updates to Lidsdale Siding noise criteria.
	5	DA504-00 MOD 6 & 7 Approval	Administrative Amendments

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 F1**.

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 and to 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 and via overland conveyor to Mount Piper Power Station.

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 5.5 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.

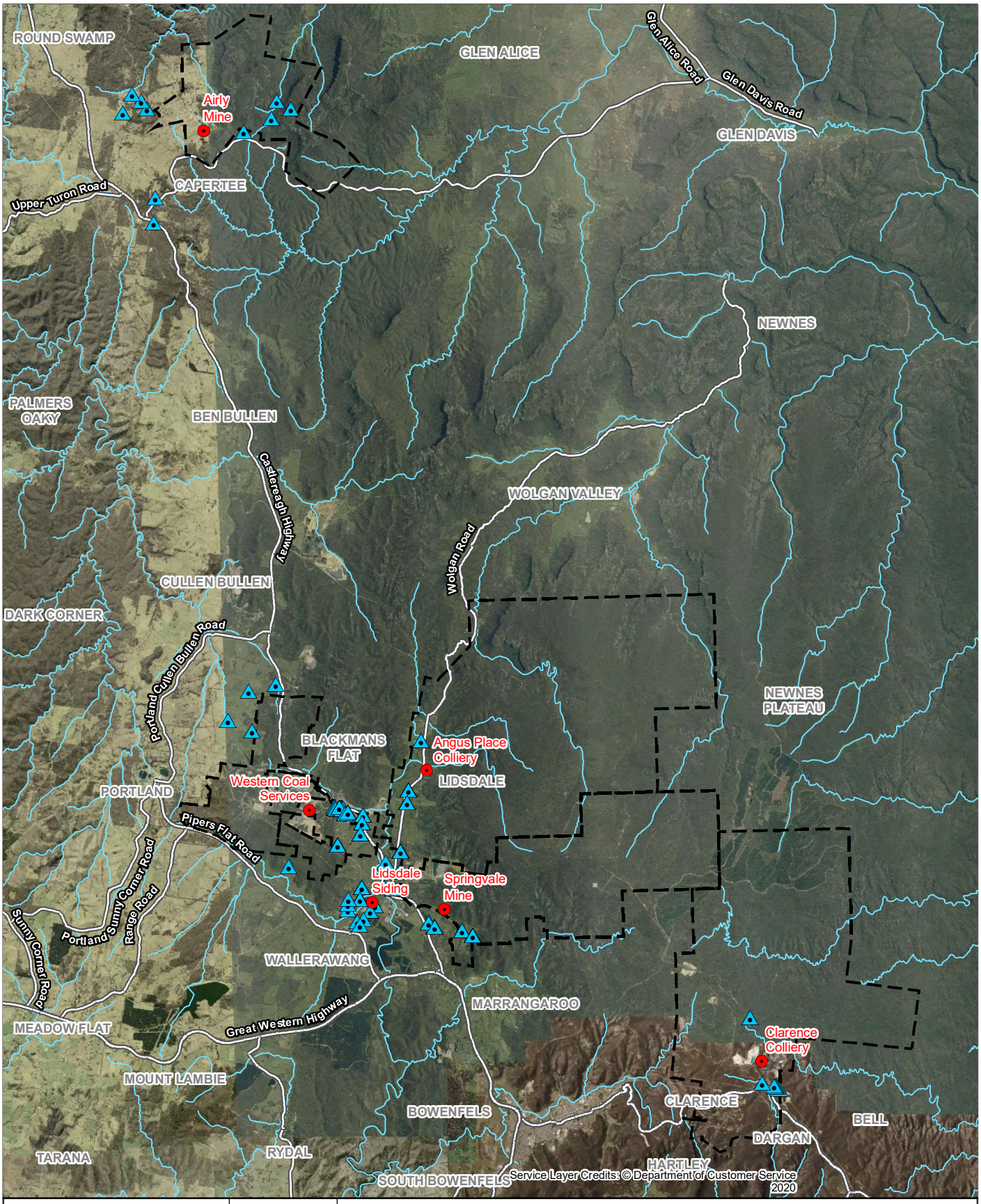
1.6.6 Western Coal Services

Western Coal Services (WCS) is located to the west of the Blue Mountains in the Lithgow Local Government Area in New South Wales. The largest project component, the Springvale Coal Services Site, is located approximately 125 kilometres (km) from Sydney, approximately 15 km north of city of Lithgow, approximately 5 km north-northwest from the township of Wallerawang, and approximately 4 km northwest of the village of Lidsdale.

WCS 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 Springvale Coal Services site (SCSS) receives coal from both the Springvale and Angus Place Collieries, and Lidsdale Siding, and sends and received 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	IG
APPROVED	SG
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Operation Locations and Sensitive Receivers

CENTENNIAL

DATE 10/11/2021

Figure 1

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\12548337\NMP\2218092_MR009_OPSLocation_Receivers_B.mxd

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 & Geosciences (DRG);
- 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 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	, A232
Clarence	ML1583, CCL705, ML1353, ML1354, A416, EL5072, A451
Lidsdale Siding	
Springvale	ML1588, CL377, ML1323, ML1303, ML1326, ML1670, ML1537, ML1727, MPL314, A460 and EL6974
Western Coal Services	ML1448, ML1319, ML1352, CCL733, ML204, ML564, PLL133, CL361, CL394

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 F1**.

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 F1**.

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 F1**.

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 F1**.

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 monitoring rationalisation 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.
- 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:

- Australian Standard AS/NZS IEC 61672.1:2019 – *Electroacoustics – Sound level meters – Part 1: Specifications*
- AS 1055:2018 - *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 locations of long term attended noise monitoring locations in relationship to landownership are shown on the plans in **Appendix G**. All attended noise compliance monitoring locations for sensitive receivers are located on privately owned land with the exception of Airly noise monitoring location ANM3 and Western Coal Services noise monitoring location WNM1. Where attended noise compliance monitoring locations are located on Centennial owned land, compliance is determined at those monitoring locations for the relevant sensitive receptors.

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).

Further details of the real time noise monitoring system are provided in the site-specific Western Coal Services **Appendix F1**.

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 measurable 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 Noise Policy for Industry* guidelines and AS 1055:2018 - *Acoustics – Description and measurement of environmental noise*.

If site noise is not measurable due to masking, then suitable methods must be employed as per the *NSW Noise Policy for Industry* (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 Fact Sheet C of the *NSW Noise Policy for Industry* , 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.

Any changes to the noise monitoring frequency for Centennial's operations will be done in consultation with the relevant agencies with a revised management plan submitted and approved prior to any changes being implemented.

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**.

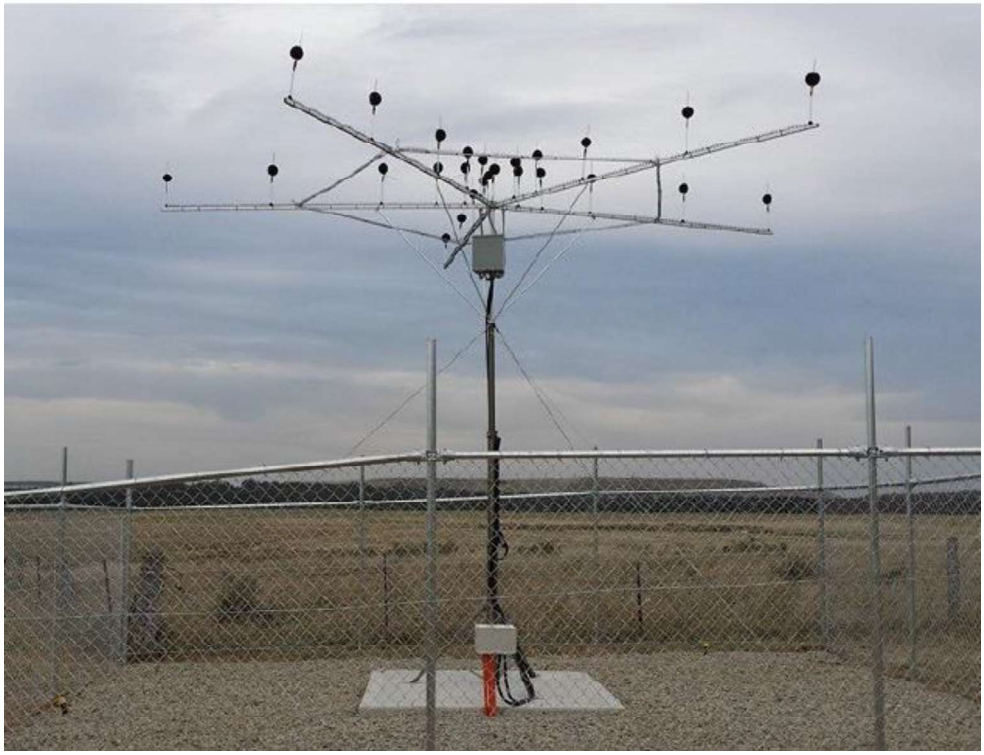


Figure 2 – Environmental Noise Compass (Acoustic Research Labs Pty Ltd)

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.

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/NZS IEC 61672.1:2019 – *Electroacoustics – Sound level meters – Part 1: 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 Noise Policy for Industry* , where applicable.
- Record the time average A-weighted sound pressure level $L_{Aeq,T}$ (as per Clause 6.5 of AS 1055:2018), 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 1055:2018. 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 1055:2018.
- 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 Fact Sheet C of the *NSW Noise Policy for Industry* .
- Record measurement details in accordance with Clause 7 of AS 1055:2018, 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/biennial 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 1055:2018.

Table 4-1 – Monitoring equipment calibration requirements

Equipment	Relevant Standard	Calibration frequency	Calibration description
Real-time monitor	AS 1055:2018 AS/NZS IEC 61672.1:2019	Annual	NATA laboratory responsible for calibration of measuring equipment used. Regular checks recommended.
Sound Level Meter	AS 1055:2018 AS/NZS IEC 61672.1:2019	Annual/every 2 years as per equipment specification	NATA laboratory calibration. Field checks pre and post each monitoring round.
Noise logger	AS 1055:2018 AS/NZS IEC 61672.1:2019	Annual/every 2 years as per equipment specification	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. Both the current short term and long term attended and unattended monitoring programs have been designed to allow for 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 programs also allows for the effectiveness of noise management measures to be measured over time, identify key noise sources and review and improve Centennial's operational noise management practices.

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	2	-	Annual	-
Angus Place Colliery	3	1	Quarterly	-
Clarence Colliery	1	1	Annual	-
Lidsdale Siding	12	-	Monthly	-
Springvale Mine	4	-	Quarterly	-
Western Coal Services	8	-	Monthly	4

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

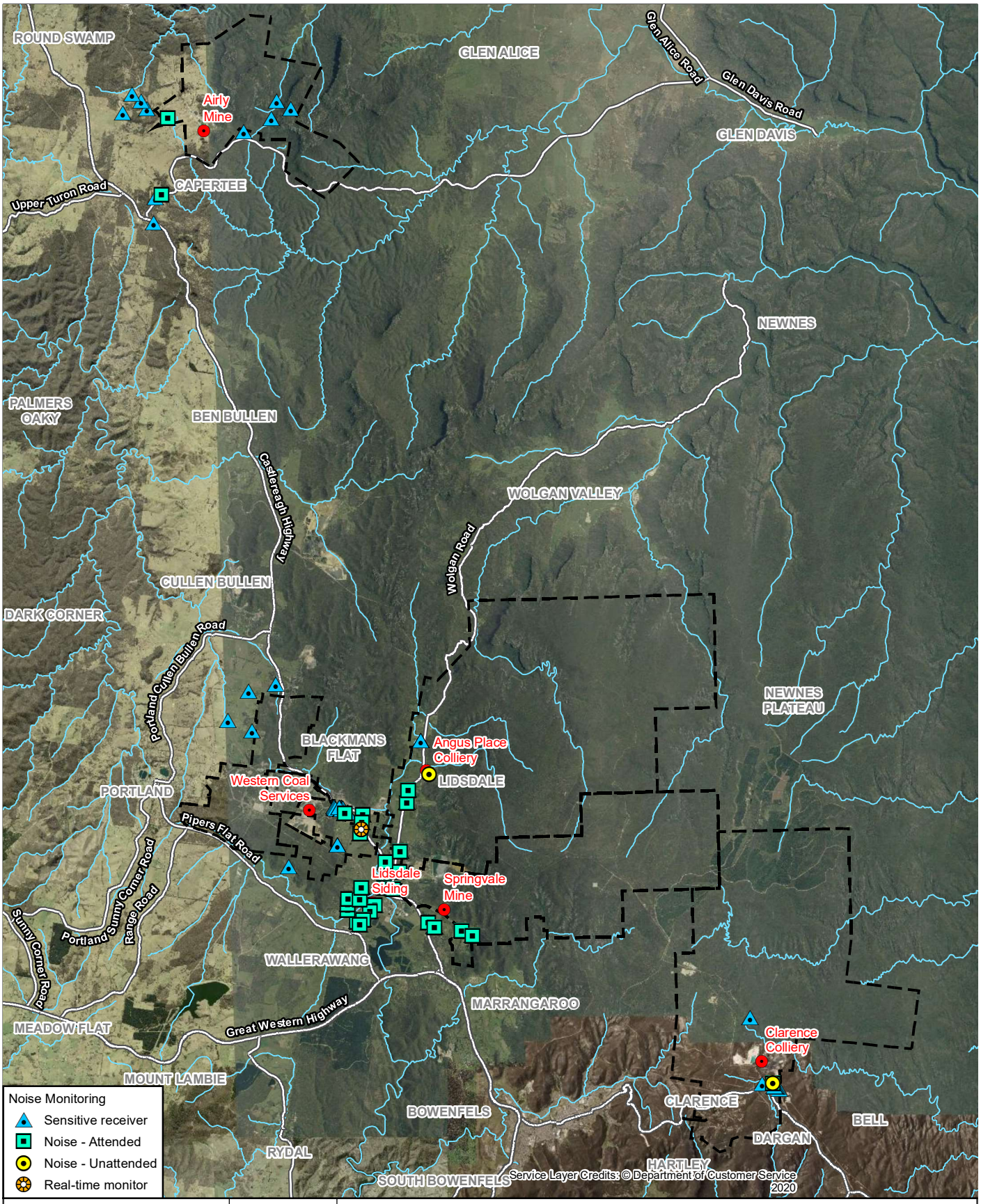
Operation	Attended monitoring	Unattended monitoring	Frequency	Continuous real-time monitor
Airly Mine	3	-	Annual	-
Angus Place Colliery	3	1	Quarterly	-
Clarence Colliery	1	1	Annual	-
Lidsdale Siding	12	-	Quarterly	-
Springvale Mine	3	-	Quarterly	-
Western Coal Services	4	-	Quarterly	4

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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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	IG
SCALE	Refer to scalebar

Centennial Western Region Noise Management Plan

Overview
Short Term Noise Monitoring

CENTENNIAL

DATE 9/11/2021

Figure 4

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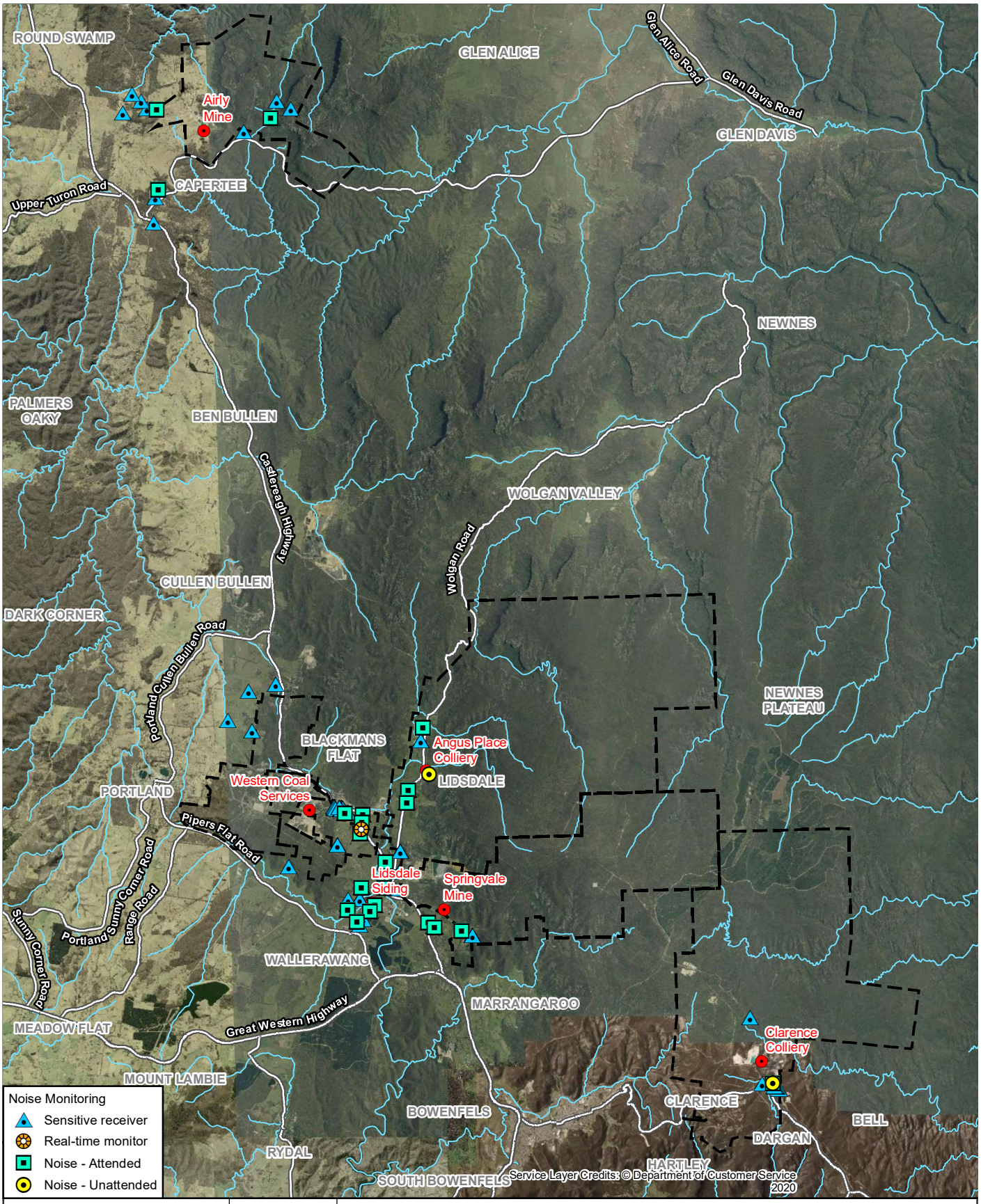

