STRATFORD MINING COMPLEX
Noise Management Plan

STRATFORD MINING COMPLEX
(STRATFORD EXTENSION PROJECT)

NOISE MANAGEMENT PLAN

Revision Status Register

Section/Page/ Annexure	Revision Number	Amendment/Addition	Distribution	DP&E Approval Date
All	1	Original	DP&E, EPA	22 March 2018
All	2	Updated to cover Stratford East Pit	DP&E, EPA	19 October 2018

OCTOBER 2018
Project No. YAN-17-10
Document No. NMP-R01-A

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1 INTRODUCTION

1.1 STRATFORD MINING COMPLEX

Stratford Coal Pty Ltd (SCPL), a wholly owned subsidiary of Yancoal Australia Limited (Yancoal), owns the Stratford Coal Mine (SCM), which is located approximately 100 kilometres (km) north of Newcastle, New South Wales (NSW) (Figure 1). SCPL also owns the Bowens Road North Open Cut (BRNOC), located to the immediate north of the SCM. The SCM and BRNOC are collectively referred to as the Stratford Mining Complex (SMC).

Yancoal also owns the Duralie Coal Mine (DCM), which is located approximately 20 km south of the SMC (Figure 1). Run-of-mine (ROM) coal from the DCM is transported by rail to the SMC for processing and export.

Mining activities approved under the SCM Development Consent and the BRNOC Development Consent were suspended in mid-2014, however, processing of ROM coal from the DCM and the export of product coals has continued under the SCM Development Consent.

The Development Consent SSD-4966 for the Stratford Extension Project (SEP) was granted on 29 May 2015 and involves the extension and continuation of mine operations at the SMC[1], including (among other things):

- mining of up to 2.6 million tonnes of ROM coal per annum;
- continuation of mining in the BRNOC; and the extension of mining into three new open cut mining areas:
  - Roseville West Pit Extension;
  - Avon North Open Cut; and
  - Stratford East Open Cut.
- progressive backfilling of mine voids with waste rock behind the advancing open cut mining operations;
- continued and expanded placement of waste rock in the Stratford Waste Emplacement and Northern Waste Emplacement;
- coal processing at the existing Coal Handling and Preparation Plant (CHPP);
- stockpiling and loading of product coal to trains for transport on the North Coast Railway to Newcastle;
- disposal of CHPP rejects via pipeline to the existing co-disposal area in the Stratford Main Pit and, later in the mine life, the Avon North Open Cut void;
- continued use of existing water storages/dams and progressive development of additional sediment dams, pumps, pipelines, irrigation infrastructure and other water management equipment and structures;
- other associated minor infrastructure, plant, equipment and activities and minor modifications to existing structure, plant and equipment and activities; and
- rehabilitation of the site.

The general arrangement of the approved SMC is provided in Figure 2.

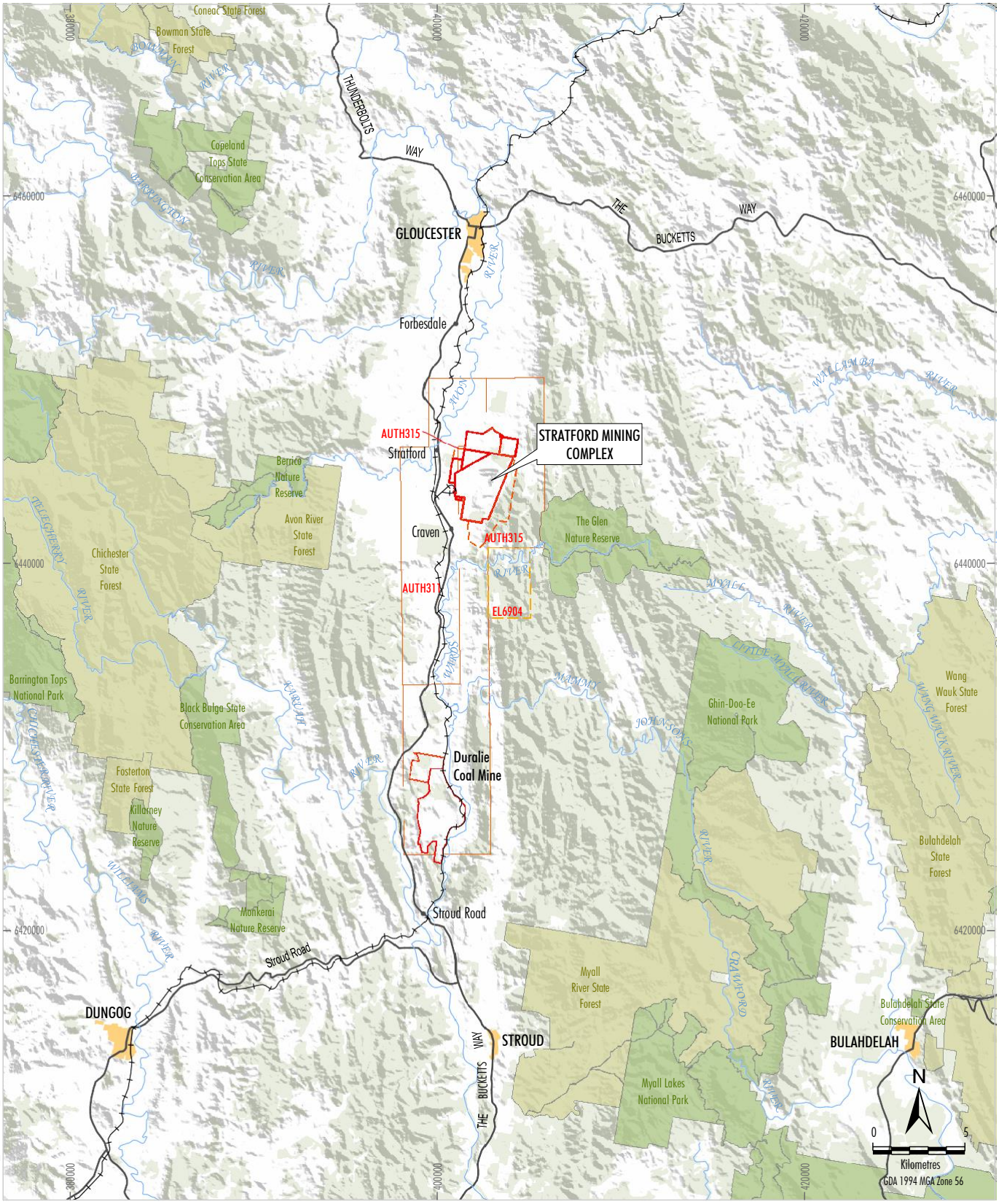
1.2 PURPOSE AND SCOPE

This Noise Management Plan (NMP) has been prepared by SCPL to address the requirements of Condition 6, Schedule 3 of Development Consent SSD-4966 and relevant conditions of Environment Protection Licence EPL 5161.

This NMP has been prepared to outline the procedures and strategies for noise management at the SMC in the Avon North Open Cut, Stratford East Open Cut and BRNOC only.

This NMP will be updated prior to commencing mining operations in the Roseville West Pit Extension, in accordance with Condition 15, Schedule 2 of SSD-4966.

[1] A copy of the Development Consent (and other statutory State and Federal licenses and approvals) is available on the Stratford Coal website (www.stratfordcoal.com.au).



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LEGEND

- Mining Lease Boundary
- Mining Lease Application Boundary
- Exploration Licence Boundary
- NSW State Forest
- National Park, Nature Reserve or State Conservation Area

Source: Geoscience Australia (2006);
NSW Department of Planning & Environment (2017)

