APPENDIX 14

Noise Impact Assessment

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GLENCORE

GLENDELL CONTINUED OPERATIONS PROJECT

Noise Impact Assessment

FINAL

November 2019

GLENCORE

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Noise Impact Assessment

FINAL

Prepared by
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on behalf of
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Glossary

Abbreviation	Description
1/3 Octave	Single octave bands divided into three parts.
Octave	A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.
ABL	Assessment background level - A single-figure background noise level representing each assessment period – day, evening and night (that is, three assessment background levels are determined for each 24 hour period of the monitoring period). It is determined by taking the lowest 10th percentile of the L_{90} level for each assessment period.
Ambient Noise	The noise associated with a given environment. Typically, a composite of sounds from many sources located both near and far where no particular sound is dominant.
Amenity Noise Level	Recommended noise levels scaled to reflect the perceived differential expectations and ambient noise environments of rural, suburban and urban communities for sensitive receivers.
Assessment Background Level (ABL)	The single-figure background level representing each assessment period: day, evening and night (that is, three assessment background levels are determined for each 24-hour period of the monitoring period). Its determination is by the methods described in Fact Sheet B.
A Weighting	A standard weighting of the audible frequencies designed to reflect the response of the human ear to noise.
dB(A), dBA	Decibels A-weighted.
dB(C), dBC	Decibels C-weighted.
dB(Z), dB(L)	Decibels Linear or decibels Z-weighted.
Day	The period from 7 am to 6 pm Monday to Saturday or 8 am to 6 pm on Sundays and public holidays
Decibel (dB)	The units of sound level and noise exposure measurement where a step of 10 dB is a ten-fold increase in intensity or sound energy and actually sounds a little more than twice as loud.
Evening	Refers to the period from 6 pm to 10 pm.
Hertz (Hz)	The measure of frequency of sound wave oscillations per second - 1 oscillation per second equals 1 hertz.
LA10	The percentile sound pressure level exceeded for 10% of the measurement period with 'A' frequency weighting calculated by statistical analysis. Typically used to assess the impact of an existing operation on a receiver area and is referred to as the cumulative noise levels at the receiver attributable to the noise source.
LA90	Background Noise Level. The percentile sound pressure level exceeded for 90% of the measurement period with 'A' frequency weighting calculated by statistical analysis.
LAmax	The maximum of the sound pressure levels recorded over an interval of 1 second.
LA1,1minute	The measure of the short duration high-level noises that cause sleep arousal. The noise level is measured as the percentile sound pressure level that is exceeded 1% of measurement period with 'A' frequency weighting calculated by statistical analysis during a measurement time interval of 1 minute.

Abbreviation	Description
LAeq,t	Equivalent continuous sound pressure level - The value of the sound pressure level of a continuous steady noise that, a measurement interval of time (t), has the same mean square sound pressure as the sound under consideration whose level varies with time. Usually measured in dB with 'A' weighting.
LAn	Percentile level - A measure of the fluctuation of the sound pressure level which is exceeded 'n' percent of the observation time.
Night	The period between 10 am and 7 pm
Project Noise Trigger Levels (PNTL)	Target noise levels for a particular noise-generating facility. They are based on the most stringent of the project intrusiveness noise level or the project amenity noise level.
Project Intrusive Noise Levels	Refers to noise that intrudes above the background level by more than 5 decibels.
Receiver	The noise-sensitive land use at which noise from a development can be heard.
Rating Background Noise level (RBL)	The overall single figure background level representing each assessment period over the whole monitoring period determined by taking the median of the ABLs found for each assessment period.
Sleep Disturbance	Awakenings and disturbance to sleep stages.
Sound Pressure Level (dBA)	The basic measure of noise loudness. The level of the root-mean-square sound pressure in decibels given by: $SPL = 10.\log10\ (p/po)^2$ where p is the rms sound pressure in pascals and po is the sound reference pressure at 20 μPa db.
Sound Power Level	A measure of the energy emitted from a source as sound and is given by: $SWL = 10.\log10\ (W/W_o)$ where W is the sound power in watts and W_o is the sound reference power at 10^{-12} watts.
Temperature Inversion	An atmospheric condition in which temperature increases with height above the ground.

1.0 Introduction

1.1 Project background

The Glendell Mine forms part of the Mount Owen Complex in the Hunter Coalfields in the Upper Hunter Valley of New South Wales (NSW), approximately 20 kilometres (km) north-west of Singleton, 24 km south-east of Muswellbrook and to the north of Camberwell, (refer to **Figure 1.1**). The Mount Owen Complex is owned by subsidiaries of Glencore Coal Pty Limited (Glencore). In addition to the Glendell Mine, the Mount Owen Complex comprises mining operations at the North Pit and Bayswater North Pit. The Mount Owen Complex also includes a coal handling and preparation plant (CHPP) and coal transport infrastructure.

The Glendell Continued Operations Project (the Project) is an extension of open cut mining operations immediately to the north of the existing Glendell Mine (refer to **Figure 1.2**). The Project would extend the life of the Glendell Mine to approximately 2044 and allow for the recovery of approximately 135 million tonnes (Mt) of run-of-mine (ROM) coal.