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Map Projection: Universal Transverse Mercator
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Centennial Western Region Noise Management Plan

Overview
Long Term Noise Monitoring

CENTENNIAL

DATE 9/11/2021

Figure 5

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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:

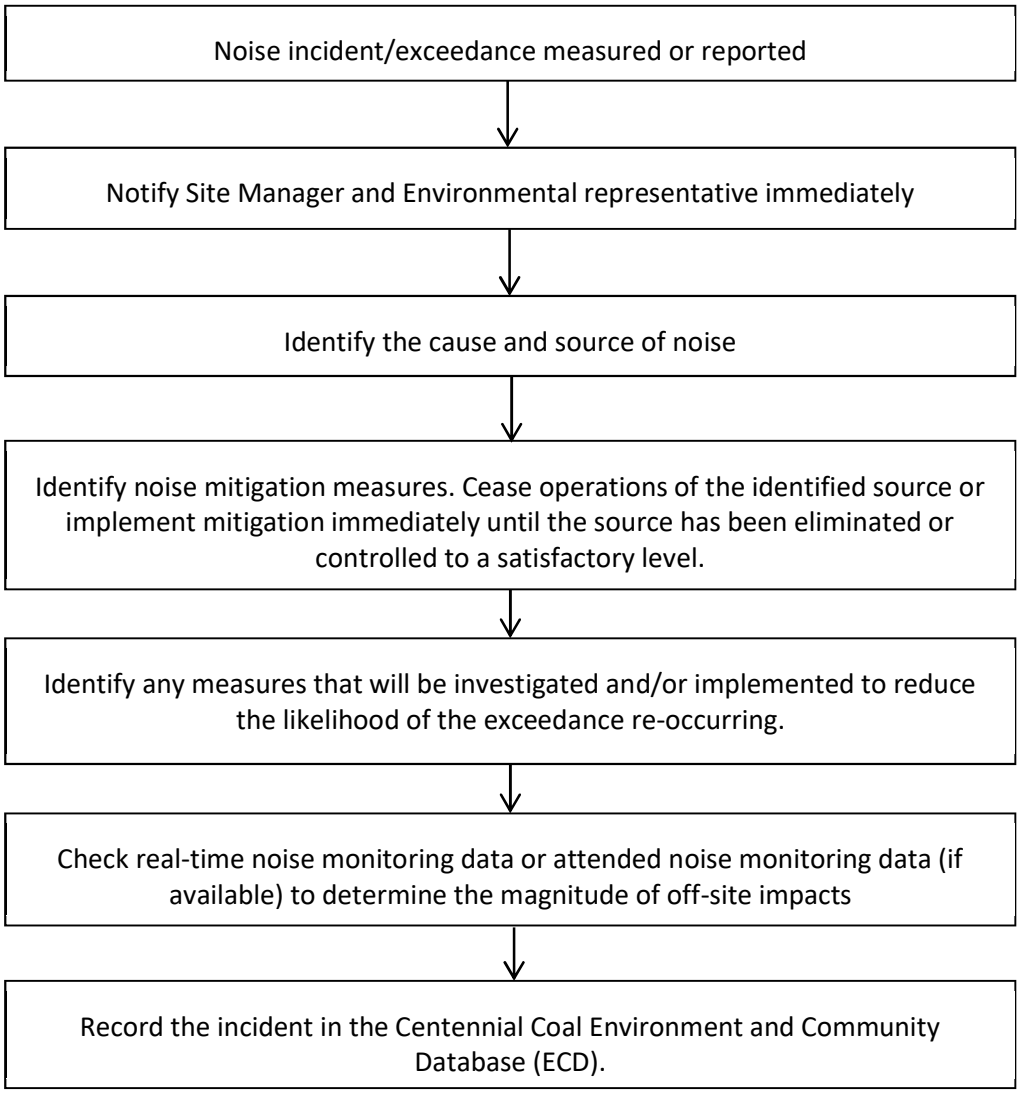


Figure 6 – Unexpected noise exceedance management procedure

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 where possible.	Complete incident investigation to determine the cause of the exceedance. Review effectiveness of mitigation measures. Modify operations where possible. Notify relevant government agencies and impacted landowners in accordance with the procedure in the Noise Management Plan. Review the Noise Management Plan in accordance with CoA. .

6 Incidents, complaints and exceedances

6.1 Incidents

Non-compliances may be identified during site inspections, noise monitoring, and as a result of either an exceedance, incident or community complaint.

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

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

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 procedures for notification of non-compliances involves assessing noise results against approval criteria and notifying regulators and is outlined in the site EMS as informed by Development Consent and EPL conditions.

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 all licences and approvals for management of the site.
- 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 instigated 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 Manager Environment 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 be identified during site inspections, through audit findings, noise monitoring, and as a result of either an exceedance, incident or community complaint. 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 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 3(a)	The Applicant must:	
	Minimise the construction, road and rail noise of the development;	Appendix A
Condition 4 Condition 3(b)	Minimise the noise impacts of the development during meteorological conditions under which the noise limits in this consent do not apply (see Appendix 8);	Appendix A & Section 3
Schedule 4 Condition 3(c)	Carry out the monitoring to determine whether the development is complying with the relevant conditions of this consent, To the satisfaction of the Secretary.	Appendix A
Schedule 4 Condition 4	Prior to carrying out any development under this consent, unless the Secretary agrees otherwise, the Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Secretary.	This Noise Management Plan consultation log is provided as Appendix H. DPE granted an extension of time to submit the Noise MP to the DPE to 30 April 2017. This Noise Management Plan was submitted to the DPE on 28 April 2017 for approval.
	This plan must:	
Schedule 4 Condition 4(a)	be prepared in consultation with the EPA;	This Noise Management Plan was prepared in consultation

Condition No.	Condition of Consent	Where Addressed
		with the EPA. A consultation log is provided as Appendix H. This Noise Management Plan was submitted to the EPA for consultation on 10 March 2017.
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)	include a monitoring program that evaluates and reports on:	
	Compliance against noise criteria in this consent; and	Appendix A
	compliance with noise operating conditions in condition 3 above.	Appendix A
	The Applicant must implement the approved Noise Management Plan for the development	

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.

As the timing for the commencement of construction activities associated with the Airly Mine Extension Project is uncertain, this Management Plan addresses the operational aspects of the Airly Mine Extension Project only. Once construction activities and timing has been confirmed, this Management Plan will need to be updated to include construction specific monitoring and management measures and re-submitted for approval. Approval of the management plan with the

construction activities included will be sought prior to the construction activities commencing. Noise management for exploration activities will be addressed in the Exploration and Minor Infrastructure Management Plan required under schedule 4 Condition 26 of SSD 5581.

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 (ongoing).
- Operate mobile plant in a quiet, efficient manner and regular training of operators (ongoing).
- Installation of frequency modulated reversing alarms or "*quakers*" on mobile plant to replace reversing alarms (complete).
- Installing acoustic enclosures around processing plants (ongoing as required to ensure compliance).
- Switching off vehicles and plant when not in use (ongoing).

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 complaint 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.

In addition to the above measures, Airly Mine proactively limit some aspects of their operations to the least-sensitive day time period only, in accordance with Schedule 4 Condition 1 of SSD 5581. 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 outline in Schedule 4 Condition 1 are reproduced in Table 2.

Table 2 – Operating hours restrictions – Airly Mine

Activity	Operating Hours
• Construction	7 am to 6 pm Monday to Friday and 8 am to 1 pm Saturdays
• Exploration and monitoring borehole drilling	

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 3**.

Table 3 – Airly Mine noise criteria dB(A)

Land	Day $L_{Aeq\ (15\ min)}$	Evening $L_{Aeq\ (15\ min)}$	Night $L_{Aeq\ (15\ min)}$	Night $L_{A\ (max)}$
Any residence on privately-owned land	35	35	35	52
	$L_{Aeq\ (period)}$			
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 two attended noise monitoring locations. Monitoring is conducted at or near sensitive receiver locations surrounding the surface facilities.

The short term noise monitoring network currently consist of the following sites:

1. Location C is close to the rail loop. Noise levels of approximately 45 dB(A) were predicted in this area as part of the EIS (SLR, 2014), although the measured contribution in 2014 was up to 33 dB(A). It is not clear if noise from train loading or the rail loop were measured at the time of monitoring
2. Location ANM2 (previously Location D) is to the south of operations and nearby an identified sensitive receiver location designated as A7 (isolated rural residence). This site was predicted to have very low impacts and the mine contribution in 2014 was measured to be <20 dB(A). No complaints relating to noise have been received. This is a very low risk site. This site will also represent Sensitive receiver A8.

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, one of the monitoring points will be relocated to a more suitable location within the Airly Mine monitoring network in the long term. Justification for the relocation is provided below:

- Location C will be relocated to sensitive receiver A2, to represent sensitive receivers A2 to A5 in the long term & relabelled ANM1. The final location of noise Location ANM1 will be dependent on agreement being reached with the landowner, and an access agreement being achieved.
- Monitoring at ANM3 (A17 camp ground) has been included in the long term monitoring network to provide evidence of compliance with the conditions of SSD 5581. Monitoring at ANM3 will also assist in determining compliance at A18 (Nissen Hut). If there is an exceedance at ANM3, then it is assumed that there is also an exceedance at A18. These sites were predicted to have very low impacts.

Airly will move from the Short term monitoring program to the long term monitoring program once an access agreement with the landowner has been achieved.

This Management Plan forms part of the consultation process for moving from the short term monitoring program to the long term monitoring program. This management plan will need to be approved prior to the site moving to the long term monitoring program. If the long term monitoring

program is different to what is detailed in an EPL, then an EPL variation will also be sought prior to moving to the long term monitoring program.

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 4** and **Table 5**.

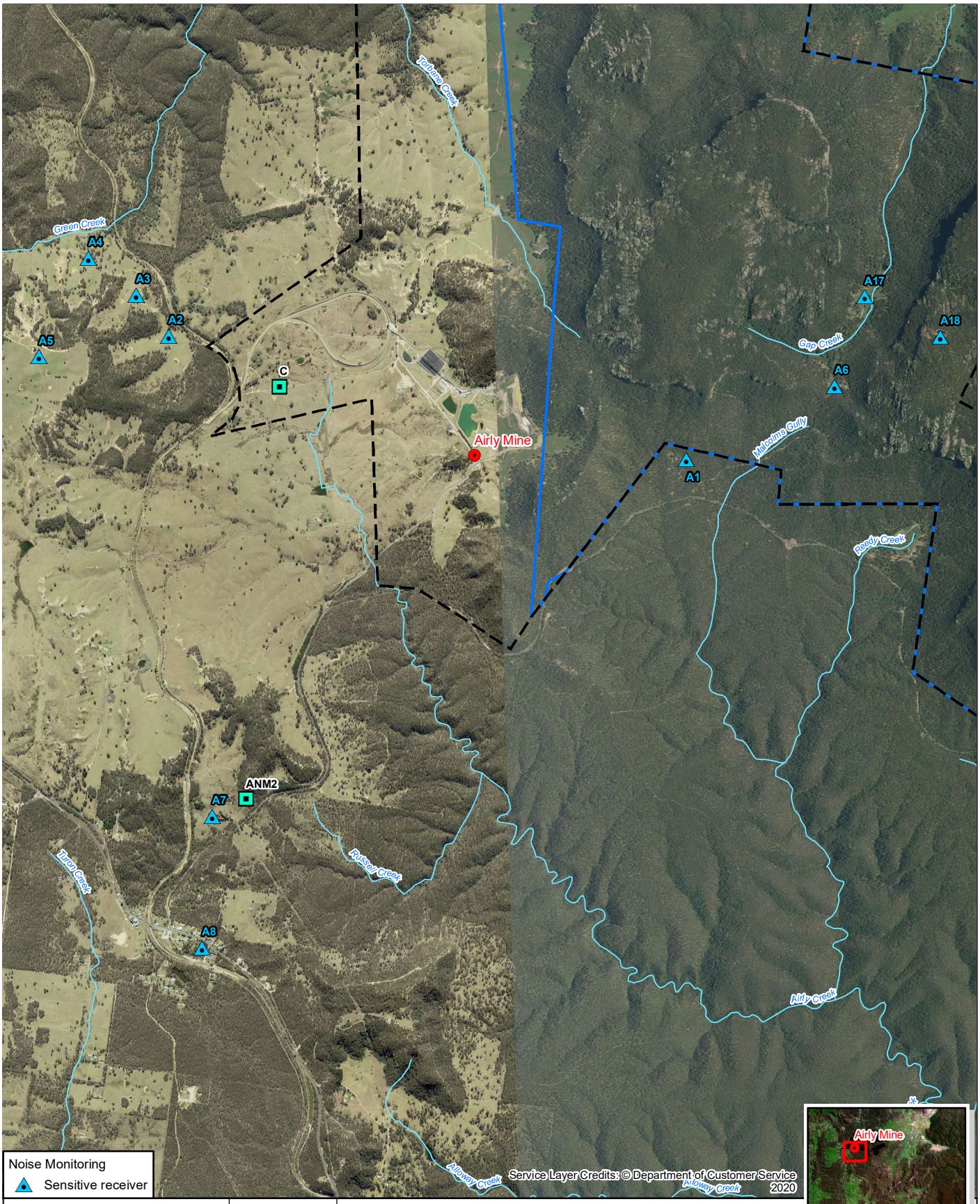
Table 4 – Airly Mine short term noise monitoring locations

Representative Noise Monitoring Location Short Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver Location			Noise Monitoring Criteria				
	Easting	Northing				Receiver ID	Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	Approval
C	219570	6332568	Attended	Annual	Compliance	R2	218907	6332949	35	35	35	52	SSD-5581
						R3	218648	6333227	35	35	35	52	SSD-5581
						R4	218292	6333516	35	35	35	52	SSD-5581
						R5	217893	6332797	35	35	35	52	SSD-5581
ANM2	219316	6329436	Attended	Annual	Compliance	R7	219316	6329436	35	35	35	52	SSD-5581
						R8	778894	6328246	35	35	35	52	SSD-5581

Table 5 – Airly Mine long term noise monitoring locations

Representative Noise Monitoring Location Long Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver Location			Noise Monitoring Criteria				
	Easting	Northing				Receiver ID	Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	Approval
ANM1	219119	6332919	Attended	Annual	Compliance	A2	218907	6332949	35	35	35	52	SSD-5581
						A3	218648	6333227	35	35	35	52	SSD-5581
						A4	218292	6333516	35	35	35	52	SSD-5581
						A5	217893	6332797	35	35	35	52	SSD-5581
ANM2	219187	6329669	Attended	Annual	Compliance	A7	219316	6329436	35	35	35	52	SSD-5581
						A8	778894	6328246	35	35	35	52	SSD-5581

Representative Noise Monitoring Location Long Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver ID	Receiver Location		Noise Monitoring Criteria				Approval
	Easting	Northing					Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	
ANM3	223770	6332585	Attended	Annual	Compliance	A17 (camp ground)	224016	6333253	50	50	50	NA	SSD-5581
						A18 (Nissen Hut)	224592	6332947	50	50	50	NA	SSD-5581



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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	IG
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Airly
Short Term Noise Monitoring

CENTENNIAL

DATE 9/11/2021

Figure 1

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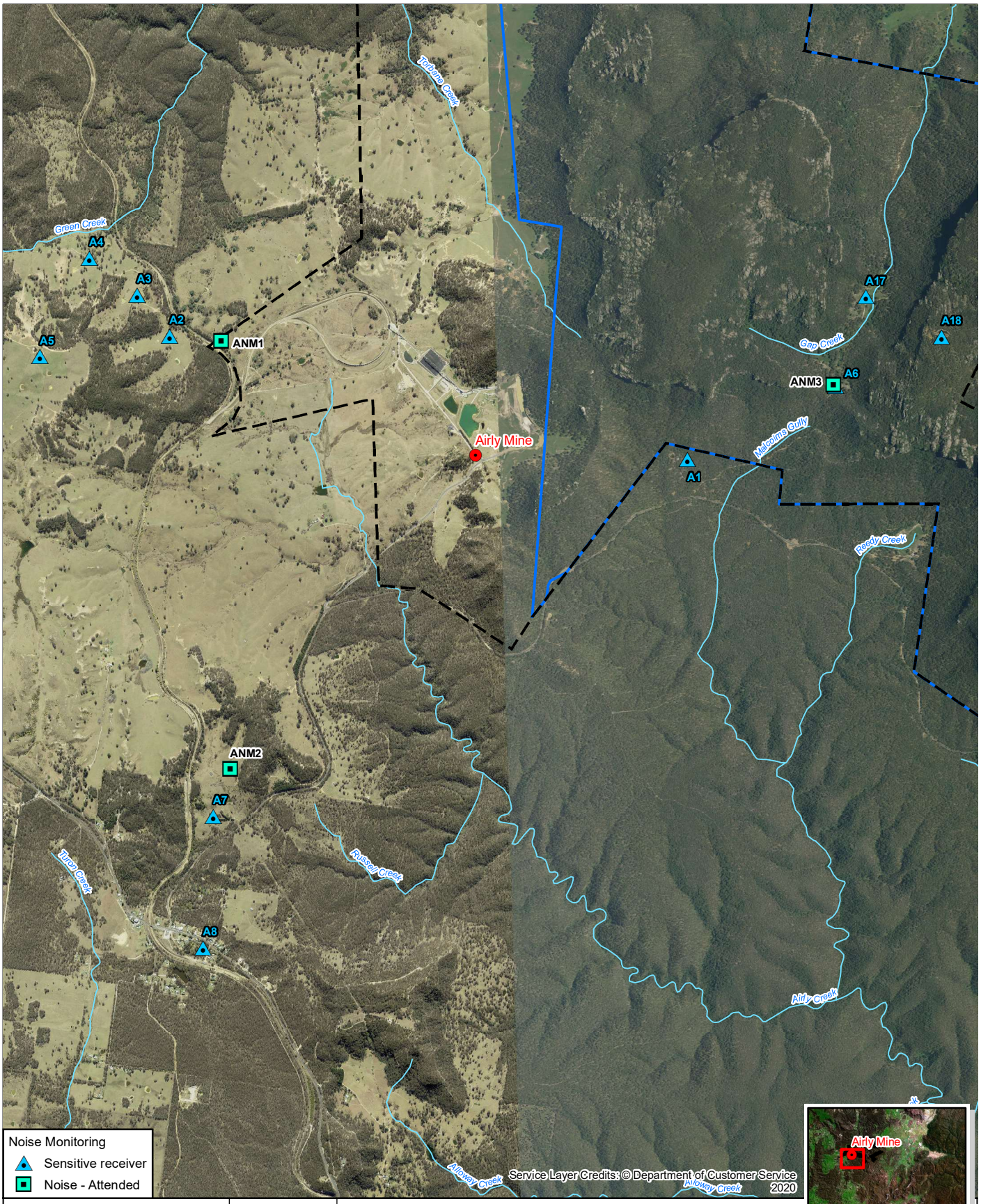

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Centennial Western Region Environmental Monitoring

Airly
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Figure 2

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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 Noise Monitoring Program was approved by the Secretary on 12 June 2007. A revised Noise Monitoring Program was approved 22 October 2013. This Noise Management Plan was originally submitted to the DPE on 11 February 2016 and approved by the Secretary on 22 July 2016. The Noise Management Plan was revised and resubmitted to the DPE on 28 April 2017.
	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 Monitoring Programme was submitted to the Secretary on 4 June 2007. This Noise Management Plan was originally submitted to the DPE on 11 February 2016 and approved by the Secretary on 22 July 2016.