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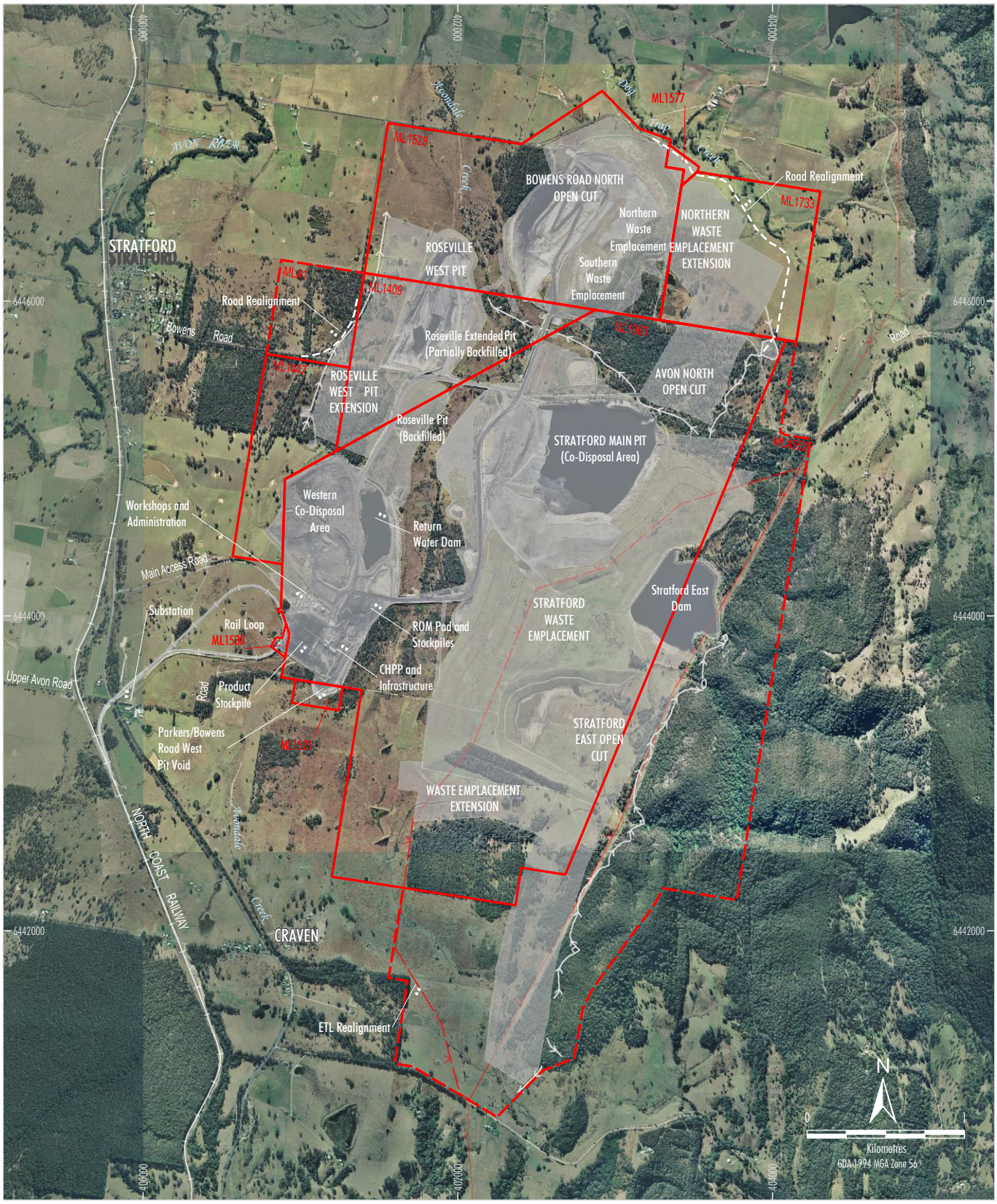
STRATFORD EXTENSION PROJECT

Regional Location

Figure 1



LEGEND

- Mining Lease Boundary
- Mining Lease Application Boundary
- Electricity Transmission Line
- Approximate Extent of Existing/Approved Surface Development
- Conceptual Up-Catchment Diversion

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STRATFORD EXTENSION PROJECT

Approved General Arrangement

Source: Orthophoto - Yancoal (July 2014); LPI (2016); NSW Department of Planning & Environment (2017)

Figure 2

1.3 STRUCTURE OF THE NMP

The remainder of the NMP is structured as follows:

Section 2: Outlines the statutory requirements applicable to this NMP.

Section 3: Describes the key noise generating activities from the SMC.

Section 4: Details the noise criteria and performance indicators that will be used to assess noise impacts at the SMC.

Section 5: Provides detailed baseline noise data.

Section 6: Describes the noise management measures proposed to minimise noise impacts at the SMC.

Section 7: Describes the noise monitoring program proposed for the SMC.

Section 8: Provides a Contingency Plan to manage any unpredicted impacts and their consequences.

Section 9: Describes the annual review, NMP review and provisions for the improvement of the environmental performance process.

Section 10: Describes the management and reporting of incidents, complaints and non-compliances.

Section 11: Lists the references cited in this NMP.

1.4 CONSULTATION

This NMP has been provided to the NSW Environmental Protection Authority (EPA) for their review and comment. The EPA confirmed, via a letter dated 8 March 2018, that it had no comments on the NMP.

2 STATUTORY REQUIREMENTS

SCPL's statutory obligations are contained in:

(i) the conditions of Development Consent SSD-4966;

(ii) the conditions of the Commonwealth Approval (EPBC 2011/6176);

(iii) the conditions of EPL 5161;

(iv) relevant licences and permits, including conditions attached to mining leases; and

(v) other relevant legislation.

Obligations relevant to this NMP are described below.

2.1 EP&A ACT APPROVAL

The conditions of Development Consent SSD-4966 relevant to noise management are described below.

Noise Management Plan

Condition 6, Schedule 3 of the Development Consent SSD-4966 requires the preparation of a NMP for the SMC. Table 1 presents these requirements and indicates where they are addressed within this NMP.

Table 1
NSW Development Consent Requirements Relevant to this NMP

NSW Development Consent Condition	*NMP Section*
6. The Applicant shall prepare and implement a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:	
(a) be prepared in consultation with the EPA, and submitted to the Secretary for approval prior to 31 December 2015, unless otherwise agreed by the Secretary;	Section 1.4

Table 1 (Continued)
NSW Development Consent Requirements Relevant to this NMP

NSW Development Consent Condition	*NMP Section*
(b) describe the measures that would be implemented to ensure:	
• *compliance with the noise criteria and operating conditions of this consent;*	Section 4
• *the noise impacts of the project are minimised during meteorological conditions when the noise limits of this consent do not apply;*	Section 6.1 and 7.5
(c) describe the proposed noise management system in detail; and	Section 6
(d) include a monitoring program that:	
• *includes monitoring of inversion strength at an appropriate sampling rate to determine compliance with noise limits;*	Section 7.5
• *provides for the biennial validation of the noise model for the project.*	Section 9.2
• *evaluates and reports on:*	
- the effectiveness of the on-site noise management system;	Section 9
- compliance against the noise criteria in this consent; and	Section 9
- compliance with the noise operating conditions; and	Section 9
• *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);*	Section 7.2.5
• *defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.*	Section 7.2.4

Management Plan Requirements

Condition 3, Schedule 5 of Development Consent SSD-4966 outlines the management plan requirements that are applicable to the preparation of this NMP. Table 2 presents these requirements and indicates where they are addressed within this NMP.

Table 2
Management Plan Requirements

Development Consent Condition	*NMP Section*
3. The Applicant shall ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:	
a) detailed baseline data;	Section 5
b) a description of:	
• *the relevant statutory requirements (including any relevant approval, licence or lease conditions);*	Section 2
• *any relevant limits or performance measures/criteria;*	Section 4
• *the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;*	Section 4
c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	Section 6
d) a program to monitor and report on the:	
• *impacts and environmental performance of the development;*	Section 7
• *effectiveness of any management measures (see c above);*	Section 7
e) a contingency plan to manage any unpredicted impacts and their consequences;	Section 8
f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 9

Table 2 (Continued)
Management Plan Requirements

Development Consent Condition	*NMP Section*
g) a protocol for managing and reporting any; • *incidents;* • *complaints;* • *non-compliances with statutory requirements; and* • *exceedances of the impact assessment criteria and/or performance criteria; and*	Section 10
h) a protocol for periodic review of the plan.	Section 9.2

2.2 LICENCES, PERMITS AND LEASES

In addition to Development Consent SSD-4966 and Commonwealth Approval (EPBC 2011/6176) all activities at, or in association with the SMC, will be conducted in accordance with a number of licences, permits and leases which have been issued or are pending issue.

Key licences, permits and leases pertaining to the SMC include:

- The conditions of Environment Protection Licence 5161 administered by the EPA under the NSW *Protection of the Environment Operations Act, 1997* (POEO Act).
- The conditions of the Mining Leases (MLs) 1360, 1409, 1447, 1538, 1521, 1577, 1528 and 1733 issued by the NSW Minister for Mineral Resources under the NSW *Mining Act, 1992*[2].
- Mining Operations Plan submitted to the Division of Resources and Geoscience (DRG) within the DP&E.
- Water supply works, water use approvals and water access licences issued by the NSW Office of Water under the NSW *Water Management Act, 2000*.

A detailed register of current licences, permits and approvals is maintained on-site by SCPL personnel and a summary of current approvals is presented in the Annual Review.

2.3 OTHER LEGISLATION

SCPL will operate the SMC consistent with Development Consent SSD-4966, the Commonwealth Approval (EPBC 2011/6176) and any other legislation that is applicable to an approved Part 4 Project under the EP&A Act.

2.4 RAIL TRANSPORT

Trains transporting coal from the SMC will travel on the North Coast Railway, which is controlled by the Australian Rail Track Corporation (ARTC). Noise emissions from the railway are regulated via the ARTC's EPL (EPL 3142).

[2] SCPL has lodged applications for the Mining Lease Application (MLA) areas MLA 552 with the DRG as shown on Figure 2.

3 KEY NOISE GENERATING ACTIVITIES

3.1 CONSTRUCTION

Construction/development works at the SMC may include the following:

- realignments of sections of Wheatleys Lane, Bowens Road, and Wenham Cox/Bowens Road;
- relocation of a 132 kV power line;
- noise management infrastructure upgrades and haul road bunding;
- realignment of a NSW Rural Fire Service (RFS) fire trail; and
- relocation of a Telstra phone line.

On-site construction-related activities will generally be restricted to daylight hours up to seven days a week.

3.2 MINE OPERATION

The key noise generating activities/equipment from the operation of the SMC will be:

- drilling;
- blasting;
- excavators;
- haul trucks;
- dozers;
- mobile fleet;
- primary and secondary crushers;
- CHPP; and
- trains and rail loading and unloading facilities.

3.3 RAIL TRANSPORT

ROM coal from the DCM is transported on the North Coast Railway to the SMC CHPP via the Duralie shuttle train in accordance with the Duralie Project Approval (DA 08_0203).

In accordance with Condition 8, Schedule 2 of Development Consent SSD-4966, SCPL will ensure that all product coal is transported from the site by rail, and:

- no more than an average of 2.5 laden trains leave the site each day over any calendar year;
- no more than 6 laden trains leave the site in any 24-hour period; and
- no more than 2 laden trains leave the site during any night-time period (i.e. from 10.00 pm to 7.00 am Monday to Saturday, and 10.00 pm to 8.00 am on Sundays and Public Holidays).

These trains will generate pass-by noise for receivers in close proximity to the railway line. In addition, noise will be generated from trains idling on the Stratford rail loop.

As stated in Section 2.4, trains originating from the SMC will be controlled by the ARTC once they have left the Stratford rail loop.

In accordance with Condition 5(d), Schedule 3 of Development Consent SSD-4966, the SMC will only use locomotives and rolling stock that are approved to operate on the NSW rail network, in accordance with the noise limits in ARTC's EPL 3142.

4 NOISE CRITERIA AND PERFORMANCE INDICATORS

4.1 DEVELOPMENT CONSENT CONDITIONS

4.1.1 Noise Criteria

Noise criteria are provided in Condition 4, Schedule 3 of Development Consent SSD-4966 and reproduced below.

Noise Criteria

4. The Applicant shall ensure that the noise generated by the development does not exceed the criteria in Table 4 at any residence on privately-owned land.

Table 4: Noise Criteria dB(A)

Land	***Day*** $L_{Aeq(15\ min)}$	***Evening*** $L_{Aeq(15\ min)}$	***Night*** $L_{Aeq(15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
40/51/Cr1 – L. Blanch	*43*	*43*	*43*	*50*
Cr7 – Pryce-Jones	*43*	*43*	*43*	*49*
42 – D. Blanch	*42*	*42*	*42*	*50*
Cr 2 – Boorer	*41*	*41*	*41*	*49*
31(1) – Isaac	*40*	*40*	*40*	*48*
36 – Wallace	*39*	*39*	*39*	*47*
44 – Cross / Jane				
60 – Healy / Greenwood	*39*	*39*	*39*	*45*
37 – Worth	*38*	*38*	*38*	*46*
29 – Ward	*38*	*38*	*37*	*45*
23 – Bagnall	*37*	*37*	*37*	*45*
31(2) – Isaac				
296 – Watson				
297 – Bosma				
298 – Yates	*36*	*36*	*36*	*45*
15(3) – Falla	*39*	*35*	*35*	*45*
15(2) – Falla	*36*	*35*	*35*	*45*
Stratford Village	*37*	*36*	*35*	*45*
All other privately-owned residences	*35*	*35*	*35*	*45*

Notes:

- *To interpret the locations referred to in Table 4 see the applicable figure(s) in Appendix 5.*
- *Stratford village is shown on the figure(s) in Appendix 5.*

Noise generated by the development is to be measured in accordance with the relevant requirements of the NSW Industrial Noise Policy[3]. Appendix 6 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.

[3] In October 2017 the NSW Industrial Noise Policy (INP) was replaced with the NSW Noise Policy for Industry. The INP still applies to this Development Consent with the exception of the application of correction factors for noise.

4.1.2 Acquisition Criteria

Noise acquisition criteria are provided in Condition 1, Schedule 3 of Development Consent SSD-4966 and reproduced below:

Acquisition Upon Request

1. *Upon receiving a written request for acquisition from an owner of the land listed in Table 1, the Applicant shall acquire the land in accordance with the procedures in conditions 5-6 of Schedule 4.*

Table 1: Land subject to acquisition upon request

Property ID	
40/51/Cr1 – L. Blanch	*42 – D. Blanch*
Cr7 – Pryce-Jones	*Cr 2 – Boorer*

Note: To interpret the location referred to in Table 1 see the applicable figure in Appendix 5.

However, the obligation to acquire a property does not apply if the Applicant has a negotiated agreement with the owner/s of the relevant land that sets aside acquisition under the terms of this consent, and the Applicant has advised the Department in writing of the terms of this agreement.

4.1.3 Additional Noise Mitigation Measures

In addition to the noise criteria and noise acquisition criteria above, Condition 2, Schedule 3 of Development Consent SSD-4966 lists the following requirements:

2. *Upon receiving a written request from the owner of any residence on the land listed in Tables 1 and 2, the Applicant shall implement additional noise mitigation measures (such as double glazing, insulation, and/or air conditioning) at the residence in consultation with the owner. These measures must be reasonable and feasible and directed towards reducing the noise impacts of the development on the residence.*

   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 Secretary for resolution.

Table 2: Land subject to additional noise mitigation upon request

Property ID	***Property ID***
31(1) – Isaac	*60 – Healy / Greenwood*
44 – Cross / Jane	*36 – Wallace*
37 – Worth	*29 – Ward*
15(3) – Falla	

Note: To interpret the locations referred to in Table 2 see the applicable figure in Appendix 5.

However, the obligation to implement noise mitigation measures does not apply if the Applicant has a negotiated agreement with the owner/s of the relevant residence or land that sets aside noise mitigation measures under the terms of this consent, and the Applicant has advised the Department in writing of the terms of this agreement.

4.1.4 Operating Conditions

The noise-related operating conditions are detailed in Condition 5, Schedule 3 of Development Consent SSD-4966. These operating conditions are detailed below:

Operating Conditions

5. The Applicant shall:

(a) implement best management practice to minimise the construction, operational, road and rail 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 mining 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 6);

(d) only use locomotives and rolling stock that are approved to operate on the NSW rail network in accordance with the noise limits in ARTC's EPL 3142;

(e) co-ordinate noise management on site with the noise management of the Gloucester Gas Project to minimise cumulative noise impacts; and

(f) carry out regular monitoring to determine whether the development is complying with the relevant conditions of this consent,

to the satisfaction of the Secretary.

4.1.5 Hours of Operation

Conditions regarding hours of operation are detailed in Condition 3, Schedule 3 of Development Consent SSD-4966. These conditions are detailed below:

3. The Applicant shall comply with the operating hours in Table 3.

Table 3: Operating hours

Activity	***Operating Hours***
• *Open cut mining operations in the Bowens Road North and Roseville West Extension pits* • *Recovery and transport of CHPP rejects for re-processing* • *Construction of the noise mitigation bunds on the western side of the Avon North, Roseville West Extension and Stratford East pits*	*7 am to 6 pm, 7 days per week*
• *Open cut mining operations in the Avon North and Stratford East pits* • *Coal processing, loading and dispatch of product coal trains* • *Maintenance Activities*	*24 hours a day, 7 days per week*

4.1.6 Meteorological Monitoring

The requirement for meteorological monitoring is outlined in Condition 24, Schedule 3 of Development Consent SSD-4966:

24. For the life of the development, the Applicant shall ensure that there is a meteorological station in the vicinity of the site that:

(a) complies with the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline and the NSW Industrial Noise Policy; and

(b) is capable of continuous real-time measurement of temperature lapse rate data that are able to be transformed accurately and repeatably, and no more favourably, to those that would be obtained by the use of a 60 m tower, to the satisfaction of the EPA.

Additional conditions relating to the monitoring of meteorological conditions are outlined in Conditions 1 and 2, Appendix 6 of Development Consent SSD-4966, including under what meteorological conditions the noise criteria (Section 4.1.1) apply:

Applicable Meteorological Conditions

1. The noise criteria in Table 4 in Schedule 3 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) temperature inversion conditions between 1.5°C and 3°C/100 m and wind speed greater than 2 m/s at 10 m above ground level; or

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

Determination of Meteorological 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 25 of Schedule 3.

4.1.7 Noise Compliance Monitoring

Conditions relating to noise compliance monitoring are outlined in Conditions 3, 4 and 5, Appendix 6 of Development Consent SSD-4966:

Compliance Monitoring

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 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[4]:

(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.