		The Noise Management Plan was revised and resubmitted to the DPE on 28 April 2017. 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 (ongoing).
- Operate mobile plant in a quiet, efficient manner and regular training of operators (ongoing).
- Installation of frequency modulated reversing alarms or "*quakers*" on mobile plant to replace reversing alarms (complete).

- Installing acoustic enclosures around processing plants (ongoing as required to ensure compliance).
- Speed limits on haul routes (complete).
- Switching off vehicles and plant when not in use (ongoing).

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 consist of three attended monitoring location and one unattended monitoring location. Attended monitoring is conducted at sensitive receiver locations to the south of the surface facilities.

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

Long term

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

This Management Plan forms part of the consultation process for moving from the short term monitoring program to the long term monitoring program. This management plan will need to be approved prior to the site moving to the long term monitoring program. If the Long term monitoring program is different to what is detailed in an EPL, then an EPL variation will also be sought prior to moving to the long term monitoring program.

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

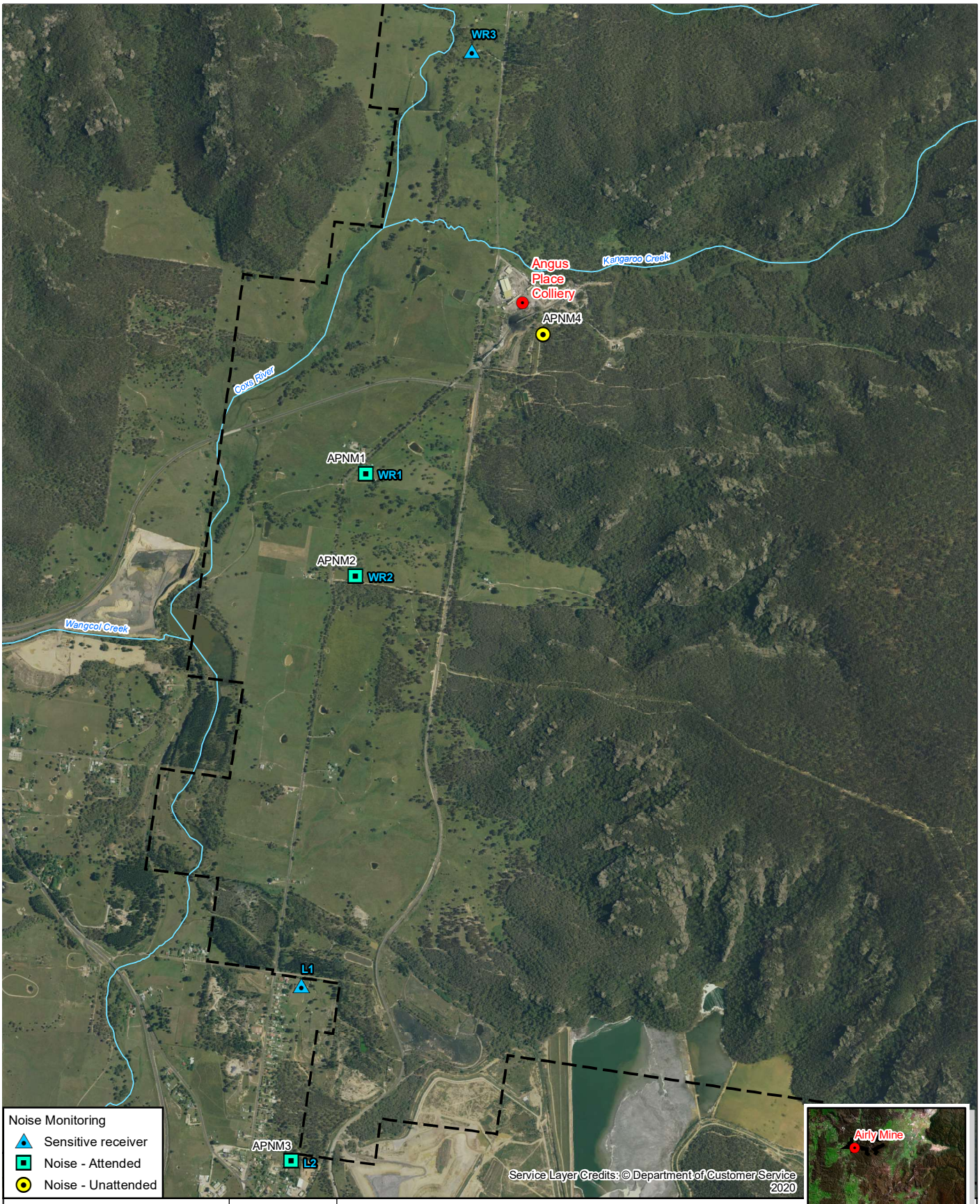
Representative Noise Monitoring Location Short Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver ID	Receiver Location		Noise Monitoring Criteria				Approval
	Easting	Northing					Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	
APNM1	229391	6305106	Attended	Quarterly	Compliance	WR1 (Sharpe)	229391	6305106	42	38	36		PA 06_0021
APNM2	229342	6304611	Attended	Quarterly	Compliance	WR2 (Mason)	229342	6304611	41	37	35		PA 06_0021
APNM3	229028	6301777	Attended	Quarterly	Compliance	L2	229028	6301777	44	40	35		PA 06_0021
APNM4	230250	6305782	Unattended	Quarterly	Informative*	NA							

* 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

Representative Noise Monitoring Location Long Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver ID	Receiver Location		Noise Monitoring Criteria				
	Easting	Northing					Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	Approval
APNM1	229391	6305106	Attended	Quarterly	Compliance	WR1 (Sharpe)	229391	6305106	42	38	36		PA 06_0021
APNM2	229342	6304611	Attended	Quarterly	Compliance	WR2 (Mason)	229342	6304611	41	37	35		PA 06_0021
APNM3	229990	6307652	Attended	Quarterly	Compliance	WR3 (Wolgan Road)	229990	6307652	41	37	35		PA 06_0021
APNM4	230250	6305782	Unattended	Quarterly	Informative*	NA							

* 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	IG
SCALE	Refer to scalebar

Centennial Western Region Noise Management Plan

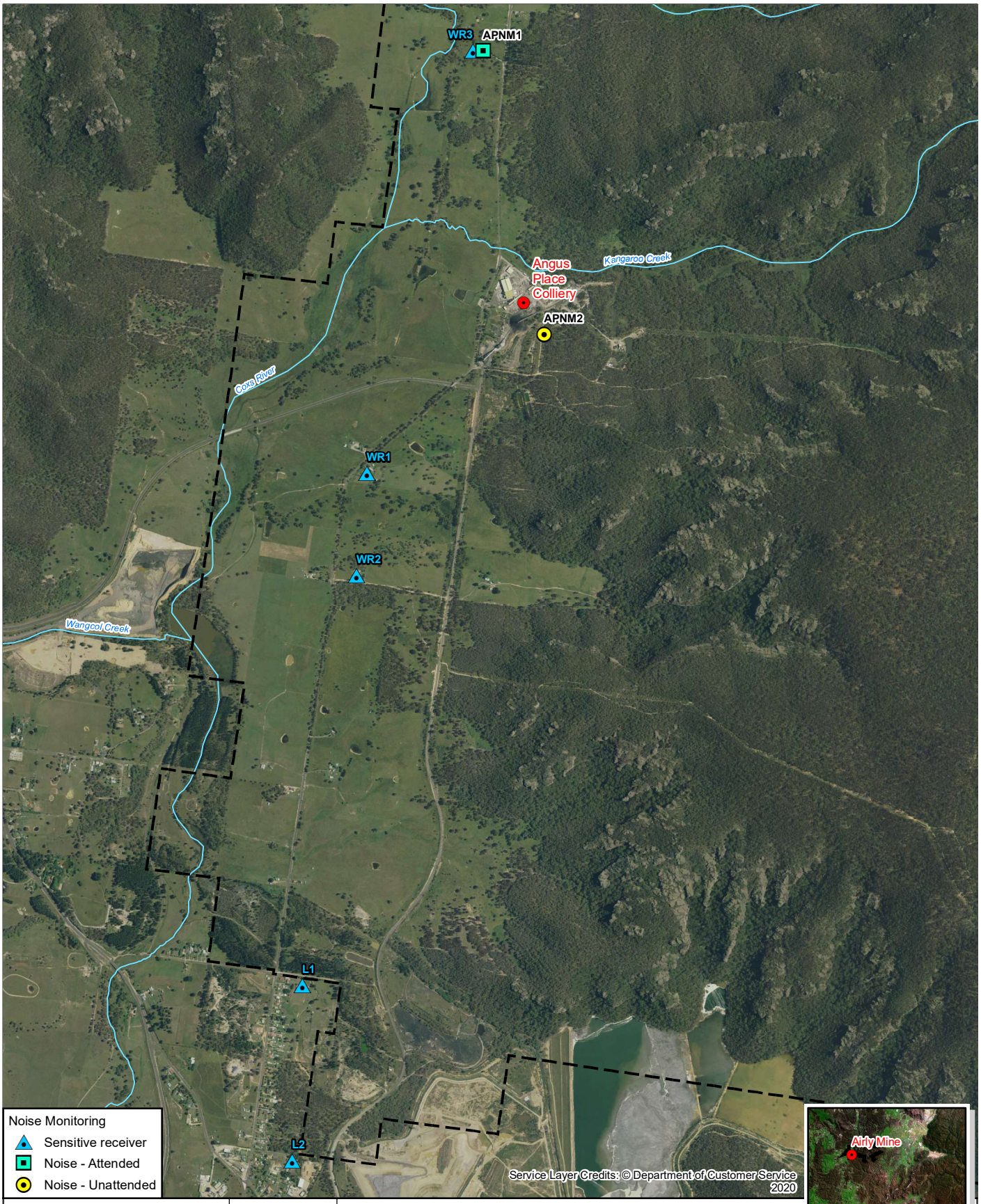
Angus Place Short Term Noise Monitoring

CENTENNIAL

DATE 9/11/2021

Figure 1

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2219046\NMP\2218092_MR004_Noise_ShortTerm_DDP_C.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	IG
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Angus Place Long Term Noise Monitoring

CENTENNIAL

DATE 9/11/2021

Figure 2

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2218092\2218092_MR004_Noise_LongTerm_DDP_B.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 must prepare and subsequently implement a Noise Management Plan for the development, in consultation with EPA, and to the satisfaction of the Planning 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 originally submitted to the DPE on 11 February 2016 and approved by the Secretary on 22 July 2016. The Noise Management Plan was revised and resubmitted to the DPE on 28 April 2017.
	The plan must include:	
Schedule 3 Condition 16(a)	a noise monitoring protocol for evaluating compliance with the noise impact assessment criteria;	Section 4
Schedule 3Condition 16(b)	a plan for the management and minimisation of noise emissions associated with train-loading and rail operations, including	Section 3 Appendix C

	consideration of all feasible and reasonable noise mitigation measures; and	
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 must prepare and implement a revised Noise Management Plan for the development, with a particular focus on reducing rail noise, to the satisfaction of the Planning 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 Noise Management Plan replaces previous Noise Monitoring Programs/ Plans.
	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 originally submitted to the DPE on 11 February 2016 and approved by the Secretary on 22 July 2016. The Noise Management Plan was revised and resubmitted to the DPE on 28 April 2017.

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 (ongoing).
- Operate mobile plant in a quiet, efficient manner and regular training of operators (ongoing).
- Installation of frequency modulated reversing alarms or "*quakers*" on mobile plant to replace reversing alarms. (complete)
- Installing acoustic enclosures around processing plants (ongoing as required to ensure compliance).
- Switching off vehicles and plant when not in use (ongoing).

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 identified as an issue by residents	Not required
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

Schedule 3, 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) *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.*

(b) *Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017)*

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 (C1-C5) 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 (C6) is located to the south of the Main Western Line on the north-eastern outskirts of Clarence village. Receiver 7 (C7) 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 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 Clarence Colliery is provided in **Table 4** and **Table 5**.

Table 4 – Clarence Colliery short term noise monitoring locations

Representative Noise Monitoring Location Short Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver ID	Receiver Location		Noise Monitoring Criteria				Approval
	Easting	Northing					Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	
CNM1	244276	6293167	Attended & Unattended*	Annual	Compliance & Informative*	C1	244554	6292906	38	36	35		DA 504-00 & EPL 726
						C2	244447	6292992	38	36	35		DA 504-00 & EPL 726
						C3	244391	6293035	38	36	35		DA 504-00 & EPL 726
						C4	244373	6292994	38	36	35		DA 504-00 & EPL 726
						C5	244335	6293026	38	36	35		DA 504-00 & EPL 726
						C6	243842	6293147	38	36	35		DA 504-00 & EPL 726

* 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

Representative Noise Monitoring Location Short Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver ID	Receiver Location		Noise Monitoring Criteria				Approval
	Easting	Northing					Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	
M1	244276	6293167	Attended & Unattended*	Annual	Compliance & Informative*	C1	244554	6292906	38	36	35		DA 504-00 & EPL 726
						C2	244447	6292992	38	36	35		DA 504-00 & EPL 726
						C3	244391	6293035	38	36	35		DA 504-00 & EPL 726
						C4	244373	6292994	38	36	35		DA 504-00 & EPL 726
						C5	244335	6293026	38	36	35		DA 504-00 & EPL 726
						C6	243842	6293147	38	36	35		DA 504-00 & EPL 726

* 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	IG
SCALE	Refer to scalebar

Centennial Western Region Noise Management Plan

Clarence Short Term Noise Monitoring

CENTENNIAL

DATE 9/11/2021

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
- Colliery Holding Boundary
- Watercourse

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

Centennial Western Region Environmental Monitoring

Clarence Long Term Noise Monitoring

CENTENNIAL

DATE 9/11/2021

Figure 2

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\12548337\NMP\2218092_MR004_Noise_LongTerm_DDP_B.mxd

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 must prepare and implement a Noise Management Plan for the development to the satisfaction of the Planning Secretary.	The original Noise Management Plan was approved by the Director-General on 15 November 2013. This Noise Management Plan was originally submitted to the DPE on 11 February 2016 and 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 Planning Secretary within 6 months of the date of this Approval unless otherwise agreed by the Planning Secretary;	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 originally submitted to the DPE on 11 February 2016 and approved by the Secretary on 22 July 2016.
Schedule 3	describe the noise mitigation measures that would be implemented to ensure compliance	Section 3

Condition No.	Condition of Consent	Where Addressed
Condition 7(b)	with the noise criteria in Table 1, including the specific measures that would be implemented to minimise train loading / unloading and rail noise generated by the project, including noise associated with: • loading coal onto trains; • unloading coal from trains • braking and accelerating of trains; • train warning horns; and • idling locomotives, particularly during the night;	Appendix D
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 Planning Secretary);	Section 4 Appendix D
	includes a protocol for determining exceedances 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
Notes	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 Planning Secretary may agree to reduce the frequency of attended noise monitoring provided the operational	

Condition No.	Condition of Consent	Where Addressed
	noise performance of the project is acceptable. The effectiveness of the Noise Management Plan is to be reviewed and audited in accordance with the requirements in Schedule 5.	

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

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

Additional Noise Mitigation On Request

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 must 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 Planning Secretary for resolution.

Upon receiving a written request from the owner of any residence within 100 m of Location R8 (see Appendix 3), the Proponent must:

(a) undertake noise monitoring at the affected residence; and

(b) implement noise mitigation measures consistent with the measures outlined in the Voluntary

Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Development (NSW Government 2018), if noise generated by the project is measured to meet or exceed 43 dB(A) $L_{Aeq(15\ min)}$.

If within 3 months of receiving this request from the owner, the Applicant 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 Planning Secretary for resolution.

Operating Conditions

The Proponent must:

(a) implement best practice noise management, including all reasonable and feasible noise mitigation measures to minimise the operational and rail noise generated by the project;

(b) regularly assess the results of noise monitoring to ensure compliance with the relevant conditions of this approval,

to the satisfaction of the Planning Secretary.

Independent Noise Audit

The Proponent must prepare and implement an Independent Noise Audit for the project to the satisfaction of the Planning Secretary. The audit must:

(a) be prepared by a suitably qualified and experienced expert, whose appointment has been approved by the Planning Secretary;

(b) be prepared in consultation with the EPA, and be submitted to the Planning Secretary for approval within 12 months of completion of the upgrade to the coal loader;

(c) incorporate monthly attended noise monitoring results for the project (unless otherwise agreed with the Planning Secretary);

(d) investigate and evaluate all reasonable and feasible measures to mitigate operational noise (including on-site rail noise) to ensure compliance with the noise criteria in Table 1; and

(e) review the feasibility of reducing the number of night-time train movements to/from the site; and

(f) include an action plan to implement the audit recommendations and a protocol for monitoring the effectiveness of these measures over time.

Construction Noise

Prior to the commencement of construction activities on the site, the Proponent must prepare (and during construction implement) a Construction Noise Management Plan prepared in accordance with EPA's Interim Construction Noise Guideline 2009 (or any relevant updated version), to the satisfaction of the Planning Secretary.

Independent Review

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 Planning Secretary in writing for an independent review of the impacts of the project on his/her land.