[4] In accordance with the *Implementation and Transitional Arrangements for the Noise Policy for Industry (2017), the NSW Industrial Noise Policy* Section 4 modifying factors, will be transitioned to the N*oise Policy for Industry* (2017) Fact Sheet C through a NSW Industrial Noise Policy application note.

4.2 EPL CONDITIONS

4.2.1 SMC Operations

Noise from the SMC must not exceed the noise limits specified in EPL 5161. The noise limits specified in EPL 5161 are the same as the noise criteria specified in Development Consent SSD-4966 (Section 4.1.1):

4.2.2 Rail Transport

The general noise limits specified in ARTC's EPL 3142 are as follows:

L2 Noise Limits

Note: It is an objective of this Licence to progressively reduce noise impacts from railways systems activities to the noise level goals of 65 dB(A)Leq, (day and evening time from 7am – 10pm), 60 dB(A)Leq, (night time from 10pm – 7am) and 85dB(A) (24 hr) max pass-by noise, at one metre from the facade of affected residential properties.

These noise limits are tabulated in Table 3.

Table 3
ARTC's EPL Noise Limits

Railway	Licence Holder	Descriptor	Rail Traffic Goal (dB[A])
North Coast Railway	ATRC EPL 3142	Daytime/evening $L_{Aeq(15hour)}$	65
		Night-time $L_{Aeq(9hour)}$	60
		Maximum Pass-by L_{Amax}	85

Source: EPL 3142

Note: dB(A) = A-weighted decibels.

4.3 ADDITIONAL RAIL CRITERIA

The EPA specifies rail noise assessment trigger levels as part of the requirements of "Environmental assessment requirements for rail traffic-generating developments" described in the EPA (2013) *Rail Infrastructure Noise Guidelines.* Appendix 2 of the guidelines provide:

Land-use developments other than rail projects that are likely to generate additional rail traffic on an existing rail network should be assessed against the following requirements:

- *Identify the typical offset distance/s of sensitive receivers from the rail line/s that are likely to be affected by increased rail movements.*
- *Quantify the existing level of rail noise at the offset distance/s identified above using the noise descriptors $L_{Aeq,15/9hr}$ and L_{Amax} (95th percentile) dB(A).*
- *Predict the cumulative rail noise level (i.e. from the existing and proposed rail movements) using a calibrated noise model (based on predicted increased rail movements) at the offset distances identified above.*
- *Compare the cumulative noise level with the rail noise assessment trigger levels: $L_{Aeq,15hr}$ 65 dB(A), $L_{Aeq,9hr}$ 60 dB(A), and L_{Amax} (95th percentile) 85 dB(A).*
- *Implement all feasible and reasonable noise mitigation measures where the cumulative noise level exceeds the noise assessment trigger levels and project-related noise increases are predicted.*
- *Where the L_{Aeq} noise level increases are more than 2 dB(A), which is equivalent to approximately 60 per cent of the total line or corridor rail traffic, and exceeds the relevant noise assessment trigger level, strong justification should be provided as to why it is not feasible or reasonable to reduce the increase.*

As such, the EPA's rail noise assessment trigger levels are shown in Table 4. These levels are the same as the ARTC EPL noise limits (refer to Table 3).

Table 4
EPA Rail Noise Assessment Trigger Levels

Descriptor	Rail Noise Assessment Trigger Level (dB[A])
$L_{Aeq(15\ hour)}$ (Day time/evening)	65
$L_{Aeq(9\ hour)}$ (Night-time)	60
Maximum Pass-by $L_{Amax\ (95th\ percentile)}$	85

Source: EPA (2013)

5 BASELINE DATA

A detailed description of baseline noise monitoring data is provided in the *Stratford Extension Project – Noise and Blasting Assessment* (SLR Consulting Pty Ltd, 2012), with a summary of noise monitoring data presented below.

5.1 PRE-MINING BACKGROUND NOISE

SLR Consulting (2012) has determined pre-mining rating background levels (RBLs), which provide an indication of background noise levels that are indicative of the entire year. The pre-mining RBLs range from 30 dBA to 32 dBA, as shown in Table 5.

Table 5
Rated Background Levels

Location	Rated Background Level (dB[A])		
	Daytime	Evening	Night-time
Stratford/Craven Residential	32	31	30
Stratford/Craven Rural	30	31	30

Source: SLR Consulting (2012)

5.2 NOISE MONITORING

Quarterly noise monitoring at key privately-owned residences is conducted at the SMC. The results of attended noise monitoring, and a comparison with noise criteria, are publicly available on the Stratford Coal website (http://www.stratfordcoal.com.au/). An assessment of the noise monitoring results on an annual basis is also included in the SMC Annual Reviews.

Noise monitoring has consisted of a combination of operator attended measurements and unattended measurements, in accordance with the *NSW Industrial Noise Policy* (NSW INP) (EPA, 2000).

5.3 SOUND POWER LEVEL MONITORING

SCPL undertakes annual mobile plant sound power level monitoring. The purpose of this monitoring is to obtain current sound power levels for noise generating plant and compare these levels with previous noise assessments and other measured data. Where significant increases are detected, maintenance and/or other remedial measures are undertaken.

Sound power level monitoring will be continued for the remainder of the SMC mine life. Previous results are contained within the SMC Annual Reviews available on the Stratford Coal website (http://www.stratfordcoal.com.au/).

5.4 METEROLOGICAL MONITORING

Meteorological monitoring is undertaken at the SMC in accordance with the requirements of Development Consent SSD-4966. Meteorological monitoring complies with the requirements of the *Approved Methods for Sampling of Air Pollutants in New South Wales* and the NSW INP.

The following data is collected by the weather station:

- daily rainfall;
- continuous wind speed and direction;
- daily temperature statistics (e.g. average, maximum and minimum);
- relative humidity; and
- solar radiation and evaporation.

A summary of monthly meteorological conditions, as recorded by the on-site weather station, can be found in the SMC Annual Reviews available on the Stratford Coal website.

In addition, temperature lapse rate is continuously measured at the Stratford Mining Complex. The temperature inversion system consists of two 10 metre (m) high meteorological towers located at an elevation differential of approximately 50 m with temperature probes, and an anemometer for measuring wind speed and direction. In accordance with Condition 24(b), Schedule 3 of Development Consent SSD-4966, this temperature inversion system calculates the real-time continuous lapse rate no more favourably to the data that will be obtained by the use of a 60 m tower.

6 NOISE MANAGEMENT MEASURES

SCPL has demonstrated continuous efforts to mitigate and manage noise from the SMC. SCPL will continue to implement measures to ensure noise from the SMC is managed to acceptable levels, through a combination of the following:

- ensuring best management practices are implemented on-site by all staff and contractors (Section 6.1);
- implementing noise controls to reduce noise from the source and attenuate noise in transmission (Section 6.2 and 6.4); and
- if necessary, implementing measures to control noise at sensitive receivers (Section 6.3).

The effectiveness of noise management measures at the SMC will be assessed through real-time and attended noise monitoring (Section 7).

6.1 BEST MANAGEMENT PRACTICES

The following proactive/predictive noise management measures will continue to be implemented at the SMC:

- An awareness and understanding of noise issues will be included in site inductions for all staff, contractors and visitors to the SMC.
- The use of significant noise generating equipment simultaneously will be avoided.
- The noisiest activities will be scheduled to the least noise sensitive times of the day (i.e. not at night).
- Weather conditions will be monitored (as per Section 7.5) and where adverse conditions are experienced or predicted, operational changes will be planned to avoid or reduce noise impacts.
- All machinery and plant used on-site will be maintained and operated in a proper and efficient manner to minimise noise generation[5].
- Train horns will not be permitted as a means of communication by the drivers of trains during coal loading activities.
- Waste rock will be strategically placed to provide acoustic barriers.
- The volume of reversing sirens and start-up alarms will be reduced to the minimum practicable level (while still complying with coal mine safety regulations) and the least intrusive reversing alarms will be used.
- Low noise mobile and fixed plant equipment will be used.
- Noise monitoring will include a combination of real-time and attended monitoring of mine-generated noise, as well as a program to monitor the sound power levels of the plant on-site.
- Operation of a meteorological station to aid noise mitigation measures and the identification of noise enhancing conditions will be continued (refer to Section 7.5).
- An awareness of industry developments will be maintained in relation to noise mitigation engineering for individual plant items in order to assess inherent cost and practicality.

In addition, the following reactive measures will be implemented:

- All verified noise complaints will be responded to and acted on as per provisions in this NMP (Section 10).
- Strategies and targets will be developed as part of the annual review of noise monitoring results and the review of verified[6] noise complaints. These strategies will be reported in the Annual Review and their effectiveness will be reported in subsequent reports.
- If verified complaints regarding specific pieces of machinery or equipment are received, a maintenance inspection and maintenance work will be undertaken, where required.

[5] This will be implemented in accordance with Condition 14, Schedule 2 of Development Consent SSD-4966, which relates to the operation of plant and equipment.

[6] A verified noise complaint is a complaint associated with a corresponding exceedance in noise criteria.

6.2 SOURCE AND TRANSMISSION NOISE CONTROLS

SCPL has implemented noise controls since the commencement of mining at the SMC. These controls include a combination of measures to reduce noise from the source and attenuate noise transmission. Table 6 shows existing noise mitigation measures which have been implemented at the SMC.

Table 6
Existing Noise Mitigation Measures at the Stratford Mining Complex

SMC Component	Noise Control
Coal Handling Facility	Installed ROM front-end loader (FEL) CAT992 (or equivalent) with an operating L_{eq} sound power level (SWL) of 112 dB(A).
	Installed 5 m high ROM hopper barrier. ROM coal stockpiles to be maintained at 5 m height and FEL to be operated generally within the ROM coal stockpile area.
	Installed secondary crusher with sound power level of 106 dB(A).
	Installed new coal stockpile facility and retained a minimum reduced level (RL) of 137 m (even when empty) so that the effective height of the barrier (provided by previous bunding) is not compromised.
	Installed a visual/noise bund wall adjacent to the CHPP with increased height by approximately 3 m to RL 140 m.
	Installed coal stockpile CAT D11XQ Dozer (or equivalent) with an operating L_{eq} SWL of 112 dB(A).
	Installed new conveyors and drives (new product stockpile and ROM conveyor/stacker) to be consistent with current low noise conveyor system technology in accordance with acoustical design specification.
CHPP	Partial enclosure of the ground and first floor levels of the CHPP and acoustic lining of 50% of the interior in accordance with an acoustic design specification.
Rail Loop	Installed two adjacent barriers approximately 60 m in length, with an elevation of 5 m above rail level and an offset distance no greater than 3 m from the nearest outer rail.
Coal Unloading Conveyors	Installed low noise idlers on conveyors CV18 and CV17 consistent with current low noise conveyor system technology in accordance with an acoustic design specification.
Coal Loading and Unloading Stations	Partial enclosure of the eastern and western wings of the coal loader comprising 0.47 millimetres Colourbond Profile Steel Iron Cladding (or equivalent) extending from ground level up to a minimum height of 10 m. Similarly, enclosure of the coal unloader comprising iron cladding extending from rail down to ground level.

Source: SCPL (2017).

6.2.1 Stratford Extension Project Mitigation Measures

In addition to the noise controls listed in Table 6, SCPL will implement the noise management and mitigation measures presented in Table 7 to minimise noise emissions associated with the SMC.

Table 7
Stratford Extension Project Noise Mitigation Measures

SEP Component	Mitigation Measure	Timing
Fixed Infrastructure	Implementation of XQ conveyor drives and idlers (e.g. conveyers CV01, CV04/05, CV22 and CV23).	April 2018
Mobile Fleet	Implementation of XQ mobile fleet for all new large haul trucks and dozers.	Prior to April 2019
	Implementation of management controls on dozers (e.g. restriction of gear usage to first gear only on product stockpiles).	Ongoing from April 2018

Table 7 (Continued)
Stratford Extension Project Noise Mitigation Measures

SEP Component	Mitigation Measure	Timing
Operational Hours	Daytime only operation of the Roseville West Pit Extension.	Upon commencement of Roseville West Pit Extension
	Mining Operations associated with the Avon North Open Cut and Stratford East Open Cut will be conducted 24 hours per day, subject to compliance with noise limits.	Ongoing from April 2018
Waste Rock Emplacement	Emplacement of Avon North Open Cut waste rock in the Stratford Main Pit or BRN Pit during evening and night-time. Emplacement of Avon North Open Cut waste rock in the Northern Waste Emplacement Extension during daytime only.	Ongoing from April 2018
	Maximising in-pit waste rock emplacement opportunities.	Ongoing from April 2018
	Emplacement of out-of-pit waste rock behind acoustic bunding during the Stratford East Open Cut evening and night-time operations (i.e. when in-pit dumping opportunities are not available).	Ongoing from November 2018
	Haulage of overburden from the Stratford East Open Cut to the Stratford Main Pit during daytime only.	
	Overburden emplacement from the Stratford East Open Cut in the Stratford Waste Emplacement to the east of a 10 m high acoustic bund to be installed on the eastern side of the Stratford Waste Emplacement.	
Noise and Weather Monitoring	Implementation of real-time noise monitoring at Stratford (Section 7.3).	Ongoing from April 2018
	Continuation of continuous weather monitoring (Section 7.5).	
	Implementation of a predictive meteorological forecasting system which will be used as part of a proactive management system and will work in conjunction with the real-time monitoring and management system. The predictive system will provide an alert for the appropriate personnel to review and manage the intensity of upcoming activities for the ensuing day as may be required (Section 7.5).	
	Quarterly attended rail noise monitoring at two locations (Craven and Wards River), including (Section 7.4).	
	Implementation of a noise monitoring site in the south-east quadrant of the SEP area. The final location of the noise monitoring site will be determined in consultation with the EPA and to the satisfaction of the Secretary of the DP&E.	Ongoing from November 2018
Private Residences	Implementation of reasonable and feasible acoustical mitigation at receivers (which may include measures such as enhanced glazing, insulation and/or air conditioning), in consultation with the relevant landowner, subject to a written request, or where noise monitoring shows noise levels which are 3 to 5 dBA above project-specific noise levels (Section 6.3).	As required following April 2018
Haul Roads	Installation of acoustic bunds.	During construction of new haul roads.

Source: SCPL (2013).

6.3 RECEIVER NOISE CONTROL

If required, as per Condition 2, Schedule 3 of Development Consent SSD-4966, SCPL will implement reasonable and feasible noise mitigation measures (such as double glazing, insulation, and/or air conditioning) at noise-affected receivers upon receipt of a written request (Section 4.1.3).

If required, as per Condition 1, Schedule 3 of Development Consent SSD-4966, SCPL will acquire the land outlined in Table 1 of Development Consent SSD-4966, upon the receipt of a written request (Section 4.1.2). SCPL will acquire the land in accordance with the procedures outlined in Conditions 5 and 6 of Schedule 4 of Development Consent SSD-4966.

In addition, as specified in the SEP Environmental Impact Statement (EIS), should noise monitoring indicate that noise levels are 3-5 dBA above project specific noise levels at surrounding receivers, in consultation with the landowner, SCPL will implement reasonable and feasible noise mitigation measures at the receiver.

6.4 RAIL TRANSPORT

In addition to the noise-control measures for the Stratford rail loop detailed in Section 6.2, the following measures have been implemented at the SMC to reduce noise associated with rail transport of coal:

- Existing locomotives were replaced by GL class locomotives, which are quieter than the existing DCM locomotives.
- Longer product coal trains (i.e. train lengths of up to 1,300 m long) were introduced to allow for the increased product coal production rates, while maintaining an average of 2.5 trains per day and a peak of five trains per day.

These trains will be approved to operate on the NSW rail network in accordance with the noise limits specified in ARTC's EPL 3142, as per Condition 5(d), Schedule 3 of Development Consent SSD-4966.

6.4.1 Train Scheduling

SCPL will ensure that trains are scheduled within the hours specified within Section 3.2 and that all train scheduling is in accordance with Condition 8, Schedule 2 of Development Consent SSD-4966, as specified in Section 3.3.

7 NOISE MONITORING PROGRAM

7.1 GENERAL REQUIREMENTS

The SMC noise monitoring program will comprise both attended and real-time monitoring, rail noise monitoring, meteorological forecasting, and equipment and sound power level monitoring. In accordance with Condition 5, Appendix 6 of Development Consent SSD-4966, noise monitoring will be undertaken in accordance with the relevant requirements for reviewing performance set out in the NSW INP.

The results of compliance attended monitoring (Section 7.2) will be used to assess compliance with relevant noise impact assessment criteria (Section 4.1.1). Attended monitoring will also be used to calibrate and validate the real-time noise monitoring results over time. Real-time noise monitoring results (Section 7.3) will be used for ongoing performance assessment and will assist in the implementation of pre-emptive management actions to avoid potential non-compliances.

Real-time and attended noise monitoring will be undertaken in the vicinity of the North Coast Railway to assess the ongoing noise performance of the product coal train over the life of the SMC (Section 7.4). In addition, meteorological monitoring will be conducted, including continuous monitoring of temperature inversions and predictive forecasting (Section 7.5), as well as annual assessments of equipment and plant sound power levels (Section 7.6).

A summary of noise monitoring sites for the SMC is provided in Table 8 below. Additionally, the frequency of monitoring undertaken for each monitoring round is outlined for different periods of the day (Table 8).