(a) If the Planning Secretary is satisfied that an independent review is warranted, then within 2 months of the Planning Secretary's decision the Proponent must: commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, 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 Planning Secretary 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 and uploading 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 (ongoing).
- Operate mobile plant in a quiet, efficient manner and regular training of operators (ongoing).
- Installation of frequency modulated reversing alarms or "*quakers*" on mobile plant to replace reversing alarms (complete).
- Switching off vehicles and plant when not in use (ongoing).
- Low-noise design for transfer chutes on conveyor systems (complete).

- Low-noise idlers fitted to conveyors (complete and ongoing as required to ensure compliance).
- Limiting sound power levels for key noise sources such as conveyor drives and the stockpile dozer (complete).
- Partial enclosures on conveyors (complete).
- Noise shielding on the loading bin (complete).

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 complaint 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. A variation for EPL 5129 is proposed to be completed to align the revised noise criteria to be consistent with PA 08_0233 following MOD 3 approval.

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

Location	Day	Evening	Night	Night
	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{A1\ (1\ min)}$
2 – Black Gold Cabins, Main St, Wallerawang	48	46	46	49
3 – "Killarney", Brays Lane, Wallerawang	48	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	44	41	41	49
8 – Cnr Heel St & Cripps Ave, Wallerawang	43	40	40	45
9 – Cnr Cripps Ave & Pindari Pl, Wallerawang	40	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 Planning Secretary 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 was 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

Monthly attended noise surveys will continue to 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. Each Receiver will move from monthly to quarterly when compliance with the noise criteria has been achieved for a period of 12 consecutive months (or negotiated agreements where this cannot be achieved) to justify this reduction. There are no other changes proposed to the long term monitoring program at this stage.

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

This Management Plan forms part of the consultation process for moving from the short term monitoring program to the long term monitoring program. This management plan will need to be approved prior to the site moving to the long term monitoring program. If the Long term monitoring program is different to what is detailed in an EPL, then an EPL variation will also be sought prior to moving to the long term monitoring program.

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

Representative Noise Monitoring Location Short Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver Site ID	Receiver Location		Noise Monitoring Criteria				Approval
	Easting	Northing					Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	
LNM1	228036	6300415	Attended	Monthly	Compliance	R1- Lot 2 Main St, Wallerawang	228036	6300415	50	50	50	55	PA 08_0223 & EPL 5129
LNM2	227837	6300179	Attended	Monthly	Compliance	R2 – Black Gold Cabins, Main St, Wallerawang	227837	6300179	48	46	46	49	PA 08_0223
LMN3	228419	6301150	Attended	Monthly	Compliance	R5 – Duncan Street, Lidsdale	228419	6301150	46	46	46	57	PA 08_0223 & EPL 5129
LNM4	228461	6302189	Attended	Monthly	Compliance	R6 – Old Castlereagh Highway	228461	6302189	43	43	43	56	PA 08_0223 & EPL 5129 (Lidsdale Siding)
LNM5	227300	6299746	Attended	Monthly	Compliance	R7 – Royal Hotel, Main St, Wallerawang	227300	6299746	44	41	41	49	PA 08_0223
LNM6	227568	6299831	Attended	Monthly	Compliance	R8 – Cnr Heel St & Cripps Ave, Wallerawang	227568	6299831	43	40	40	45	PA 08_0223
LNM7	227415	6299619	Attended	Monthly	Compliance	R9 – Cnr Cripps Ave &	227415	6299619	40	39	39	45	PA 08_0223

Representative Noise Monitoring Location Short Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver Site ID	Receiver Location		Noise Monitoring Criteria				Approval
	Easting	Northing					Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	
						Pindari Pl, Wallerawang							
LNM8	226917	6300236	Attended	Monthly	Compliance	R10 – Brays Lane South, Wallerawang	226917	6300236	45	45	45	50	PA 08_0223 & EPL 5129
LNM9	226928	6300457	Attended	Monthly	Compliance	R11 – “Tara” Brays Lane, Wallerawang	226928	6300457	45	45	45	51	PA 08_0223 & EPL 5129
LNM10	226936	6300677	Attended	Monthly	Compliance	R12 – Brays Lane Corner, Wallerawang	226936	6300677	43	43	43	51	PA 08_0223 & EPL 5129
LMN11	227484	6301148	Attended	Monthly	Compliance	W1 – “Fairview”, Brays Lane, Wallerawang	227484	6301148	43	43	43	54	PA 08_0223 & EPL 5129
LMN12	227420	6300654	Attended	Monthly	Compliance	W2 – “Killarney”, Brays Lane, Wallerawang	227420	6300654	48	47	47	56	PA 08_0223

Table 4 – Lidsdale Siding long term noise monitoring locations

Representative Noise Monitoring Location Long Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver Location			Noise Monitoring Criteria				
	Easting	Northing				Receiver Site ID	Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	Approval
LNM1	228036	6300415	Attended	Quarterly	Compliance	R1- Lot 2 Main St, Wallerawang	228036	6300415	50	50	50	55	PA 08_0223 & EPL 5129
LNM2	227837	6300179	Attended	Quarterly	Compliance	R2 – Black Gold Cabins, Main St, Wallerawang	227837	6300179	48	46	46	49	PA 08_0223
LMN3	228419	6301150	Attended	Quarterly	Compliance	R5 – Duncan Street, Lidsdale	228419	6301150	46	46	46	57	PA 08_0223 & EPL 5129
LNM4	228461	6302189	Attended	Quarterly	Compliance	R6 – Old Castlereagh Highway	228461	6302189	43	43	43	56	PA 08_0223 & EPL 5129 (Lidsdale Siding)
LNM5	227300	6299746	Attended	Quarterly	Compliance	R7 – Royal Hotel, Main St, Wallerawang	227300	6299746	44	41	41	49	PA 08_0223
LNM6	227568	6299831	Attended	Quarterly	Compliance	R8 – Cnr Heel St & Cripps Ave, Wallerawang	227568	6299831	43	40	40	45	PA 08_0223
LNM7	227415	6299619	Attended	Quarterly	Compliance	R9 – Cnr Cripps Ave &	227415	6299619	40	39	39	45	PA 08_0223

Representative Noise Monitoring Location Long Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver Site ID	Receiver Location		Noise Monitoring Criteria				Approval
	Easting	Northing					Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	
						Pindari Pl, Wallerawang							
LNM8	226917	6300236	Attended	Quarterly	Compliance	R10 – Brays Lane South, Wallerawang	226917	6300236	45	45	45	50	PA 08_0223 & EPL 5129
LNM9	226928	6300457	Attended	Quarterly	Compliance	R11 – "Tara" Brays Lane, Wallerawang	226928	6300457	45	45	45	51	PA 08_0223 & EPL 5129
LNM10	226936	6300677	Attended	Quarterly	Compliance	R12 – Brays Lane Corner, Wallerawang	226936	6300677	43	43	43	51	PA 08_0223 & EPL 5129
LMN11	227484	6301148	Attended	Quarterly	Compliance	W1 – "Fairview", Brays Lane, Wallerawang	227484	6301148	43	43	43	54	PA 08_0223 & EPL 5129
LMN12	227420	6300654	Attended	Quarterly	Compliance	W2 – "Killarney", Brays Lane, Wallerawang	227420	6300654	48	47	47	56	PA 08_0223

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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0 0.1 0.2 0.3 0.4

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	IG
SCALE	Refer to scalebar

Centennial Western Region Noise Management Plan

Lidsdale Siding Short Term Noise Monitoring

CENTENNIAL

DATE 9/11/2021

Figure 1

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2219046\NMP\2218092_MR004_Noise_ShortTerm_DDP_C.mxd

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0 0.1 0.2 0.3 0.4

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	IG
SCALE	Refer to scalebar

Centennial Western Region Environmental Monitoring

Lidsdale Siding Long Term Noise Monitoring

CENTENNIAL

DATE 9/11/2021

Figure 2

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2218092\2218092_MR004_Noise_LongTerm_DDP_B.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.	The Noise Management Plan was revised and resubmitted to the DPE on 28 April 2017.
	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 originally submitted to the DPE on 11 February 2016 and approved by the Secretary on 22 July 2016. The Noise Management Plan was revised and resubmitted to the DPE on 28 April 2017.
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

Condition No.	Condition of Consent	Where Addressed
Schedule 4 Condition 4(e)	include a noise 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 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 4. 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 (ongoing).
- Operate mobile plant in a quiet, efficient manner and regular training of operators (ongoing).
- Installation of frequency modulated reversing alarms or "*quakers*" on mobile plant to replace reversing alarms (complete).
- Installing acoustic enclosures around processing plants (ongoing as required to ensure compliance)..
- Switching off vehicles and plant when not in use (ongoing).

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 (complete);

- use of flashing reversing warning signals for use during the night for the stockpile dozer (complete);
- restriction of the stockpile dozer to the use of second gear while reversing (complete);
- improved inspection conveyor idlers, and consequent prompt replacement of defective idlers identified by these inspections (complete);
- 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 (complete).

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** were 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

Since 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
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 four attended noise monitoring locations. Monitoring is conducted at sensitive receiver locations to the south of the pit top surface facilities, where highest operational noise levels are expected.

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.

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.

Although not specifically listed in the CoA, sensitive receiver S4 will remain as an attended noise monitoring location to Springvale Mine in the long term as SNM3 to determine compliance at "*All other privately-owned land*". This monitoring location will also represent sensitive receiver S5. If an exceedance occurs at SNM3, then it is assumed that there is an exceedance at S5.

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

This Management Plan forms part of the consultation process for moving from the short term monitoring program to the long term monitoring program. This management plan will need to be approved prior to the site moving to the long term monitoring program. If the long term monitoring program is different to what is detailed in an EPL, then an EPL variation will also be sought prior to moving to the long term monitoring program.

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

Representative Noise Monitoring Location Short Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver ID	Receiver Location		Noise Monitoring Criteria				Approval
	Easting	Northing					Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	
SNM1	230210	6299703	Attended	Quarterly	Compliance	S1	230210	6299703	44	44	42	52	SSD_5594 & EPL 3607 (Springvale)
SNM2	230469	6299536	Attended	Quarterly	Compliance	S2	230469	6299536	43	43	43	53	SSD_5594 & EPL 3607 (Springvale)
SNM3*	231589	6299387	Attended	Quarterly	Compliance	S4	231589	6299387	35	35	35	45	SSD_5594 & EPL 3607 (Springvale)
SNM4*	232009	6299182	Attended	Quarterly	Compliance	S5	232009	6299182	35	35	35	45	SSD_5594 & EPL 3607 (Springvale)

* Receivers S4 & S5 not listed in CoA. Included in monitoring program to determine compliance at "*All other privately-owned land*".

Table 5 – Springvale Mine long term noise monitoring locations

Representative Noise Monitoring Location Long Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver ID	Receiver Location		Noise Monitoring Criteria				Approval
	Easting	Northing					Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	
SNM1	230210	6299703	Attended	Quarterly	Compliance	S1	230210	6299703	44	44	42	52	SSD_5594 & EPL 3607 (Springvale)
SNM2	230469	6299536	Attended	Quarterly	Compliance	S2	230469	6299536	43	43	43	53	SSD_5594 & EPL 3607 (Springvale)
SNM3*	231589	6299387	Attended	Quarterly	Compliance	S4	231589	6299387	35	35	35	45	SSD_5594 & EPL 3607 (Springvale)
						S5	232009	6299182	35	35	35	45	SSD_5594 & EPL 3607 (Springvale)

* Receiver S4 (SNM3) not listed in CoA. Added to monitoring program to determine compliance at "*All other privately-owned land*". This monitoring location will also represent S5. If an exceedance occurs at SNM3, then assume an exceedance at S5.

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.

Further to the 2015 investigations, noise consultant Advitech was engaged in 2016 to complete further investigative work and assess the viability of engineering resolutions at a number of Centennial Western Operations. Relevant sections of the summary report are reproduced in the following paragraphs. This Management Plan will be reviewed and revised if necessary to take into consideration the outcomes of the ongoing investigations & monitoring and any recommended management or mitigation measures.

The Low Frequency Noise (LFN) investigation of the Centennial Coal Western Operations indicates that there are multiple sources of LFN within the Springvale Crushing Sizing Plant (SCSP) operations. The character of these emissions suggests that there is potential to generate adverse impacts in off-site sensitive receiving environments. While the absolute levels associated with these discrete emissions are below generally accepted thresholds for perception or adverse impact, it is noted that these results were observed under relatively stable but neutral conditions. Enhancements of up to 10dB may be expected under worst case or enhancing conditions, and review of monitoring results suggests that where these conditions are observed, emissions may start to approach perceptible adverse impact thresholds.

The investigation also indicates that there is an element of directionality to the emission, which may (depending on the location of the receivers) change the nature of the impact. Monitoring results suggest that some façades of processing infrastructure possess different effective power levels, meaning that LFN is not emitted uniformly in all directions. While further assessment is required to quantify the significance of this phenomenon, it may mean that any engineering or process based controls may be effective without needing to treat the entire process; treatments of a single façade may provide some benefit.

While the investigation history and recurrent findings suggest general compliance with statutory obligation, results of this study suggest that there is an underlying LFN phenomenon associated with operation of the coal handling and processing plant. While this contemporary assessment does not seek to validate potential Centennial Coal contributions to adverse impacts reported by local residents, it does confirm that there are multiple sources within the Centennial Coal Western Operations that contribute LFN in the range 12 to 25 Hz frequency bands.

Furthermore, while contributions were observed at levels well below impact thresholds, experience suggests that significantly greater contributions may manifest under enhancing atmospheric conditions. Given this uncertainty around compliance and the role of enhancing conditions, specific actions to control emissions via process or engineering interventions are considered both unlikely and potentially unwarranted at this point in time. Notwithstanding this, it is recommended that understanding of the phenomenon would benefit from the collection and analysis of additional monitoring data, from a carefully designed measurement plan.

Historical investigations indicate that there may be some relationship between potentially adverse impacts and LFN in the 16Hz 1/3 octave range. Results of this survey indicate that there are a number of noise sources across the Western operations active in this frequency range. Thus, an integrated monitoring program that records prevailing operational conditions and meteorological conditions, and is sensitive to a 1/3 octave signal at 16Hz may provide valuable insight into the range of LFN impacts. This may contribute further to understanding the conditions under which adverse impacts may manifest, and how often those conditions may occur.

1:22,000 for A4

0 0.2 0.4 0.6 0.8

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

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

Centennial Western Region Noise Management Plan

Springvale Short Term Noise Monitoring

CENTENNIAL

DATE 9/11/2021

Figure 1

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2219046\NMP\2218092_MR004_Noise_ShortTerm_DDP_C.mxd

1:22,000 for A4

0 0.2 0.4 0.6 0.8

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

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

Centennial Western Region Environmental Monitoring

Springvale Long Term Noise Monitoring

CENTENNIAL

DATE 9/11/2021

Figure 2

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2218092\2218092_MR004_Noise_LongTerm_DDP_B.mxd

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 F1 – 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 3	Thee Applicant shall prepare and implement a Construction Noise Management Plan prepared in accordance with the EPA's Interim Construction Noise Guideline 2009 (or any relevant updated version), to the satisfaction of the Secretary prior to commencing construction.	Appendix F1
Schedule 3 Condition 9	The Applicant shall prepare and implement a Noise Management Plan for the development to the satisfaction of the Secretary.	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 originally submitted to the DPE on 11 February 2016 and approved by the Secretary on 22 July 2016. The Noise Management Plan was revised and resubmitted to the DPE on 28 April 2017.
	This plan must:	
Schedule 3 Condition 9(a)	be prepared in consultation with the EPA, and submitted to the Secretary for approval within 4 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. The original Noise Management Plan was submitted to the Secretary on 4 August 2014.

Condition No.	Condition of Consent	Where Addressed
		This Noise Management Plan was originally submitted to the DPE on 11 February 2016 and approved by the Secretary on 22 July 2016. The Noise Management Plan was revised and resubmitted to the DPE on 28 April 2017.
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 Condition 9(c)	describe the proposed noise management system in detail; and	Section 3
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 F1
	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

Condition No.	Condition of Consent	Where Addressed
Schedule 3 Condition 9(d)	detail a maintenance schedule for the overland coal conveyor.	Appendix F2 Section 11

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

Construction Activities

There are three specific construction activities approved for Western Coal Services under the Western Coal Services Project Development Consent (SSD-5579), including:

- Construct processing infrastructure including additional conveyors and transfer points and other coal handling requirements to cater for the upgraded Washery facility within the existing disturbance footprint of Western Coal Services.
- Construct a private Link Haul Road linking Western Coal Services with the existing private haul road from Angus Place Colliery to Mt Piper Power Station;
- Extend and enlarge an existing reject emplacement area at Western Coal Services to enable sufficient reject disposal capacity for a 25 year life;

This Management Plan incorporates the Construction Noise Management Plan, as required in Schedule 3 Condition 3 of SSD 5579. This replaces the Construction Noise Management Plan submitted to the DPE dated August 2015 and Approved on 17 August 2015.

With Angus Place being placed on care and maintenance, there are no immediate plans to construct the haul road access road or complete the upgrades to the CHPP. As a result, the Construction noise management covers the construction upgrades for the Reject Emplacement Area (REA) only. Should construction of the haul roads be undertaken, this management plan will be updated accordingly.

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

Site specific noise mitigation and management measures

Noise mitigation controls

The following specific noise mitigation measures will be implemented, staged over a two-year period each stage and to be completed by indicative dates noted:

- Restrict dozer operations to daytime period only (Immediately).
- Install low noise idlers along the CW01 and CW02 sections of the internal onsite Conveyor System (June 2018).
- Install low noise idlers along the OL2 and OL3 sections of the Overland Conveyor System traversing through SCSS, as required in conjunction with other noise attenuation measures to achieve compliance (June 2018).
- Install noise barrier around the OL2/OL3 transfer point drive, as required in conjunction with other noise attenuation measures to achieve compliance (June 2018)
- Clad the existing coal preparation plant with noise attenuating panels, as required in conjunction with other noise attenuation measures to achieve compliance (June 2019)
- Upgrade modelled mobile plant used on site to meet, as a minimum, the sound power level used in the WCS Noise Model (Loader 109 dB (A-weighted) / 11 3 dB (linear); Dozer 108 dB (A weighted) / 117 dB (linear)), or as required in conjunction with other noise attenuation measures to achieve compliance (December 2019).