Table 8
Noise Monitoring Sites

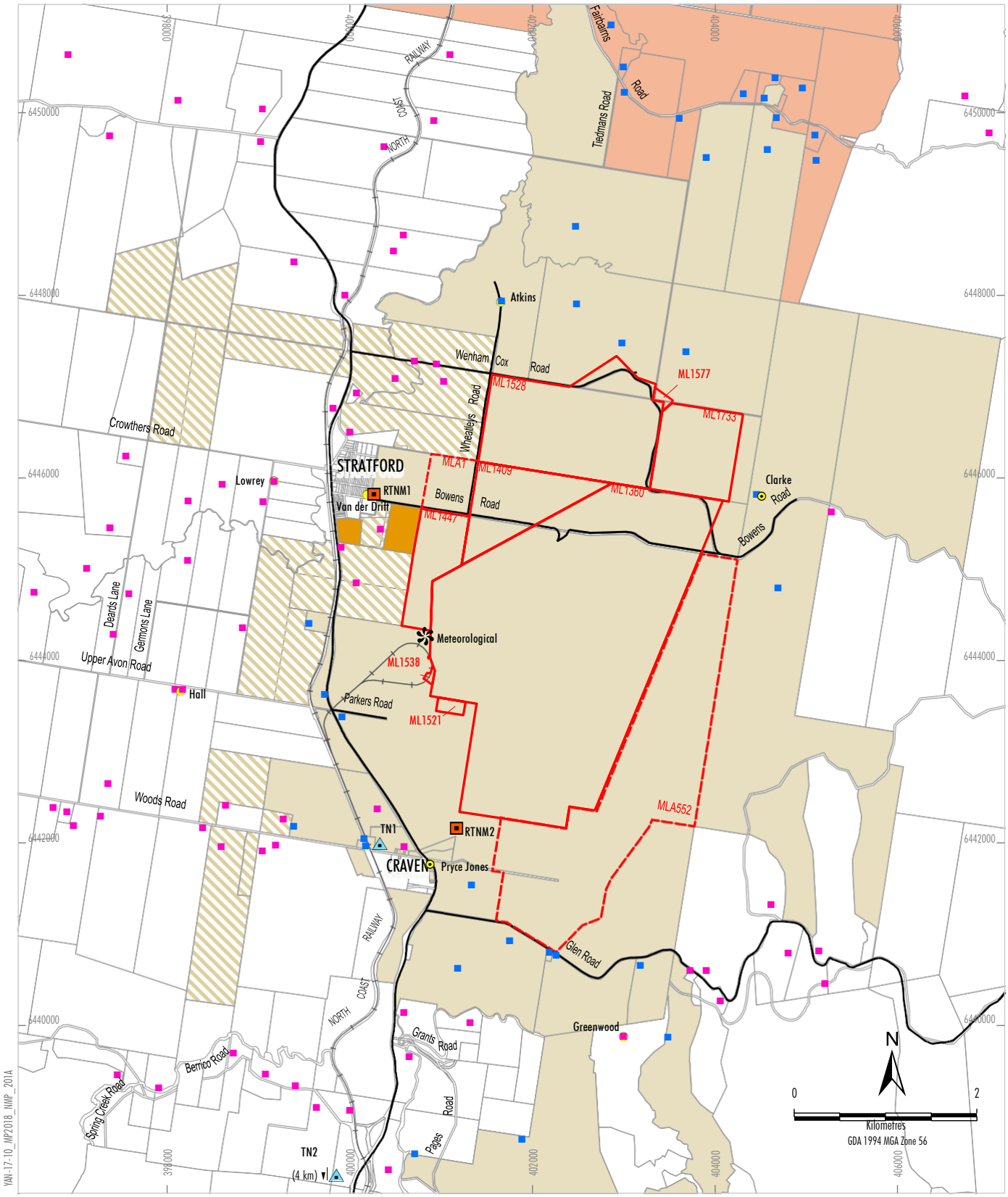
Site Name	Site Type
Atkins	Compliance Attended Site
Clarke	Compliance Attended Site
Hall	Compliance Attended Site
Lowrey	Compliance Attended Site
Pryce Jones	Compliance Attended Site
Van der Drift	Compliance Attended Site
Greenwood	Compliance Attended Site
RTNM1	Real-time Site and Attended Verification[1]
RTNM2	Real-time Site and Attended Verification[1]
TN1	Rail Noise Site[2]
TN2	Rail Noise Site[2]

Note:

[1] Attended noise monitoring will be conducted at real-time monitoring sites RTNM1 and RTNM2 to validate real-time monitoring results with attended monitoring results.

[2] As per rail noise monitoring undertaken for the Duralie Coal Mine.

The locations of the noise monitoring sites listed above are presented in Figure 3.



LEGEND

- Mining Lease Boundary
- Yancoal Owned Land
- GRL Owned Land or Under Option
- Private Landholders - Yancoal Agreement
- Crown Land
- Privately Owned Dwelling
- Resource Company Owned Dwelling
- Meteorological Station
- Compliance Attended Site
- Train Noise Site
- Real-time Noise Monitoring

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STRATFORD EXTENSION PROJECT

Noise Monitoring Sites

Source: Orthophoto - Yancoal (July 2014); LPI (2016); NSW Department of Planning & Environment (2017)

Figure 3

7.2 ATTENDED NOISE MONITORING

7.2.1 Purpose

The main aim of attended noise monitoring is to determine compliance with the criteria presented in Development Consent SSD-4966 (refer to Section 4.1.1). Results from verification attended noise monitoring will also be used to verify data collected from real-time noise monitoring.

7.2.2 Monitoring Locations

Attended noise monitoring will be conducted at representative locations for private receivers (refer Table 8 and Figure 3 for monitoring locations)**.**

The two verification attended monitoring sites have been sited next to the real-time noise monitoring sites (RTNM1 and RTNM2) and will be used to verify data collected from the real-time noise monitoring sites in accordance with Section 7.2.5.

7.2.3 Methodology

Attended noise monitoring during the day, evening and night periods will occur at each site monthly (i.e. at least 12 times in each calendar year) and in accordance with Australian Standard (AS) 1055:1997 *Acoustics – Description and Measurement of Environmental Noise* and the NSW INP.

In accordance with Condition 3, Appendix 6 of Development Consent SSD-4966, the results of the attended noise monitoring will be compared with the Development Consent noise criteria (refer to Section 4.1.1).

The monthly noise monitoring reports will be made publicly available on the Stratford Coal website (http://www.stratfordcoal.com.au/environment) in accordance with Condition 11, Schedule 5 of Development Consent SSD-4966. A summary of all monitoring results for each year will be reported in the Annual Review which will also be made available on the Stratford Coal website.

Measurement

Acoustic instrumentation used in attended monitoring will comply with AS 1259.2:1990 *Sound Level Meters* and carry current National Association of Testing Authorities or manufacturer calibration certificates. Instrument calibration will be conducted before and after each survey, with the variation in calibrated levels not to exceed ± 0.5 dBA.

The intrusive noise level ($L_{Aeq[15min]}$) contribution from operational activities will be quantified over a 15 minute measurement period. In addition, the overall levels of ambient noise (i.e. L_{Amax}, L_{A1}, L_{A10}, L_{A90}, L_{Amin} and L_{Aeq}) over the 15 minute period will be quantified and characterised.

Modifying factors from Section 5 of the NSW INP will be used where applicable. Tonality and low frequency will be assessed by analysis of the measured L_{Aeq} spectrum.

Recording

The following information will be recorded for each monitoring survey:

- operator's name;
- locations of attended noise instruments;
- recording intervals;
- meteorological conditions for each measurement location, including the wind speed recorded at microphone height as recorded by the operator, as well as a combination of graphs and tables presenting the weather conditions from the on-site meteorological station (including the presence and strength of any temperature inversions) for the entire survey period;
- statistical noise level descriptors together with notes identifying the principal noise sources;

- some operating conditions including train loading times together with mobile and ancillary equipment operation and predominant location; and
- instrument calibration details.

7.2.4 Compliance Assessment Protocol

As discussed in Section 7.2.1, the results of noise monitoring at the compliance attended monitoring sites will be compared against the relevant noise criteria (Section 4.1.1). The comparison will be undertaken following the exclusion of data where meteorological conditions are not relevant to the site in accordance with the NSW INP and conditions within Development Consent SSD-4966 (Section 4.1.6), as well as observations of non-mine (extraneous) noise by the person undertaking the attended noise monitoring program.

In the event of an exceedance of the noise criteria, an assessment will be conducted to determine if the exceedance is valid. This assessment will include:

- The timing of the exceedance.
- The location of the exceedance.
- The exclusion of non-mine related noise and noise from non-SMC mining activities (e.g. if the exceedance can be directly attributed to the SMC). This will include consideration of:
  - the methods and type of equipment being used at the SMC at the time of the exceedance and proximity to the locations at which the exceedance was recorded; and
  - the location of non-SMC mining activities (e.g. agricultural activities) and proximity to the locations at which the exceedance was recorded.
- The meteorological conditions at the time of the exceedance, including confirmation that meteorological conditions are relevant to apply to the noise criteria. Meteorological conditions where noise criteria are not relevant are detailed in Development Consent SSD-4966, as follows (Section 4.1.6):
  - wind speeds greater than 3 m/s at 10 m above ground level (Section 7.2.3);
  - temperature inversion conditions between 1.5 degrees Celsius per 100 m (°C/100 m) and 3°C/100 m and wind speed greater than 2 m/s (as measured by the on-site meteorological station [Section 7.5]); and
  - temperature inversion conditions greater than 3°C/100 m (as measured by the on-site meteorological station [Section 7.5]).

If the above assessment determines that a potential noise criteria exceedance is due to SMC -related noise during applicable meteorological conditions, then:

- the exceedance will be reported to DP&E and EPA in accordance with Section 10 of this NMP.
- a second reading will be undertaken at the location within 75 minutes; and
- the exceedance will be reported in the Monthly Environmental Monitoring Report and Annual Review.

If the second reading is also confirmed to exceed the relevant criteria, then:

- the sustained exceedance will be deemed to be a noise incident will;
- the noise incident will be reported to DP&E and EPA as a non-compliance in accordance with Section 10;
- follow up monitoring will be conducted at the location within one week of the recorded non-compliance; and
- the non-compliance and the outcome of the follow-up monitoring will be reported in the Monthly Environmental Monitoring Report and Annual Review.

A confirmed noise incident (i.e. sustained exceedance and non-compliance) as determined by attended noise monitoring will be deemed to be a breach of the noise criteria.

If the above assessment determines that a breach of the noise criteria has occurred, then the management strategies detailed in Sections 8 and 10 to help prevent recurrence will be implemented in an effort to reduce noise levels below the noise criteria.

7.2.5 Verification Assessment Protocol

Attended monitoring will be used to verify real-time noise monitoring. This comparison will be used to inform the continual calibration and validation of the real-time monitors, in order to improve the ability of the real-time monitors to indicate compliance and as a trigger for further attended monitoring.

The ongoing calibration of the real-time monitors to reflect the attended noise monitoring results will be the responsibility of the SCPL Environment and Community Superintendent (or delegate).

7.3 REAL-TIME NOISE MONITORING

7.3.1 Purpose

Real-time noise monitoring will be used as a noise management tool, and will not be used to assess compliance with noise criteria. This will involve the use of noise investigation triggers (i.e. performance indicators) for ongoing performance assessment and will assist in the implementation of pre-emptive management actions to avoid potential noise non-compliances.

7.3.2 Monitoring Location

Two real-time noise monitoring units are in use at the SMC. The monitors are strategically located at sites between the SMC and the villages of Stratford and Craven (Figure 3).

These locations have been chosen as they are representative locations for monitoring noise from the SMC's 24 hour/day activities on the Stratford and Craven villages respectively.

7.3.3 Methodology

The real-time noise monitoring equipment has the following capabilities:

- Recording of 15 minute statistical noise data.
- Continuous recording of real-time audio files.
- Recording of meteorological monitoring data (including wind speed, direction, temperature, humidity and rainfall).
- Production of daily reports, including:
  - 15 minute statistical data (L_{A10}, L_{A90});
  - $L_{Aeq(15\ minute)}$ and $L_{Aeq(period)}$ noise levels;
  - $L_{Aeq(15\ minute)}$ in 1/3 octave;
  - $L_{Aeq(15\ minute)}$ in the 12.5 to 630 Hertz (Hz) range; and
  - wind direction, wind speed, temperature, humidity and rainfall.

The monitors record noise levels 24 hours per day, seven days per week. A graphical summary of the previous 24 hours of noise levels is emailed to mine staff on a daily basis. The continuous recording also includes an audio function which allows the monitor to record audio of the noise signal. This audio information can be downloaded to assess whether the noise source is mine-related, noting there are numerous other noise sources (such as wind, traffic, machinery, animals and general non-mining anthropogenic activities, etc.) that may contribute to the recorded noise monitoring data.

Noise data will be processed to exclude data recorded during meteorological conditions that are not relevant to the site in accordance with Development Consent SSD-4966 (Section 4.1.6). The meteorological station (Section 7.5) will be used to determine these conditions, with the meteorological data recorded by the real-time noise monitors used as a back-up.

As outlined in Section 7.2.5, attended monitoring sites will be used to validate and where required progressively calibrate the real-time noise monitors.

Noise Investigation Triggers

The noise investigation triggers for the real-time noise monitoring sites are detailed in Table 9. If noise at the real-time monitoring location exceeds the trigger thresholds at either location, a SMS or radio message will be sent to the mobile phone of the on-site SCPL Environment and Community Superintendent (or delegate). The protocol for responding to situations where the triggers are exceeded is described in Section 7.3.4 below.

Table 9
Real-time Response Trigger Levels

Time Period	Location	Green	Amber	Red
6 pm – 10 pm	Stratford Village	Low pass noise >32 dBA for 4 consecutive 15 minute periods	Low pass noise >34 dBA for 2 consecutive 15 minute periods	Low pass noise >36 dBA for 2 consecutive 15 minute periods
	Craven Village	Low pass noise >37 dBA for 4 consecutive 15 minute periods	Low pass noise >39 dBA for 2 consecutive 15 minute periods	Low pass noise >41 dBA for 2 consecutive 15 minute periods
10 pm – 6 am	Stratford Village	Low pass noise >31 dBA for 4 consecutive 15 minute periods	Low pass noise >33 dBA for 2 consecutive 15 minute periods	Low pass noise >35 dBA for 2 consecutive 15 minute periods
	Craven Village	Low pass noise >37 dBA for 4 consecutive 15 minute periods	Low pass noise >39 dBA for 2 consecutive 15 minute periods	Low pass noise >41 dBA for 2 consecutive 15 minute periods

Notes:

- For all triggers wind speed is <3 m/s and there is no rainfall.
- Triggers are subject to review and change in consideration of attended verification monitoring data
- Triggers not considered between 6 - 7 am due to influence of traffic on the Bucketts Way.

7.3.4 Noise Monitoring Response Protocol

The implementation of the real-time noise monitoring protocol will be the responsibility of the SCPL Environment and Community Superintendent (or delegate).

Response to Noise Investigation Trigger

The protocol for responding to noise investigation triggers is outlined in Table 10. SMS alarms will be directed to key staff/operational personnel as a result of noise levels above triggers. The adequacy of these alarms will be reviewed on an annual basis with any changes reported in the Annual Review and subsequent revisions of this NMP.

Table 10
Real-time Response Management Actions

Colour	Management/Control Action	Responsibility
Green	• Confirm that the prevailing weather conditions are relevant in accordance with Development Consent SSD-4966 and EPL 5161 and the noise criteria apply. • Review the audio to determine noise source. Record observations. • If SCPL noise is audible: – Monitor changes in noise levels. – Record management strategies. This includes details of investigation, type of response (if any required), real time monitoring results and actions taken.	Environment and Community Superintendent
Amber	• Confirm that the prevailing weather conditions are relevant in accordance with Development Consent SSD-4966 and EPL 5161 and the noise criteria apply. • Review the audio to determine noise source. Record observations. • If SCPL noise is audible: • The SCPL Environment and Community Superintendent (or delegate) alerts the Operations Manager of the noise observations. – Review noise generating activities and make preparations for moving into a protected area or temporarily shutting down equipment if noise levels remain elevated. – Review predicted weather conditions to identify if noise enhancing conditions are forecast for the rest of the shift. Review weather predictions to confirm if forecast has changed. – Monitor changes in noise levels. – Record management strategies. This includes details of investigation, type of response (if any required), real time monitoring results and actions taken.	Environment and Community Superintendent
Red	• Confirm that the prevailing weather conditions are relevant in accordance with Development Consent SSD-4966 and EPL 5161 and the noise criteria apply. • Review the audio to determine noise source. Record observations. • . If SCPL noise is audible: – The SCPL Environment and Community Superintendent (or delegate) alerts the Operations Manager of the noise observations. – Implement mitigation measures such as moving equipment into protected areas or temporarily shutting down equipment. • Monitor changes in noise levels against operational changes: – Review predicted weather conditions to identify if noise enhancing conditions are forecast for the rest of the shift. Review weather predictions to confirm if forecast has changed. • Recording of management strategies. This includes details of investigation, type of response (if any required), real time monitoring results and actions taken.	Environment and Community Superintendent

[1] Forecasting model described in Section 7.5.

7.4 RAIL NOISE MONITORING

Rail noise monitoring will continue to be undertaken along the North Coast railway consistent with the rail monitoring locations in the DCM Noise Management Plan.

This monitoring will constitute quarterly attended noise monitoring to be undertaken at existing locations TN1 (Craven) and TN2 (Wards River), as shown on Figure 3. Rail noise monitoring and reporting against the rail noise performance criteria described in Section 4 will be undertaken.