Haul Road and Coal Movement Activities

- Haul trucks will only be operated during the day period throughout Angus Place Colliery's development stage when the mine recommences operations under current project approval, and will be constrained to a maximum of 12 trucks operating at any one time.
- Haul trucks on the Mount Piper and Wallerawang Haul Roads will be installed with facilities to monitor and track truck speeds.
- Low noise idlers will continue to be implemented on the identified reasonable and feasible OL1 and OL2 sections of the overland conveyor system in Lidsdale. The works will be completed by December 2017.

Monitoring and Maintenance

- Regular and systematic maintenance of the entire overland conveyor system will continue to be undertaken to identify and replace or repair noisy idlers as necessary.

- Regular sound power screening testing will be continued to will assist in managing equipment sound power levels, and identify plant items requiring maintenance.
- Noise monitoring will be continued in accordance with the WCS consent conditions SSD 5579 and the approved WCS Noise Management Plan.
- Real time continuous noise monitoring will be continued at the installed noise compass to provide real time feedback to the SCSS operations for noise management, specifically to manage compliance during the evening period mobile plant use. Mobile plant will not be used on the site during the evening period, when meteorological conditions indicate the likelihood of noncompliance with noise criteria (e.g. during adverse meteorological conditions).
- Monitoring of real time meteorological conditions and forecasts

Verification of noise predictions

The following steps will be followed to verify noise predictions following the implementation of each type of engineered noise control on fixed and mobile plant:

- The sound power levels of mitigated fixed or mobile plant at the SCSS will be measured.
- The WCS Noise Model will be validated with the ongoing attended noise monitoring data and the new sound power levels of plant.
- The WCS Noise Model will be re-run to evaluate the effectiveness of the implemented noise control.
- Using the revised noise predictions an evaluation of whether further implementation of noise controls is required will be undertaken.

Future CPP Construction

- The approved 5 Mtpa Coal Preparation Plant, should it be constructed in the future, will be designed and constructed to meet the mitigated sound power levels included in the noise modelling in Global Acoustics (2017).

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 4, and 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 4 & 6 are reproduced in **Table 2**.

Table 2 – Operating hours restrictions – Western Coal Services

Activity	Operating hours
Coal transportation operations on the Wallerawang haul road	Truck movements restricted to the day period only prior to longwall extraction at the Angus Place Colliery.

Activity	Operating hours
	Maximum of 3 trucks operating during the evening period following the commencement of longwall extraction at Angus Place Colliery. No truck movements to occur in the night period.
Coal transportation operations on the Mount Piper haul road	Truck movements restricted to the day period only prior to longwall extraction at the Angus Place Colliery. Maximum of 8 trucks operating during the evening period following the commencement of longwall extraction at Angus Place Colliery. Maximum of 2 trucks operating during the night period. No truck movements to occur in the night period during adverse meteorological conditions.
Kerosene Vale Coal Stockpile operations	During the day period only
All other operational activities	24 hours a day, 7 days per week
Construction hours	7am to 6pm Monday to Friday 8am to 1pm Saturday No construction activities Sunday and Public Holidays

In accordance with Schedule 3 Condition 5 of SSD 5579, If Western Coal Services proposes to undertake any construction work outside of the hours specified in condition 4 of Schedule 3, then an "Out of Hours Work Protocol" must be prepared for these works to the satisfaction of the Director-General. This protocol must be prepared in consultation with the EPA and the residents who would be affected by the noise generated by these works, and be consistent with the requirements of the ICNG. Western Coal Services will not carry out any out of hours construction work prior to having a protocol approved by the Director-General.

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.
- Site inspections and observation of unusually noisy equipment.

- The onset (measured or forecast) of noise enhancing weather conditions e.g. temperature inversion.
- A complaint 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. However, these criteria do not apply:

- to noise generated by the operation of the overland coal conveyor, Wallerawang haul road or Mount Piper haul road; or
- if the Applicant has an 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.

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	35	55
B15	36	35	35	45
B16	35	35	36	45
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

Land	Day	Evening	Night	Night
	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{A1\ (1\ min)}$
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 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.

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 8 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. This Management Plan forms part of the consultation process for moving from the short term monitoring program to the long term monitoring program. This management plan will need to be approved prior to the site moving to the long term monitoring program. If the long term monitoring program is different to what is detailed in an EPL, then an EPL variation will also be sought prior to moving to the long term monitoring program.

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

The long term monitoring program will not include monitoring at the following receptors:

- **B17** – This location has been monitored at extensively in the past and has shown ambient noise levels are dominated by the overland conveyor system, which traverses through the rear of the property, and to which noise criteria do no longer apply. Quantifying the SCSS would, in most cases, be improbable unless the conveyor is not operational. Regular monitoring at this location is therefor considered meritless and should be only undertaken on a complaint driven basis.

- **S3, W1 and W2** – These residences were included in Table 3 of the Consent due to their proximity to the overland conveyor system. Historical data has shown the SCSS has rarely been audible or quantifiable at these locations. Given noise criteria do no longer apply to noise generated from the overland conveyor system, and that these monitoring locations are a sufficient distance from the SCSS, there is no merit in regular monitoring at these locations. Noise at receptors W1 and W2 are still monitored in accordance with the Lidsdale Siding noise monitoring program.

- **WR1, WR2, L1 and L2 –** These residences were included in Table 3 of the Consent due to their proximity to the Mount Piper and Wallerawang haul roads. Historical data has shown the SCSS has rarely been audible or quantifiable at these locations. Given that noise criteria do no longer apply to the Mount Piper and Wallerawang haul roads, and that the monitoring locations are a sufficient distance from the SCSS, there is no merit in regular monitoring at these locations. The selected monitoring locations are closer to the SCSS, located in the same direction, and located where potential noise impacts are predicted. Therefore they are more suitable in determining compliance with regulatory limits in lieu of monitoring these locations. Noise at receptors WR1 and WR2 are still monitored in accordance with the Angus Place noise monitoring program.

Additionally, for Western Coal Services the long term monitoring program reduces the frequency of attended noise monitoring surveys from monthly to quarterly. Each Receiver will move from monthly to quarterly when compliance with the noise criteria has been achieved for a period of 12 consecutive months or as agreed by the Secretary.

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

Representative Noise Monitoring Location Short Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver ID	Receiver Location		Noise Monitoring Criteria				Approval
	Easting	Northing					Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	
WNM1	226809	6304166	Attended	Monthly	Compliance	B12	226809	6304166	40	35	35	47	SSD-5579 (WCS)
						B13*	226918	6304210	41	36	36	50	SSD-5579 (WCS)
WNM2	227543	6304120	Attended	Monthly	Compliance	B14	227543	6304120	41	35	35	55	SSD-5579 (WCS)
WNM3	227514	6303808	Attended	Monthly	Compliance	B15	227514	6303808	36	35	35	45	SSD-5579 (WCS)
WNM4	227440	6303341	Attended	Monthly	Compliance	B16	227440	6303341	35	35	36	45	SSD-5579 (WCS)
WNM5	227484	6301148	Attended	Monthly	Compliance	W1	227484	6301148	37	37	41	45	SSD-5579 (WCS)
WNM6	229078	6302626	Attended	Monthly	Compliance	L1	229078	6302626	42	35	35	45	SSD-5579 (WCS)

Representative Noise Monitoring Location Short Term	Monitoring Location		Monitor type	Frequency	Purpose	Receiver ID	Receiver Location		Noise Monitoring Criteria				Approval
	Easting	Northing					Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	
WNM7	229391	6305106	Attended	Monthly	Compliance	WR1	229391	6305106	41	38	36	57	SSD-5579 (WCS)
WNM8	228775	6301089	Attended	Monthly	Compliance	S3	228775	6301089	36	36	39	45	SSD-5579 (WCS)
Real-time	227493	6303523	Unattended (Noise Compass)	Continuous	Proactive mngt	NA	227493	6303523					SSD-5579 (WCS)

* This monitoring location will be represented by B12. If an exceedance occurs at B12, then assume an exceedance at B13.

Table 5 – Western Coal Services long term noise monitoring locations

Representative Noise Monitoring Location Long Term	Monitoring Location		Monitor type	Frequency**	Purpose	Receiver Location			Noise Monitoring Criteria				Approval
	Easting	Northing				Receiver ID	Easting	Northing	Day Laeq (15 min)	Evening Laeq (15 min)	Night Laeq (15 min)	Night La1 (1 min)	
WNM1	226809	6304166	Attended	Quarterly	Compliance	B12	226809	6304166	40	35	35	47	SSD-5579 (WCS)
						B13*	226918	6304210	41	36	36	50	SSD-5579 (WCS)
WNM2	227543	6304120	Attended	Quarterly	Compliance	B14	227543	6304120	41	35	35	55	SSD-5579 (WCS)
WNM3	227514	6303808	Attended	Quarterly	Compliance	B15	227514	6303808	36	35	35	45	SSD-5579 (WCS)
WNM4	227440	6303341	Attended	Quarterly	Compliance	B16	227440	6303341	35	35	36	45	SSD-5579 (WCS)
Real-time	227493	6303523	Unattended (Noise Compass)	Continuous	Proactive management	NA	227493	6303523					SSD-5579 (WCS)

* This monitoring location will be represented by B12. If an exceedance occurs at B12, then assume an exceedance at B13.

** Monthly monitoring at these locations will continue until agreed to by the Secretary to reduce frequency to quarterly

Real time monitoring

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

At Western Coal Services, Real Time Noise Monitoring;

- Is used to understand real time noise impacts at specific locations;
- Is used to improve and implement management of site noise controls,
- Is used to collect data that is extracted to allow an estimate to be made of site noise levels at each unattended monitoring location;
- Is not used to evaluate compliance with regulatory limits;
- Is used to support proactive management of noise mitigation processes where real time and potential noise management issues are identified, and
- Provides a history that can be used to identify trends that is useful for management, planning and decision-making related to noise mitigation control and operational activities.

The WCS real-time monitoring network consists of;

- 1 x fixed Environmental Noise Compass (ENC), and
- 3 x mobile Ngara acquisition units.

The locations of Ngara units are selected for specific measurement and inference of noise generation from operational activities, and can be used for both the measurement of noise impacts at both source and receptor locations.

Ngara unit locations are reviewed regularly to determine if the purpose and objective of each monitoring site remains relevant and are typically located in semi-permanent, fixed, or rotating positions to generate data for a specific noise mitigation control measure or initiative.

The ENC is located as shown in Figures 1 and 2 below. It is capable of determining directional noise and as such it is possible to identify approximate measured noise from the direction of WCS operations at the SCSS.

The ENC does not filter noise wavelengths and cannot distinguish between WCS and other background noise sources and as such the ENC cannot be accurately used to measure noise compliance but has purpose in providing indicative data that over time can be trended to improve noise management operational outcomes.

Real time noise monitoring data is reviewed in accordance with proposed operational activities and predictive meteorological forecasting to determine operational changes as required to reduce potential noise emissions at SCSS.

The data from the real-time monitor units is analysed and reviewed quarterly to identify noise generation trends for specific initiatives. Where this data shows elevated noise levels, further targeted attended noise monitoring and investigations are implemented to improve the performance of noise mitigation control measures.

Sound Power Level Monitoring

Acceptability of noise from the site, and modification of SSD_5579 was based on operational noise modelling undertaken as part of the EA. A key input to that modelling is sound power of plant to be operated on site.

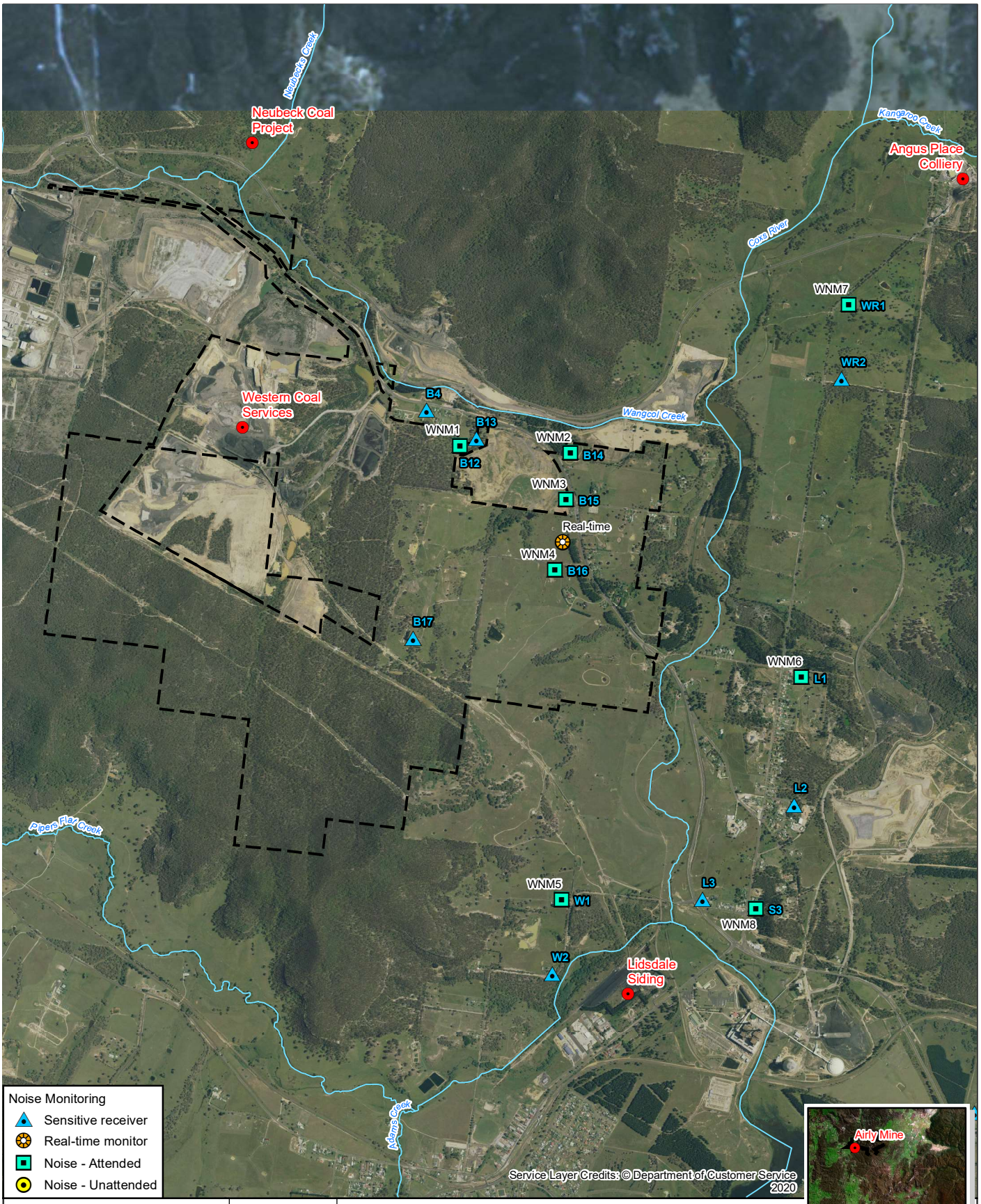
To ensure the highest likelihood of compliance with regulatory limits, and an acceptable acoustic environment around the site, it is important that plant sound power is annually checked and, any non-compliant item is modified and/or repaired as necessary.

Items that requires annual sound power level are identified in the WCS Noise Impact Assessment (Global Acoustics, 2017) (NIA) and include;

- Washery;
- All conveyors and associated drives;
- Transfer stations; and
- Mobile plant (loaders, dozers, reject trucks etc.).

Additional sound power testing as part of the Noise Reduction Study is detailed in Appendix F2 to the Western Region Noise Management Plan.

Sound Powered Levels monitored are compared against predicted levels in the NIA to identify items of compliance /non-compliance.



1:35,000 for A4

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
- Colliery Holding Boundary
- Watercourse

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

Centennial Western Region Noise Management Plan

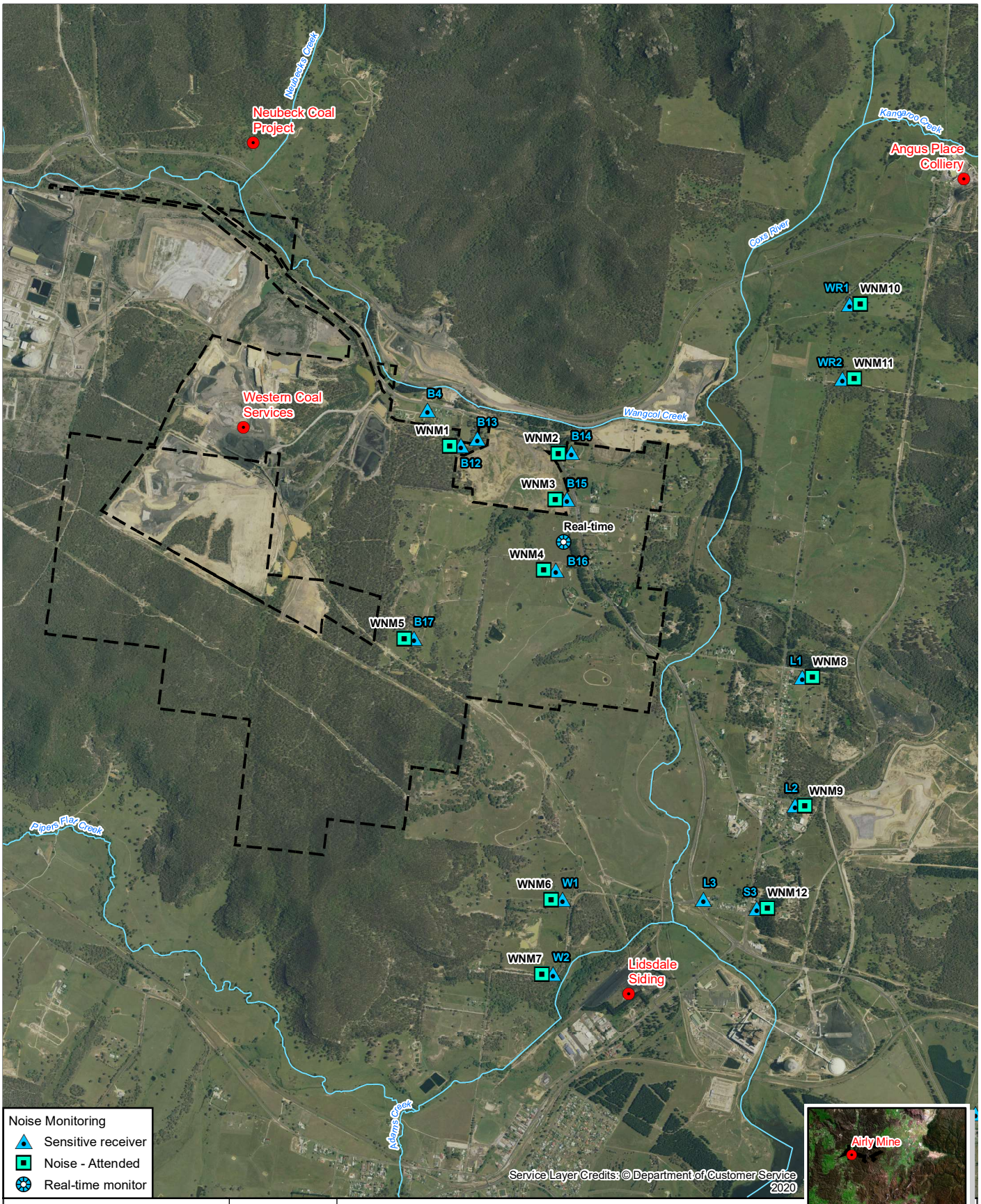
Western Coal Services Short Term Noise Monitoring

CENTENNIAL

DATE 9/11/2021

Figure 1

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2219046\NMP\2218092_MR004_Noise_ShortTerm_DDP_C.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
- Colliery Holding Boundary
- Watercourse

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

Centennial Western Region Environmental Monitoring

Western Coal Services Long Term Noise Monitoring

CENTENNIAL

DATE 9/11/2021

Figure 2

GIS Filename: G:\22\0105001\GIS\Maps\Deliverables\Western\Regional\2218092\2218092_MR004_Noise_LongTerm_DDP_B.mxd

Meteorological monitoring

Meteorological data for Western Coal Services is monitored at the site Weather station and is linked to an online web portal.