7.5 METEOROLOGICAL MONITORING AND FORECASTING

Meteorological monitoring will continue to be undertaken at the on-site weather station (Figure 3) and meteorological towers in accordance with Section 5.4. As described in Section 5.4, meteorological data collected at the SMC includes:

- daily rainfall;
- continuous wind speed and direction;
- daily temperature statistics (e.g. average, maximum and minimum);
- relative humidity; and
- continuous temperature lapse rate (measured at two 10 m high meteorological towers located at an elevation differential of approximately 50 m or an alternative method which calculates the real-time continuous lapse rate no more favourably to the data that will be obtained by the use of a 60 m tower).

In accordance with Condition 5(b), Schedule 3 of Development Consent SSD-4966, SCPL will operate the meteorological monitoring system to guide the day-to-day planning of mining operations, as described below.

Adverse meteorological conditions under which the noise criteria in Development Consent SSD-4966 do not apply are outlined in Section 4.1.6. The SCPL Environmental and Community Superintendent (or delegate) will regularly monitor meteorological results from the meteorological monitoring system and will record and make available on the Stratford Coal website when exemptions from the noise criteria due to meteorological conditions have occurred (Section 9.2). Where adverse meteorological conditions are found to be currently occurring at the SCM, the Environmental and Community Superintendent (or delegate) will facilitate operational changes to minimise noise impacts during the adverse period as required (i.e. as informed by real-time monitoring and associated trigger levels). The Environment and Community Superintendent (or delegate) will record the specific management measures used during the adverse meteorological conditions to minimise the noise impacts of the mine (Section 9.2).

A meteorological forecasting system (forecasting model) will be used at the SMC to predict meteorological conditions for the coming day to determine, one day in advance, where the risk of noise-enhancing meteorological conditions may occur (e.g. based on wind speed, direction and atmospheric stability).

Predictive meteorological forecasting information will be available at the start of every operational shift to inform the need for any control of the locations of major mobile equipment (i.e. to maintain compliance with Development Consent SSD-4966 noise criteria). The predictive meteorological forecasting system will work in conjunction with the real-time monitoring system, providing an alert for the appropriate personnel to review the real-time data and manage the intensity of activities for that day, increase controls (e.g. gear restriction) or limit activity to various areas of the site.

7.6 SOUND POWER LEVEL MONITORING

Sound power level monitoring will continue to be conducted annually at the SMC.

8 CONTINGENCY PLAN

In the event that noise criteria detailed in Section 4.1.1 are considered to have been breached (i.e. a confirmed non-compliance), as per the Protocol described in Section 7.2.4, SCPL will implement the following Contingency Plan:

- The breach of the noise criteria will be reported to the Environment and Community Superintendent (or delegate) within 24 hours of assessment completion.
- The Environment and Community Superintendent (or delegate) will report the likely breach to the Operations Manager immediately.
- SCPL will report the breach as a non-compliance to the EPA and the DP&E as soon as practicable (i.e. once confirmed as a noise non-compliance and within 7 days of assessment completion).

  SCPL will identify an appropriate course of action with respect to the identified impact(s), in consultation with DP&E, as necessary. For example contingency measures, such as, but not limited to, those described in Section 8.1 of this NMP.
- SCPL will submit the proposed course of action to the DP&E for approval.
- SCPL will implement the approved course of action to the satisfaction of the DP&E.

8.1 POTENTIAL CONTINGENCY MEASURES

Potential contingency measures will be reviewed during revisions of this NMP. Key potential contingency measures to be implemented following criteria verified and reported noise non-compliance may include the following:

- SCPL will notify the affected landholder or tenant (for privately-owned property) of the non-compliance and provide them with regular noise monitoring results, until the results show that the SMC is complying with the noise criteria.
- SCPL will complete a review of noise management actions (including real-time noise triggers), meteorological forecasting, equipment sound power levels, and the noise model as appropriate to determine the potential for additional noise controls. Where such controls are deemed to be reasonable and feasible then these will be implemented.

9 ANNUAL REVIEW AND IMPROVEMENT OF NMP

9.1 ANNUAL REVIEW

In accordance with Condition 4, Schedule 5 of Development Consent SSD-4966, SCPL will conduct an Annual Review of the environmental performance of the SMC by the end of March each year, or other timing as may be agreed by the Secretary of the DP&E.

The Annual Review will specifically address the following aspects of Condition 4, Schedule 5, which are directly relevant to noise management:

- include a comprehensive review of the monitoring results and complaints records for the SMC over the previous calendar year, including a comparison of these results against the:
  - relevant statutory requirements, limits or performance measures/criteria;
  - monitoring results of previous years; and
  - relevant predictions in the SEP EIS;
- identify any non-compliance over the past year with relevant noise criteria or operating conditions, and describe what actions were (or are being) taken to ensure compliance;
- identify any trends in the monitoring data over the life of the SMC;
- identify any discrepancies between the predicted and actual impacts of the SMC , and analyse the potential cause of any significant discrepancies; and
- describe what measures will be implemented over the next year to improve the environmental performance of the SMC.

The Annual Review will be made publicly available on the Stratford Coal website, in accordance with Condition 11, Schedule 5 of Development Consent SSD-4966.

9.2 NMP REVIEW AND UPDATE

In accordance with Condition 5, Schedule 5 of Development Consent SSD-4966, this NMP will be reviewed to the satisfaction of the Secretary of the DP&E within three months of the submission of:

(a) an Annual Review under Condition 4, Schedule 5 of Development Consent SSD-4966;

(b) an incident report under Condition 7, Schedule 5 of Development Consent SSD-4966;

(c) an audit report under Condition 9, Schedule 5 of Development Consent SSD-4966; or

(d) any modification to the conditions of Development Consent SSD-4966.

Where this review leads to revisions of this NMP, within 4 weeks of the review, the revised NMP will be submitted for the approval of the Secretary of the DP&E. The revision status of this NMP is indicated on the title page of each copy.

This NMP will be made publicly available on the Stratford Coal website in accordance with Condition 11, Schedule 5 of Development Consent SSD-4966. A hard copy of the NMP will also be kept at the SMC. The noise monitoring program requirements of this NMP will be reviewed by DP&E in light of data collected during the early years of its implementation. This may result in changes to noise monitoring locations, and frequency of noise sampling.

Additionally, in accordance with Condition 8, Schedule 3 of Development Consent SSD-4966, SCPL will record and make the following available on its website:

a) when the real-time monitoring system detects any potential exceedance of noise limits (Section 7.3.3);

b) when exemptions from noise limits due to meteorological conditions have occurred (Section 7.5); and

c) the specific management measures that were undertaken when either a) or b) above have occurred.

SCPL will facilitate the regular review of the above information by the SMC Community Consultative Committee.

In accordance with Condition 6(d), Schedule 3 of Development Consent SSD-4966, validation of the noise model for the SMC will occur every two years with the first validation to occur in June 2019.

9.3 NIGHT-TIME NOISE COMPLIANCE REVIEW

In accordance with Condition 7, Schedule 3 of Development Consent SSD-4966, within 2 years of the commencement of night-time mining operations at the SMC, and every 2 years thereafter, the SCPL will engage an independent acoustic expert to undertake a review of compliance with the relevant conditions of consent for night-time operations, to the satisfaction of the Secretary of the DP&E.

10 REPORTING AND MANAGEMENT PROTOCOLS

In accordance with Condition 3, Schedule 5 of Development Consent SSD-4966, SCPL has developed protocols for managing and reporting the following:

- incidents;
- complaints;
- non-compliances with statutory requirements; and
- exceedances of the impact assessment criteria and/or performance criteria.

These protocols are described in detail in the SMC Environmental Management Strategy. The management of exceedances of performance criteria is detailed in Sections 7 and 8 of this NMP.

11 REFERENCES

Duralie Coal Pty Ltd, (2012) *Duralie Coal Mine Noise Management Plan.*

Environment Protection Authority (2013) *Rail Infrastructure Noise Guidelines*.

Environmental Protection Authority (2000) *NSW Industrial Noise Policy*.

SLR Consulting Pty Ltd (2012) *Stratford Extension Project – Noise and Blasting Assessment.*

SLR Consulting Pty Ltd (2016) *Stratford Coal Pty Ltd Quarterly Compliance Noise Monitoring November 2016.*

SLR Consulting Pty Ltd (2017a) *Stratford Coal Pty Ltd Quarterly Compliance Noise Monitoring April 2017.*

SLR Consulting Pty Ltd (2017b) *Stratford Coal Pty Ltd Quarterly Compliance Noise Monitoring July 2017.*

Stratford Coal Pty Ltd (2013) *Stratford Extension Project Environmental Impact Statement.*

Stratford Coal Pty Ltd (2016) *Stratford Mining Complex Annual Review.*

Stratford Coal Pty Ltd (2017) *Stratford Mining Complex Noise Management Plan*.

Vipac Engineers and Scientists (2016a) *Stratford Coal Pty Ltd Environmental Quarterly Survey 2016 June Compliance Survey.*

Vipac Engineers and Scientists (2016b) *Stratford Coal Pty Ltd Environmental Quarterly Survey 2016 September Compliance Survey.*