The weather stations continuously monitor weather parameters as summarised in **Table 6**.below.

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 F2 – Western Coal Services Noise Reduction Study

1.0 Introduction

Western Coal Services (WCS) is located to the west of the Blue Mountains in the Lithgow Local Government Area in New South Wales. The largest project component, the Springvale Coal Services Site, is located approximately 125 kilometres (km) from Sydney, approximately 15 km north of city of Lithgow, approximately 5 km north-northwest from the township of Wallerawang, and approximately 4 km northwest of the village of Lidsdale.

WCS 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 Springvale Coal Services site (SCSS) receives coal from both the Springvale and Angus Place Collieries, and sends washed and run of mine coal to customers via Lidsdale Siding.

WCS 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.

WCS was granted State Significant Development consent SSD 5579 (the Consent) on 04 April 2014 by the Planning & Assessment Commission of NSW, as delegate of the then Minister of Planning and Infrastructure, under Section 89E of the Environmental Planning and Assessment Act 1979 (EP&A Act).

On 15 December 2017, the WCS SSD 5579 Development Consent was modified (MOD 2) to revise the application of noise criteria to the Project components. The conditions of approval following MOD 2 being determined required the development of a Noise Reduction Study for the overland conveyor and the SCCS components of the Western Coal Services operations.

2.0 Purpose

This Noise Reduction Study (NRS) has been prepared to satisfy the requirements of Condition 8A of the WCS SSD 5579 Development Consent.

This NRS forms an Appendix to the Western Region Noise Management Plan should be read in conjunction with the Western Region Noise Management Plan, specifically the Western Coal Services Noise Management Plan provided as Appendix F1 to the Western Region Noise Management Plan.

The purpose of the NRS is to identify any noise reduction that is achieved via the reasonable and feasible measures proposed in the statement of commitments (SOC) MOD 2 to inform proposed future compliance conditions for inclusion in the site Environmental Protection Licence (EPL).

The condition of consent that relate to noise management at WCS and where they have been addressed in this document is provided in Table 1 below.

Table 1 – SSD 5579 Condition 8A Noise Reduction Strategy

Condition Number	Noise Reduction Study – Conditions	Section Covered in Plan
Schedule 3, Condition 8A	The Applicant shall prepare and implement a noise reduction study for the overland coal conveyor and SCSS to the satisfaction of the Secretary. The study must:	Appendix F2 (This document)
Schedule 3, Condition 8A(a)	be prepared in consultation with the EPA, and be submitted to the Secretary for approval by the end of February 2018, unless otherwise agreed by the Secretary;	Section 13
Schedule 3, Condition 8A(b)	identify sensitive receptors and existing noise levels in the vicinity of the overland coal conveyor and SCSS;	Section 3
Schedule 3, Condition 8A(c)	investigate and propose reasonable and feasible measures to mitigate noise associated with the overland coal conveyor and SCSS, including but not necessarily limited to: A.1 low noise idlers, barriers or other measures on sections of the conveyor system; and A.2 cladding, attenuated plant or other measures at the CHPP;	Section 4
Schedule 3, Condition 8A(d)	predict changes in noise levels in the vicinity of the overland coal conveyor and SCSS associated with the proposed noise mitigation measures; and	Section 5
Schedule 3, Condition 8A(e)	provide a maintenance schedule for the overland coal conveyor to be implemented in the Noise Management Plan (see condition 9 below).	Section 11

3.0 Existing Environment

MOD 2 Environmental Assessment included existing WCS noise level predictions and identified 168 sensitive receptors in the vicinity of the project.

Monthly attended noise monitoring since 2014 has regularly quantified noise contributions from the overland conveyor and SCSS, and has validated the existing modelled predictions.

Existing noise level data will be used as a baseline to evaluate the noise reductions achieved by the proposed mitigation measures.

Existing noise levels for the overland conveyor system and the SCSS as predicted are provided in Tables 2 and 3 below.

Table 2 – Overland Conveyor System Unmitigated Noise Predictions – Laeq,15minute dB

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
B12	27	31	31	L42	40	44	43
B13	29	34	34	L43	40	43	43
B14	31	35	34	L44	40	43	43
B15	34	38	37	L45	41	44	43
B16	37	41	40	L46	40	42	42
B17	45	46	46	L47	38	41	41
B18	15	23	22	L48	37	41	40
B19	32	36	35	L49	38	42	41
B20	34	37	37	L50	38	43	43
B21	34	37	37	L51	42	45	44
B22	37	39	39	L52	42	45	44
B23	37	40	40	L53	43	45	45
B24	35	38	38	L54	43	45	44
B25	35	38	38	L55	43	46	45
B26	35	38	38	L56	43	45	44
B27	35	37	37	L57	43	46	45
B28	35	38	38	L58	42	45	44
B29	35	38	38	L59	42	45	44
B30	35	38	38	L60	42	45	44
B31	35	37	37	L61	42	45	44

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
B32	36	39	39	L62	42	44	44
B33	37	40	40	L63	42	45	44
B34	37	40	40	L64	42	44	44
B35	34	37	37	L65	41	44	44
B36	37	41	41	L66	41	44	44
B37	40	43	43	L67	41	44	44
B38	39	42	42	L68	41	43	43
B39	42	45	45	L69	41	44	44
B40	42	44	44	L70	40	43	42
B41	43	45	45	L71	40	42	42
B42	43	45	45	L72	40	42	42
B43	43	46	46	L73	39	42	41
B44	38	41	41	L74	40	43	42
B45	37	40	40	L75	39	42	41
B46	36	40	40	L76	39	42	41
B47	36	40	39	L77	35	38	38
B48	36	40	40	L78	37	40	39
B49	37	40	40	L79	36	39	39
B50	37	40	40	L80	35	38	38
B51	37	40	40	L81	37	39	39
B52	33	36	36	L82	38	40	39
B53	38	41	41	L83	38	40	39

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
L1	34	38	38	L84	35	38	37
L2	41	43	43	L85	35	38	37
L3	47	48	48	L86	35	38	37
L4	47	48	47	L87	34	38	37
L5	46	48	47	L88	35	38	37
L6	46	48	47	L89	35	38	38
L7	46	48	47	L90	35	38	38
L8	45	47	47	L91	35	38	38
L9	45	47	46	L92	35	38	38
L10	44	46	45	L93	35	39	39
L11	46	49	47	L94	35	39	39
L12	45	46	45	L95	35	39	39
L13	43	45	44	L96	35	39	39
L14	42	44	44	L97	35	38	38
L15	45	46	46	L98	35	38	37
L16	45	47	46	L99	33	36	36
L17	46	48	47	L100	32	36	35
L18	46	48	47	L101	32	35	35
L19	46	47	46	P1	16	21	21
L20	45	47	46	P2	15	20	20
L21	45	47	46	P3	20	26	26
L22	45	46	46	P4	17	24	24

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
L23	44	45	46	P5	12	23	23
L24	43	44	44	R1	47	50	49
L25	42	44	43	R2	42	45	44
L26	45	46	46	R3	45	48	47
L27	41	43	43	R4	46	49	48
L28	44	45	45	R7	37	41	40
L29	44	45	45	R8	41	44	43
L30	44	46	46	R9	38	41	41
L31	41	43	42	R10	38	42	41
L32	42	43	43	R11	39	43	41
L33	42	44	44	R12	40	45	43
L34	42	44	43	S1	43	45	44
L35	41	43	43	S2	41	43	42
L36	41	43	43	S3	46	47	47
L37	41	43	43	S4	34	35	35
L38	41	43	43	S5	32	33	33
L39	41	43	43	WR1	26	29	28
L40	41	43	43	WR2	28	31	30
L41	41	44	43				

Table 3 – SCSS Unmitigated Noise Predictions – Laeq,15minute dB

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
B4	45	49	49	L35	29	29	29

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
B12	37	41	39	L36	29	29	29
B13	41	43	42	L37	29	30	29
B14	37	39	38	L38	29	30	29
B15	40	41	40	L39	29	30	30
B16	40	42	40	L40	29	30	30
B17	45	46	46	L41	29	30	29
B18	15	18	17	L42	29	29	29
B19	37	39	38	L43	29	29	29
B20	39	40	39	L44	26	27	26
B21	38	39	39	L45	26	27	27
B22	38	39	38	L46	26	26	26
B23	39	40	39	L47	26	27	27
B24	38	39	38	L48	26	27	27
B25	38	39	38	L49	24	25	25
B26	37	38	37	L50	26	27	27
B27	37	38	37	L51	26	27	27
B28	37	38	38	L52	26	27	27
B29	36	38	37	L53	30	30	30
B30	36	37	36	L54	29	30	30
B31	35	37	36	L55	30	30	30
B32	37	38	38	L56	27	27	27
B33	36	37	36	L57	30	31	31

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
B34	35	37	35	L58	29	30	30
B35	35	36	36	L59	30	30	30
B36	29	30	29	L60	30	30	30
B37	26	28	27	L61	30	31	30
B38	31	33	32	L62	30	30	30
B39	29	30	29	L63	30	31	30
B40	30	31	30	L64	30	30	30
B41	29	30	29	L65	30	30	30
B42	29	31	30	L66	30	31	30
B43	29	31	31	L67	30	30	30
B44	27	28	27	L68	30	31	30
B45	28	30	28	L69	30	31	30
B46	28	29	28	L70	30	31	30
B47	28	29	28	L71	30	31	31
B48	27	29	27	L72	30	31	31
B49	27	29	27	L73	31	31	31
B50	24	26	24	L74	31	32	31
B51	23	25	22	L75	31	31	31
B52	33	34	33	L76	31	32	31
B53	35	37	34	L77	31	31	31
B54	40	41	40	L78	31	32	31
B55	40	41	40	L79	31	32	31

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
B56	40	41	39	L80	31	32	31
B57	39	40	39	L81	31	32	31
B58	39	40	39	L82	31	32	31
B59	30	32	30	L83	31	32	31
B60	30	31	30	L84	31	32	31
L1	31	33	31	L85	31	32	31
L2	29	30	29	L86	31	32	31
L3	27	28	27	L87	31	32	31
L4	27	28	28	L88	31	32	31
L5	27	29	28	L89	31	32	31
L6	27	29	28	L90	31	32	31
L7	27	29	28	L91	31	32	31
L8	27	29	28	L92	31	33	31
L9	27	29	28	L93	32	33	31
L10	27	29	28	L94	32	33	32
L11	27	29	28	L95	31	32	31
L12	27	29	28	L96	30	32	30
L13	27	29	28	L97	30	32	30
L14	26	29	27	L98	32	33	32
L15	27	29	28	L99	32	33	33
L16	28	29	28	L100	32	33	32
L17	27	28	28	L101	31	33	32

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
L18	28	29	28	R1	28	28	28
L19	28	29	28	R2	27	28	28
L20	28	29	28	R3	27	29	29
L21	21	22	21	R4	22	26	26
L22	20	22	21	R7	27	28	28
L23	27	28	28	R8	27	28	28
L24	28	28	28	R9	26	28	28
L25	28	29	28	R10	18	28	28
L26	28	29	29	R11	14	23	21
L27	28	29	28	R12	14	22	21
L28	29	29	29	S1	22	23	23
L29	23	24	23	S2	22	22	22
L30	22	23	22	S3	28	28	28
L31	28	29	29	S4	19	19	19
L32	28	29	29	S5	18	18	18
L33	29	29	29	WR1	28	30	29
L34	29	29	29	WR2	31	32	32

4.0 Mitigation and Management Measures

Extensive investigations have been completed to identify reasonable and feasible mitigation measures to reduce noise levels from both the Overland Conveyor Systems and the SCSS.

The mitigation measures identified as part of the MOD 2 Statement of Environmental Effects to be implemented are detailed below.

4.1 Overland Conveyors

The overland conveyor system is divided into 9 zones for the purposes of noise management as identified in Figures 1 and 2 below.

In December 2017, Springvale Coal completed installation of low noise idlers across sections of the overland conveyor system that run through Lidsdale and Wallerawang.

These management zones are shown in Figure 2 below. Low noise idlers have continued to be implemented on the identified reasonable and feasible OL1 and OL2 sections of the overland conveyor system in Lidsdale. These works were completed in December 2017.

Areas within the SCSS where low noise idlers will be installed along the CW01, CW02, OL2, and OL3 sections of the Overland Conveyor System traversing through SCSS are shown in Figure 3 below.

4.2 Springvale Coal Services Sites

Mitigation controls for the SCSS will be implemented, staged over a two-year period each stage and to be completed by indicative dates as provided below.

(a) Restrict dozer operations to daytime period only (Immediately).

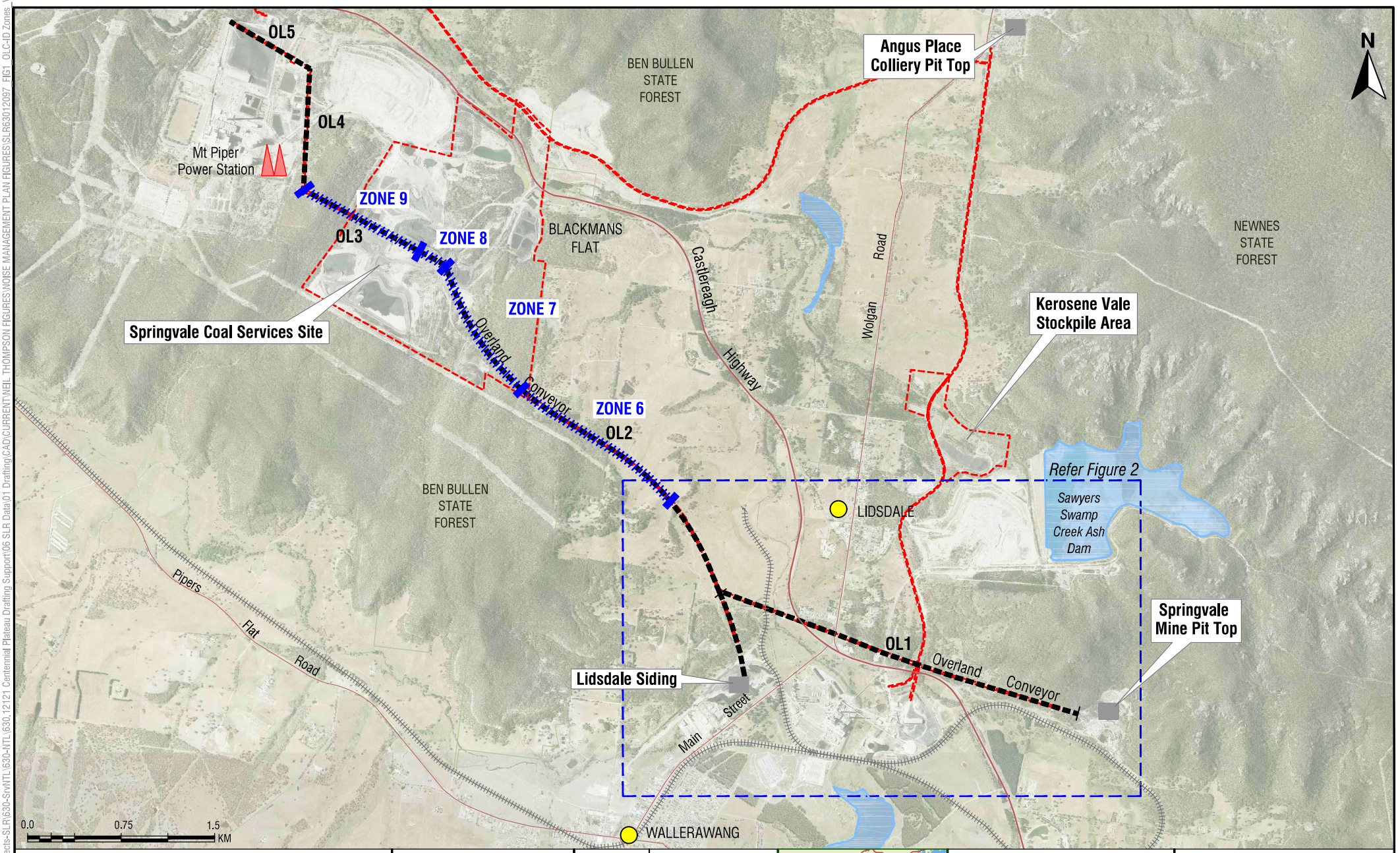
(b) Install low noise idlers along the CW01 and CW02 sections of the internal onsite Conveyor System (June 2018).

(c) Install low noise idlers along the OL2 and OL3 sections of the Overland Conveyor System traversing through SCSS, as required in conjunction with other noise attenuation measures to achieve compliance (June 2018).

(d) Install noise barrier around the OL2/OL3 transfer point drive, as required in conjunction with other noise attenuation measures to achieve compliance (June 2018)

(e) Clad the existing coal preparation plant with noise attenuating panels, as required in conjunction with other noise attenuation measures to achieve compliance (June 2019)

(f) Upgrade modelled mobile plant used on site to meet, as a minimum, the sound power level used in the WCS Noise Model (Loader 109 dB (A-weighted) / 11 3 dB (linear); Dozer 108 dB (A weighted) / 117 dB (linear)), or as required in conjunction with other noise attenuation measures to achieve compliance (December 2019).



LEGEND:

- Project Application Area
- Major Roads
- Railway
- Overland Conveyor System
- Town / City
- Designated Zones

DATE	02.03.2018
SEAM	LITHGOW
REFERENCE	SLR63012097_FIG1_OLC-ID Zones_V1
SCALE	1:40000

Figure 1

Centennial Western Region
Western Coal Services - Overland Conveyor Identification Zones

Centennial Coal

Prepared by: SLR

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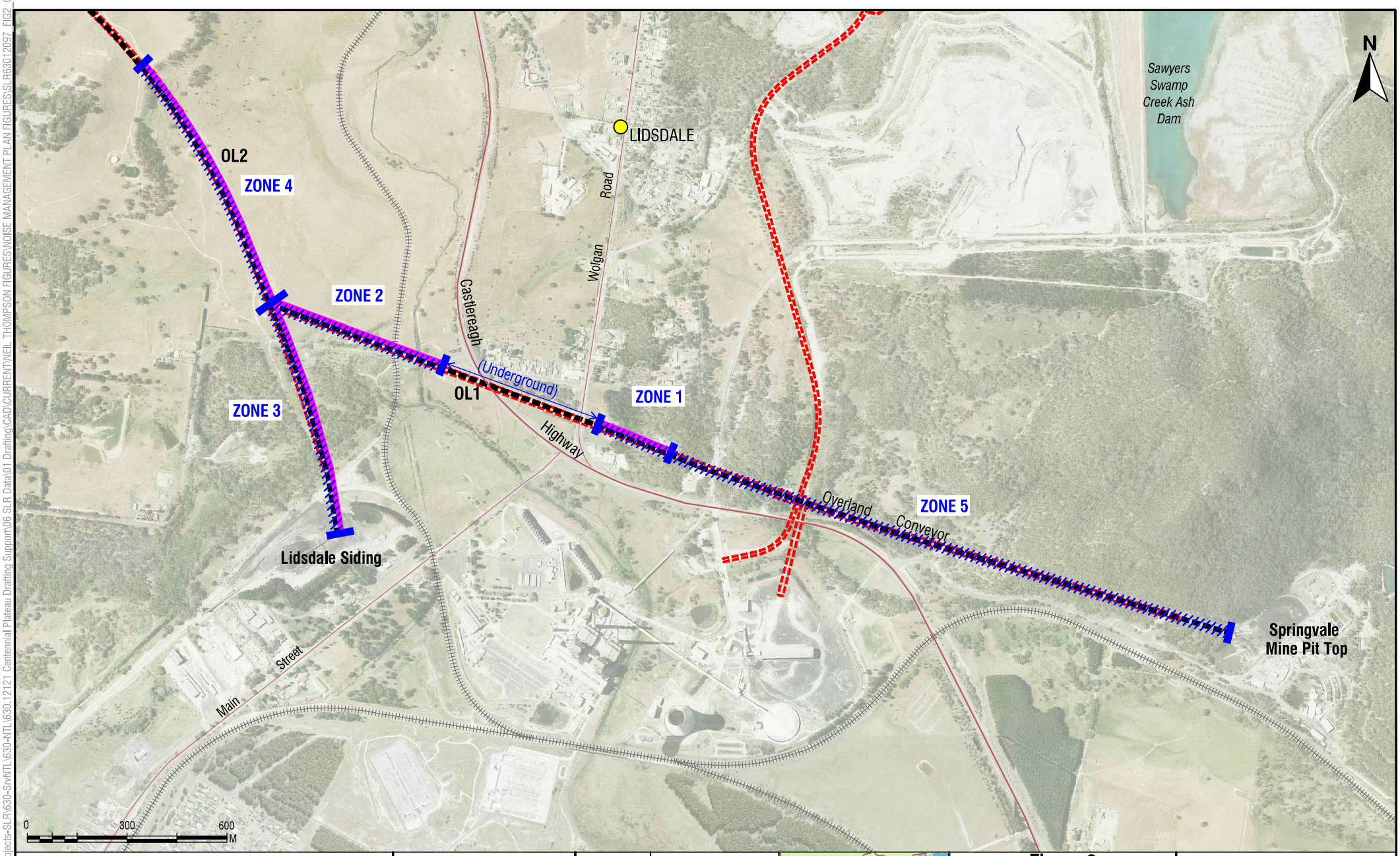


LEGEND:

- Project Boundary
- Railway
- Major Roads
- Overland Conveyor System
- Low Noise Idler Sections
- Town / City
- Designated Zones

DATE	02.03.2018
SEAM	LITHGOW
REFERENCE	SLR63012097_FIG2_OLC Zones_L & W Areas_V2
SCALE	1:15000

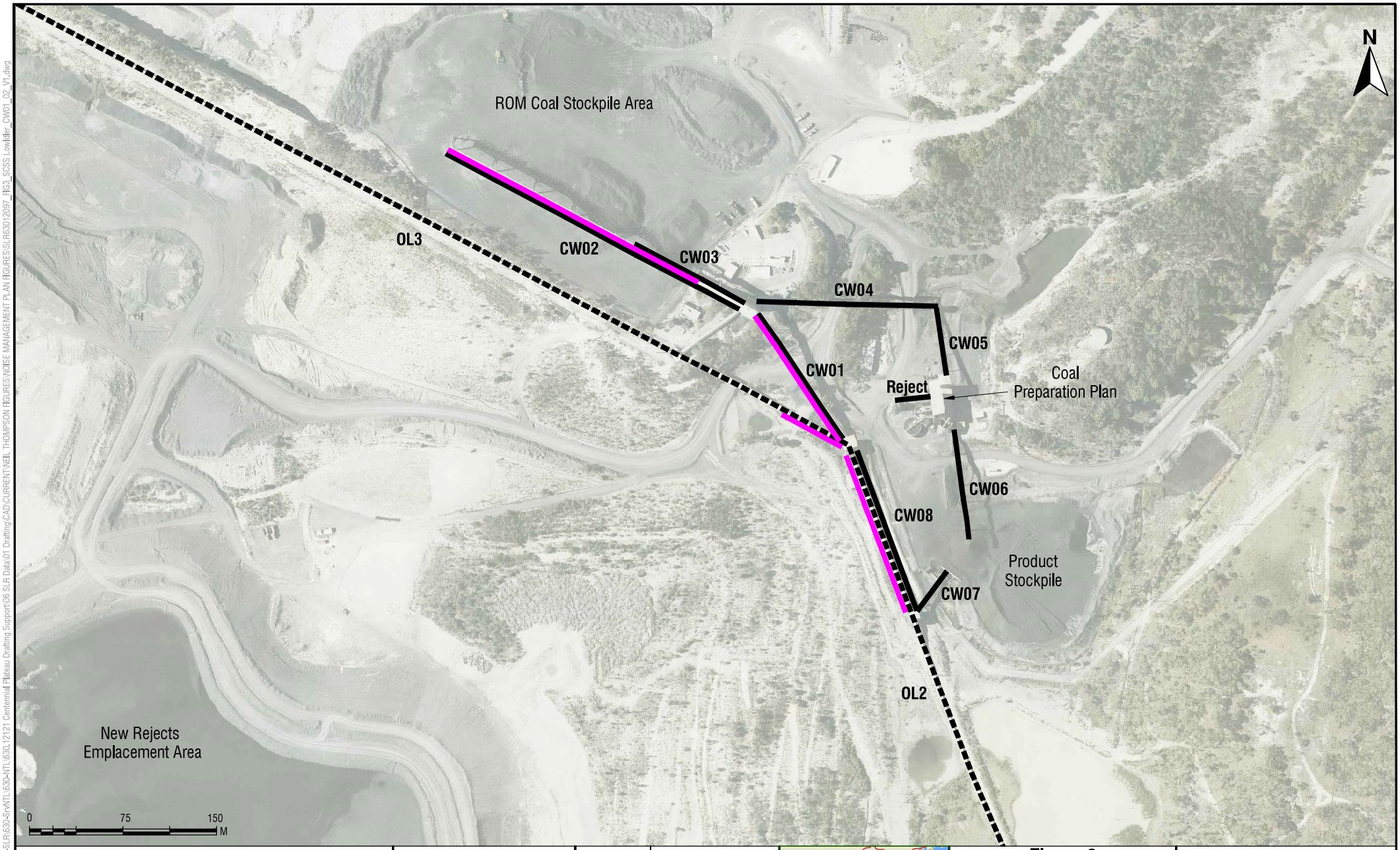
Figure 2

Centennial Western Region
Western Coal Services -
Overland Conveyor Identification Zones (subset and Low Noise Idler Zones - Lidsdale and Wallerawang Areas

Centennial Coal

Prepared by: SLR

A4



LEGEND:
- Overland Conveyor System
- Internal Conveyors
- Low Noise Idler Sections

DATE	02.03.2018
SEAM	LITHGOW
REFERENCE	SLR63012097_FIG3_SCSS Lowldler_CW01_02_V1
SCALE	1:4000

Figure 3
Centennial Western Region
Western Coal Services – SCSS - Low Noise Idler Zones (CW01 and CW02 sections of the internal onsite Conveyor System, OL2 and OL3 sections of the Overland Conveyor System traversing through SCSS)

Centennial Coal

Prepared by: SLR

A4

5.0 Predicted Changes in Noise Levels

The predicted noise levels as a result of the implementation of the noise management measures identified above for both the Overland Conveyor System and the SCSS is provided in Tables 4 and 5 respectively below.

Table 4 – Overland Conveyor Noise Predictions – Laeq,15minute dB

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
B4	32	36	35	L41	36	39	38
B12	27	31	31	L42	36	39	39
B13	29	34	34	L43	36	39	39
B14	31	34	33	L44	36	39	39
B15	34	37	36	L45	37	39	39
B16	37	40	40	L46	34	37	37
B17	45	46	46	L47	34	37	36
B18	15	22	21	L48	34	37	37
B19	32	36	35	L49	34	37	37
B20	34	37	36	L50	34	39	38
B21	34	37	36	L51	38	40	40
B22	35	38	38	L52	37	40	40
B23	36	39	38	L53	38	41	40
B24	34	37	36	L54	38	40	40
B25	34	36	36	L55	38	41	40
B26	33	36	36	L56	38	40	40
B27	33	36	36	L57	38	41	40
B28	34	36	36	L58	37	40	40
B29	33	36	36	L59	37	40	40
B30	33	36	36	L60	37	40	40
B31	33	36	36	L61	38	41	40
B32	35	38	38	L62	37	40	40

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
B33	36	39	39	L63	38	41	40
B34	36	39	39	L64	37	40	40
B35	32	35	35	L65	37	40	40
B36	33	37	37	L66	37	40	40
B37	36	39	39	L67	37	40	40
B38	35	38	38	L68	37	40	40
B39	38	40	40	L69	37	40	40
B40	37	40	40	L70	36	39	39
B41	38	41	40	L71	36	38	38
B42	38	41	41	L72	35	37	37
B43	39	41	41	L73	35	37	36
B44	34	37	36	L74	36	39	38
B45	33	36	36	L75	35	38	37
B46	33	36	35	L76	35	38	37
B47	33	36	35	L77	32	36	35
B48	33	36	35	L78	34	37	36
B49	33	36	35	L79	33	36	35
B50	33	36	35	L80	32	35	34
B51	34	36	36	L81	34	37	36
B52	30	33	32	L82	34	37	36
B53	35	38	38	L83	34	37	36
L1	30	35	35	L84	32	34	33
L2	36	39	39	L85	31	34	33
L3	41	42	42	L86	31	35	34
L4	41	42	42	L87	31	34	33
L5	41	43	42	L88	31	35	34
L6	41	43	42	L89	31	35	34
L7	41	43	42	L90	31	35	34

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
L8	40	42	41	L91	31	35	34
L9	39	42	40	L92	31	35	34
L10	39	40	40	L93	31	36	35
L11	41	43	42	L94	31	36	35
L12	39	41	40	L95	31	35	35
L13	38	40	39	L96	31	35	35
L14	37	39	39	L97	31	35	34
L15	39	41	40	L98	31	34	34
L16	40	41	40	L99	31	34	33
L17	41	42	41	L100	30	33	33
L18	40	42	41	L101	29	32	32
L19	40	42	41	P1	16	21	21
L20	39	41	40	P2	15	20	20
L21	40	41	40	P3	20	26	26
L22	38	40	39	P4	17	24	24
L23	42	44	44	P5	12	23	23
L24	40	42	43	R1	42	44	44
L25	38	41	41	R2	38	41	40
L26	40	41	40	R3	39	42	41
L27	38	40	40	R4	40	43	42
L28	39	40	39	R7	35	38	37
L29	38	40	39	R8	37	40	40
L30	39	41	40	R9	35	38	38
L31	37	39	38	R10	33	37	36
L32	37	39	39	R11	34	38	36
L33	37	39	39	R12	35	39	38
L34	37	39	39	S1	42	45	44
L35	37	39	39	S2	41	42	42

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
L36	37	39	39	S3	40	41	41
L37	37	39	39	S4	34	35	34
L38	37	39	39	S5	32	32	32
L39	37	39	39	WR1	24	27	26
L40	37	39	39	WR2	26	28	28

Table 5 – SCSS Noise Predictions – Laeq,15minute dB

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
B4	43	41	43	L35	27	25	26
B12	34	34	34	L36	27	25	26
B13	38	36	38	L37	27	25	27
B14	34	33	34	L38	27	25	26
B15	37	36	37	L39	27	25	27
B16	37	37	37	L40	27	25	27
B17	41	43	43	L41	27	25	26
B18	13	13	14	L42	26	25	26
B19	35	33	35	L43	26	25	26
B20	36	35	36	L44	25	21	24
B21	35	34	35	L45	25	21	24
B22	35	34	35	L46	24	20	24
B23	36	35	35	L47	25	22	24
B24	35	34	34	L48	25	21	24
B25	35	34	34	L49	22	20	22

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
B26	34	33	33	L50	24	21	24
B27	34	33	33	L51	25	21	24
B28	34	33	34	L52	25	21	24
B29	33	32	32	L53	27	26	27
B30	33	31	32	L54	27	26	27
B31	32	31	32	L55	27	26	27
B32	34	31	33	L56	25	21	24
B33	33	32	32	L57	28	27	28
B34	33	32	32	L58	27	26	27
B35	32	31	32	L59	28	26	27
B36	26	25	25	L60	28	26	27
B37	24	24	24	L61	28	27	27
B38	28	27	27	L62	28	26	27
B39	27	26	27	L63	28	27	27
B40	28	27	27	L64	28	27	27
B41	27	25	27	L65	27	27	27
B42	27	27	27	L66	28	27	27
B43	27	27	28	L67	27	27	27
B44	24	24	23	L68	28	27	27
B45	27	24	25	L69	28	27	27
B46	27	23	25	L70	28	27	27
B47	26	23	25	L71	28	27	27

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
B48	26	23	25	L72	28	27	27
B49	26	23	25	L73	28	27	27
B50	24	23	23	L74	28	27	28
B51	20	22	19	L75	28	27	27
B52	30	29	29	L76	28	27	27
B53	32	32	31	L77	28	27	27
B54	37	35	36	L78	28	27	27
B55	37	36	36	L79	28	27	27
B56	36	36	36	L80	28	27	27
B57	36	36	35	L81	28	27	27
B58	36	35	35	L82	28	27	27
B59	28	27	27	L83	28	27	27
B60	28	26	27	L84	28	27	27
L1	28	27	27	L85	28	27	27
L2	27	25	27	L86	28	27	27
L3	25	25	25	L87	28	27	27
L4	25	25	25	L88	28	27	27
L5	25	25	25	L89	28	27	27
L6	25	25	25	L90	28	27	27
L7	25	25	25	L91	28	27	27
L8	25	25	25	L92	28	27	27
L9	25	25	25	L93	29	28	27

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
L10	25	26	25	L94	29	28	28
L11	25	26	25	L95	28	28	27
L12	25	26	25	L96	27	27	26
L13	25	26	25	L97	27	27	25
L14	24	26	25	L98	29	28	28
L15	25	26	25	L99	29	29	29
L16	26	25	25	L100	29	28	28
L17	25	25	25	L101	28	28	28
L18	26	25	25	R1	25	24	25
L19	26	25	26	R2	25	24	25
L20	26	25	25	R3	25	26	27
L21	20	19	19	R4	20	19	22
L22	18	18	18	R7	24	24	25
L23	25	24	24	R8	24	24	25
L24	25	24	25	R9	24	24	24
L25	25	24	25	R10	15	23	24
L26	26	25	26	R11	12	18	18
L27	25	24	25	R12	11	15	16
L28	26	25	26	S1	20	19	19
L29	21	20	20	S2	19	18	18
L30	20	19	19	S3	25	25	25
L31	26	25	25	S4	16	15	16

Receptor ID	Day	Evening	Night	Receptor ID	Day	Evening	Night
L32	26	25	26	S5	16	14	15
L33	26	25	26	WR1	26	24	25
L34	26	25	26	WR2	28	28	28

6.0 Overland Conveyor – Noise Reduction Study Noise Monitoring Program

It is understood that after low noise idlers have been installed on the overland conveyor, noise levels have the potential to change in both the short and long term with effective noise mitigation deterioration rates unquantified.

A period of implementation and monitoring is required to accurately assess the effectiveness of implemented mitigation measures and to accurately predict changes in noise levels in the vicinity of the overland conveyor associated with implemented noise mitigation measures.

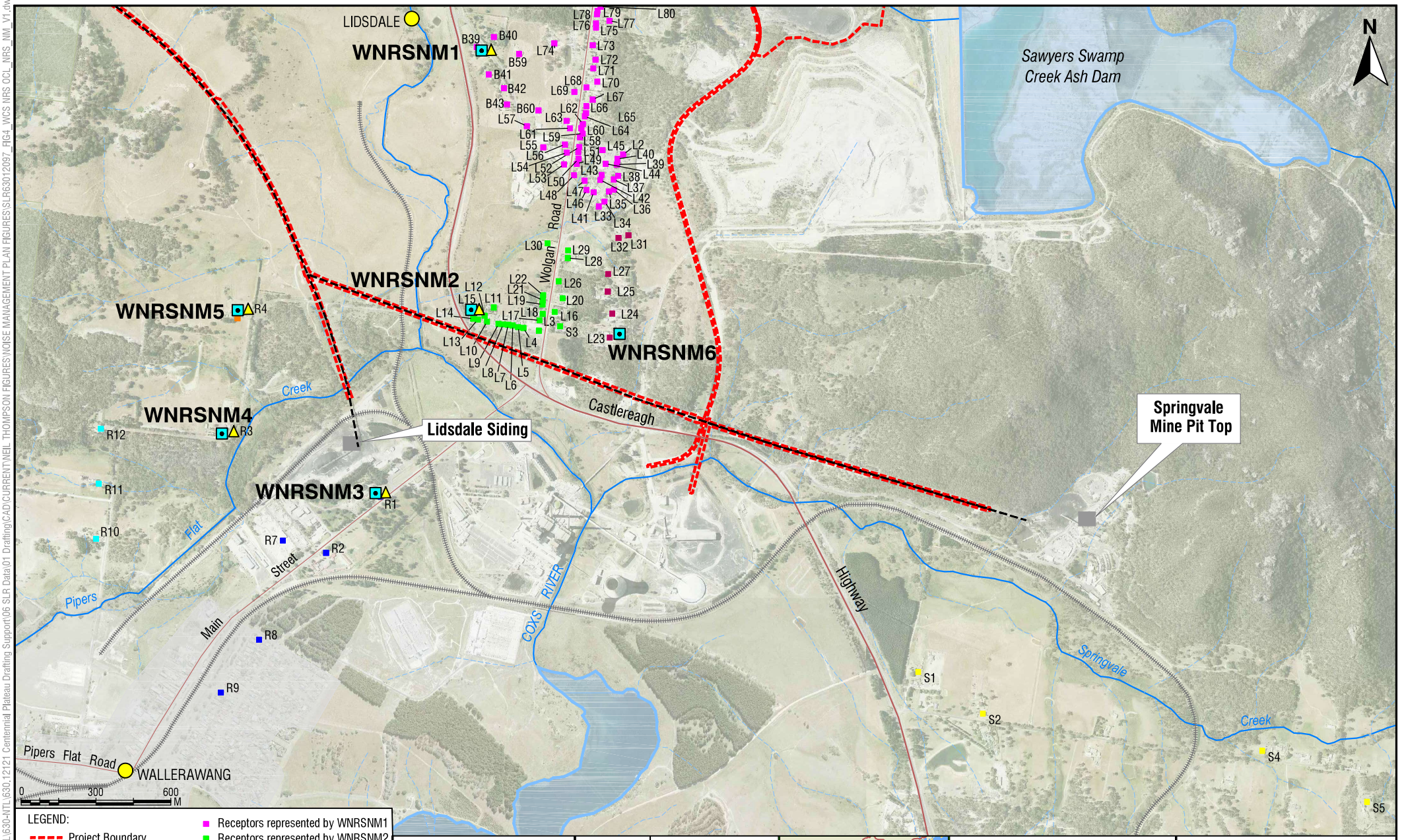
To progressively investigate and quantify noise levels from the overland conveyor system, a 6 monthly OLC Noise Reduction Study attended noise monitoring program will be implemented at 6 locations in Lidsdale and Wallerawang as shown in Figure 4 and listed in Table 6 below.

It should be noted that as part of the WCS monthly attended monitoring program overland conveyor system noise contributions will be quantified further inform the NRS.

The conveyor system zones will be monitored to allow for consistent testing, direct comparison of results between measurement campaigns, and for identification of areas of concern for further investigation.

Table 6 – Overland Conveyor Noise Reduction Study Monitoring Locations

OLC Noise Reduction Study Monitoring Locations	Monitoring Location		Monitor type	Frequency	Purpose
	Easting	Northing			
WNRSNM1	228036	6300415	Attended	6 Monthly	Noise Reduction Study
WNRSNM2	227420	6300654	Attended	6 Monthly	Noise Reduction Study
WNRSNM3	227484	6301148	Attended	6 Monthly	Noise Reduction Study
WNRSNM4	228419	6301150	Attended	6 Monthly	Noise Reduction Study
WNRSNM5	228461	6302189	Attended	6 Monthly	Noise Reduction Study
WNRSNM6	229017	6301056	Attended	6 Monthly	Noise Reduction Study



DATE	02.03.2018
SEAM	LITHGOW
REFERENCE	SLR63012097_FIG4_WCS NRS OCL NRS_NM_V1
SCALE	1:20000

Figure 4

Centennial Western Region
Western Coal Services - Overland Conveyor Noise Reduction Study
Monitoring Locations

Centennial Coal

Prepared by: SLR

A4

H:\Projects-SLR\630-SrvNTL\630-NTL\630.12121 Centennial Plateau Drafting Support\06 SLR Data\01 Drafting\CAD\CURRENT\NEIL THOMPSON FIGURES\NOISE MANAGEMENT PLAN FIGURES\SLR63012097_FIG4_WCS NRS OCL_NRS_NM_V1.dwg

7.0 Springvale Coal Services Sites – Noise Reduction Study Noise Monitoring Program

Attended noise monitoring at locations surrounding SCSS has been documented in Appendix F1 of the Western Region Noise Management Plan. This program is considered robust enough to identify any achieved noise reduction from the mitigation measures at SCSS off site.

The SCSS was modelled with all the proposed mitigation measures in the MOD 2 Environmental Assessment. The predicted results at each of the 168 receptors are provided in Table 5 above. Regardless of the noise levels predicted following the implementation of the noise mitigation measures, Springvale Coal Services are required to achieve the noise levels detailed within the Western Coal Services Project development consent (SSD 5579). Mitigation measures detailed in Section 4.2 of this Noise Reduction Study will be implemented on a staged basis until compliance with the development consent noise criteria has been achieved.

8.0 Sound Power Level Testing

Regular sound power screening testing will be continued to assist in managing equipment sound power levels, and identify plant items requiring maintenance.

Targeted sound power level testing of infrastructure or machinery will occur to assess and quantify change in noise levels;

- Within 2 months of the completion of the proposed mitigation measures being implemented; and
- Annually for the overland conveyor system.

Sound Power Level testing of the overland conveyor will be used to identify:

- Changes in noise levels,
- Potentially noisy equipment, and
- Potential additional actions for management and mitigation.

9.0 Model Validation

The overland conveyor and SCSS noise levels will be progressively modelled and validated with attended monitoring and sound power level monitoring results.

Site noise models will be updated with sound power results and monitoring data to evaluate the effectiveness of the noise mitigation measures implemented.

Modelled predictions in conjunction with the ongoing compliance monitoring results will be used to assess if further noise mitigation at SCSS is required.

Site noise models will be progressively updated with recent sound power results after each stage of mitigation, and the effectiveness of the noise mitigation measures will be assessed.

10.0 Determining Compliance Levels

It is proposed that accurate determination of mitigation effectiveness will require a minimum 2 year period of monitoring and assessment to provide sufficient information to accurately inform future proposed compliance management conditions for overland conveyor inclusion in the sites Environmental Protection Licence (EPL) and predict changes in noise levels in the vicinity of the overland coal conveyor with implemented mitigation measures.

The monitoring program is considered rigorous enough to accurately assess the overland conveyor system noise levels, to predict changes in noise levels in the vicinity of the overland coal conveyor with implemented mitigation measures, and to provide basis for future compliance management conditions for inclusion in the sites Environmental Protection Licence (EPL).

11.0 Overland Conveyors Maintenance Program

Schedule 3, Condition 9 of SSD-5579 requires that this Noise Management Plan detail a maintenance schedule for the overland conveyor system.

It has been determined that this information is best suited for inclusion as part of the Noise Reduction Study to ensure the effectiveness of the site maintenance program is evaluated and assessed to specifically include identified and committed measures to maintain noise mitigation measures as implemented (Low Noise Idlers installation).

Information provided in this management plan is limited to the context of the requirement for a maintenance schedule for the overland conveyor system for noise management mitigation measures, and does not include maintenance scheduling information related to non-noise mitigation processes undertaken at WCS.

11.1 Maintenance Management Process Overview

Regular and systematic maintenance of the entire overland conveyor system will be undertaken to identify and replace or repair noisy idlers as necessary. WCS maintenance activities related to the overland conveyor system are managed in accordance with a range of internal and external standards and management documents as required the under *Coal Mines Health & Safety Act 2002.*

WCS utilises a Pulse Maintenance System that provides

- A work order system for mechanical work to be performed including but not limited to the following:
    - Scheduled Maintenance inspections
    - Response to breakdown situations
    - Corrective or remedial work
    - Defects in conjunction with" Out Of Service Tags"
    - Attaching safe work instructions to a particular task.

- Record of work completed

The WCS Mechanical Engineering Control Plan (SCSO-MEMP-001) consolidates specific controls for the identified risks related to mechanical components of the overland conveyor system with Low Noise Idlers classified as mechanical components.

The purpose of SCSO-MEMP-001 is to define the standards, procedures and responsibilities required to maintain a system for effectively managing risks, in accordance with appropriate legislation, standards, codes of practice and guidelines.

SCSO-MEMP-001 aims to control the risks associated with mechanical energy through:

- The overall life cycle of plant and structures at the site
- The reliability of safe guards used at the site to protect persons from the hazards posed by plant and structures during each phase of its life cycle
- The mechanical engineering practices to be employed at the site; and
- The competency required by workers in order to safely work on plant and structures at the site.

SCSO-MEMP-001 controls maintenance tasks, corrective tasks, spares requirements and life cycle forecasts for the equipment given a defined operating context including;

- Any machinery, equipment, appliance, container, implement and tool;
- Any component of any of those things; and
- Anything fitted or connected to any of those things

SCSO-MEMP-001 consolidates specific controls for the identified risks via a range of ore Standards, Protocols and Procedures including;

- Standards of mechanical Engineering Practice (SCSO-MEMS-001)
- Mechanical Maintenance and Safety Inspection Standard (SCSO-MEMS-002)
- Defect Management Standard (SCSO-MEMS-003)
- Wheel Management Standard (SCSO-MEMS-004)
- Hot Work Management Standard (SCSO-MEMS-005)
- Lifting and Towing Management Standard (SCSO-MEMS-006)
- Controlled Work Area Management Standard (SCSO-MEMS-007)
- Fluid Power Management Standard (SCSO-MEMS-008)
- Plant Lifecycle Standard (SCSO-MEMS-009)
- Diesel Emissions Standard (SCSO-MEMS-010)
- Conveyor Standard (SCSO-MEMS-011)
- Mobile Plant Management Standard (SCSO-MEMS-012)
- Energy Control Management Standard (SCSO-MS-014)

- High pressure Fluid Injection Management Standard (SCSO-MS-017)
- Hazardous Substances Management Standard (SCSO-MS-023)
- Change Management Standard (SCSO-MS-025)
- Introduction of Plant to Site – Long Term (SCSO-AF-005)
- Introduction of Plant to Site – Short Term (SCSO-AF-010)
- Multi Work Permit (SCSO-PF-0001)
- Safe Work Procedures listed on Lotus Notes (controlled documents)

11.2 Maintenance Processes related to Noise Mitigation Measures

The WCS Maintenance processes specific to Noise Mitigation Measures implemented on site (installation of low noise idlers) for the identification and scheduling of maintenance is summarised below;

- An inspection is completed of the entire overland system on a daily basis.
- The inspection includes specific elements to identify noisy or defected conveyor idlers and rollers.
- All identified defects (including noisy or excessive noise from conveyor idlers and rollers) are recorded on the inspection form.
- Defect identified conveyor idlers and rollers are tagged for further investigation or replacement on a daily basis at the time of the inspection.
- Completed daily inspection reports (including all tagged conveyor idlers and rollers tag stubs) are returned and reviewed by the WCS Site Supervisor on a daily basis.
- All defected conveyor idlers and rollers (including noise defects) are identified for maintenance (typically replacement) at the next available opportunity.
- All defected items (including noise defects) recorded from the daily overland inspection are tabled at the daily WCS production meeting for determination and scheduling of actions to remediate defects.
- WCS undertake a weekly defect planning meeting where defects across the operation (including noise related defects) are scheduled for maintenance.
- WCS undertakes a maintenance day across the operations weekly (each Thursday).
- WCS undertakes a rolling 3 week maintenance program across the operational areas that include overland conveyor areas, Washery areas, and other identified maintenance areas.
- WCS undertakes opportunistic maintenance pending operational and other risk based constraints.
- Maintenance is scheduled for items in accordance with the severity of defect, efficiencies in maintenance, and in accordance with identified risk based constraints.

- Low noise idlers are specifically targeted for replacement each maintenance window and are scheduled as a priority item.

Maintenance scheduling at WCS is conducted in a dynamic nature with both proactive and reactive maintenance undertaken pending the identified defect / maintenance issue.

12.0 Community Consultation

Springvale Coal commits to implementing an ongoing community consultation process to inform and update stakeholders on Noise Reduction Study actions and resulting mitigated outcomes.

Following the completion of modelling and validation of implemented measures as detailed in Section 9.0 above, Springvale Coal will report outcomes as listed below;

- **Potentially affected residents**
    - Provided information will include summaries of works completed and the modelled results.
    - This information will be via letter with the opportunity to make contact with a representative of the project.
- **Western Regional Community Consultative Committee (CCC)**.
    - A report will be provided at each Western Region CCC meeting and will include the works completed and the most up to date modelled results.
- **Centennial Coal Website**:
    - An update on the works program and modelled results will be updated at each stage of the program and published on the website.
- **Newspaper notification**.
    - A six (6) monthly community update will be placed in the Lithgow Mercury and Village Voice outlining the progress of the works program, results achieved and project contact details.

This consultation program will be managed by the Centennial Group Manager – Stakeholder Engagement.

13.0 Reporting

Within 6 months of the noise mitigation strategies identified in this Noise Reduction Study being implemented, a Noise Reduction Study Completion Report will be provided to the Secretary of the Department of Planning and Environment that summarises the actions implemented and the noise reductions gained as a result. The provision of this report to the Secretary will highlight the practical completion of all commitments made within this Noise Reduction Study.

14.0 Government Consultation

The draft Noise Reduction Study was provided to the EPA for review and comment on 26 February 2018.

Feedback draft Noise Reduction Study from the EPA was received on 1 March 2018.

As detailed in the correspondence from the EPA dated 1 March 2018, it was identified that Springvale Coal include a monitoring location in the vicinity of 70 Skelly Road to monitor performance of the Overland Conveyor previously identified as audible at this location.

Subsequent to the EPA feedback, a monitoring location (WRNMS6) was included in the Overland Conveyor – Noise Reduction Study Noise Monitoring Program located at receptor L23 and be representative of receptors L24, L25, L27, L31, L32 as illustrated in Figure 4 above.

A copy of consultation received from the EPA is provided below.

Feedback from the Department of Planning and Environment on the Noise Reduction Study was received on 19 July 2018. **Table 7** below summarises how this feedback has been addressed.

Table 7 – DPE Feedback and Response

DPE Feedback	Response
It is recommended that Section 4 be updated to include all controls and management strategies described in the Statement of Commitments in the Western Coal Services Project – Modification 2 Statement of Environmental Effects including controls within Section 7.1.9.2.	Additional commitments, relevant to the overland conveyor system and SCSS that were detailed in the Western Coal Services MOD 2 Statement of Environmental Effects have been incorporated throughout this Noise Reduction Study. Other commitments relevant to the haul roads or ongoing monitoring are addressed within the Western Coal Services Site Specific Appendix to the Western Region Noise Management Plan (Appendix F1).
Please confirm if site based NMP would need to be updated as part of commencing the study.	No changes to the Western Coal Services site specific appendix of the Western Region Noise Management Plan (Appendix F1) is required as a result of this Noise Reduction Study commencing.

EPA Feedback on Noise Reduction Study

Appendix G – Land Ownership Plans

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
8 July 2016	Re-submission of revised Noise Management Plan to the DPE for review and approval.
22 July 2016	Noise Management Plan approved by the Secretary
10 March 2017	Draft Noise Management Plan submitted to the EPA for review and comment.
28 April 2017	Submission of revised Noise Management Plan to the DPE for review and approval.
26 March 2018	Submission of revised Noise Management Plan to the EPA for review and comment.
13 April 2018	Submission of revised Noise Management Plan to the DPE for review and approval.

15 June 2018	Feedback from DPE on the Noise Management Plan received.
22 June 2018	Submission of revised Noise Management Plan to the DPE for review and approval.

Appendix I – Consultation Feedback and Response

Issue Raised	By Whom	How Addressed
Section 4.3.2 – Provide an update (via email) of the status of the final two paragraphs.	Department of Planning and Environment	The current noise monitoring frequency implemented across Centennial's western region operations are detailed in appendices A - F1. Section 4.3.2 of this Noise Management Plan has been updated to clarify that any changes to the noise monitoring frequency for Centennial's operations will be done in consultation with the relevant agencies with a revised management plan submitted and approved prior to any changes being implemented.
Within Appendices – Where proposed actions are described, update the current status and include timeframes.	Department of Planning and Environment	The status of, or timeframes for completion of, site specific noise mitigation and management measures for each operation has been included in Appendices A – F1 of this Noise Management Plan.
4.3 and 6.1 – Confirm that all compliance monitoring sites are located on private land. If located on mine owned land, update the NMP to clearly state that compliance will be assessed at the monitoring location, irrespective of landownership. It is also recommended that Plans included in Appendices show land ownership.	Department of Planning and Environment	Plans showing the location of noise monitoring locations in relation to landownership have been provided as **Appendix G** to this Noise Management Plan. Section 4.3 of this management plan has been updated to clarify that where noise compliance monitoring is undertaken on Centennial owned land, compliance for the relevant sensitive receptors is

Issue Raised	By Whom	How Addressed
		determined at that monitoring location.
Consider including a description of how the short and long term monitoring programs are used to evaluate performance	Department of Planning and Environment	Section 4.5 of this Noise Management Plan has been updated to clarify that both the short term monitoring program and long term monitoring program are designed to allow for 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. Additionally both the short term and long term monitoring programs allow for the effectiveness of noise management measures to be measured over time, identify key noise sources and review and improve Centennial's operational noise management practices.