The key features of the Project include:

- extension of open cut mining to the north of the existing Glendell Mine until 2044
- extraction of approximately 135 Mt of ROM coal
- continued integration of the mine with the wider Mount Owen Complex, including the use of the Mount Owen CHPP, rail loop and associated infrastructure for ROM coal processing and product coal transport
- demolition of the existing Glendell Mine Infrastructure Area (MIA) and the construction and use of a new MIA
- realignment of a section of Hebden Road
- realignment of the lower reach of Yorks Creek
- relocation of Ravensworth Homestead
- other ancillary infrastructure works such as the construction of a Heavy Vehicle Access Road, and
- progressive rehabilitation of the site.

This Noise Impact Assessment (NIA) has been prepared by Umwelt (Australia) Pty Limited (Umwelt) to form a component of the Environmental Impact Statement (EIS) for the Project.

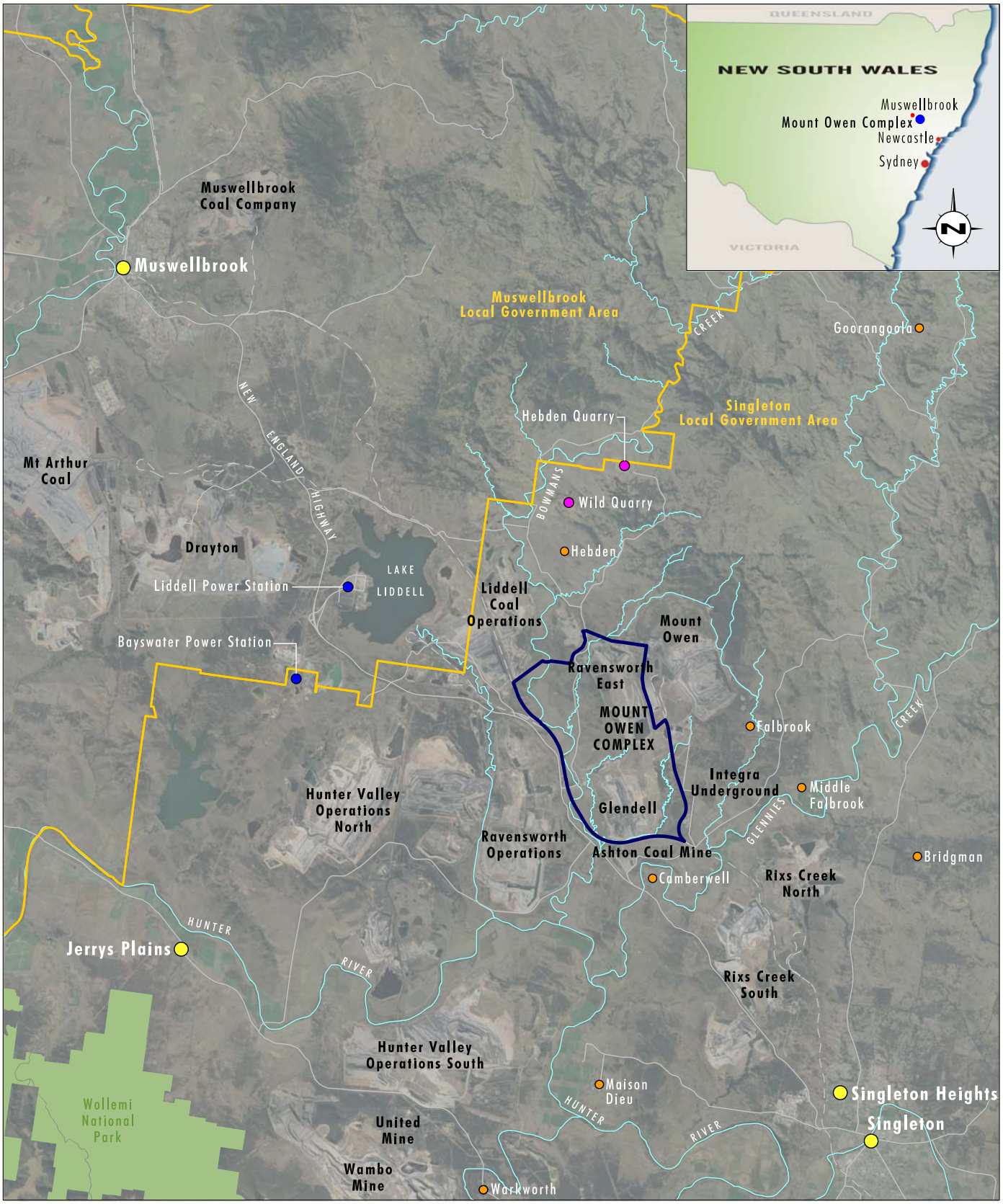


Image Source: Google Earth (2018)
Data Source: Glencore (2019), OEH (2018)

0 2.5 5.0 10km

Legend

- Project Area
- Local Government Area Boundary
- National Park
- Road
- Railway
- Drainage Line
- Towns
- Village/Localities
- Power Stations
- Quarry

FIGURE 1.1

Project Locality

File Name (A4): R13/4166_558.dgn
20191121 15.43

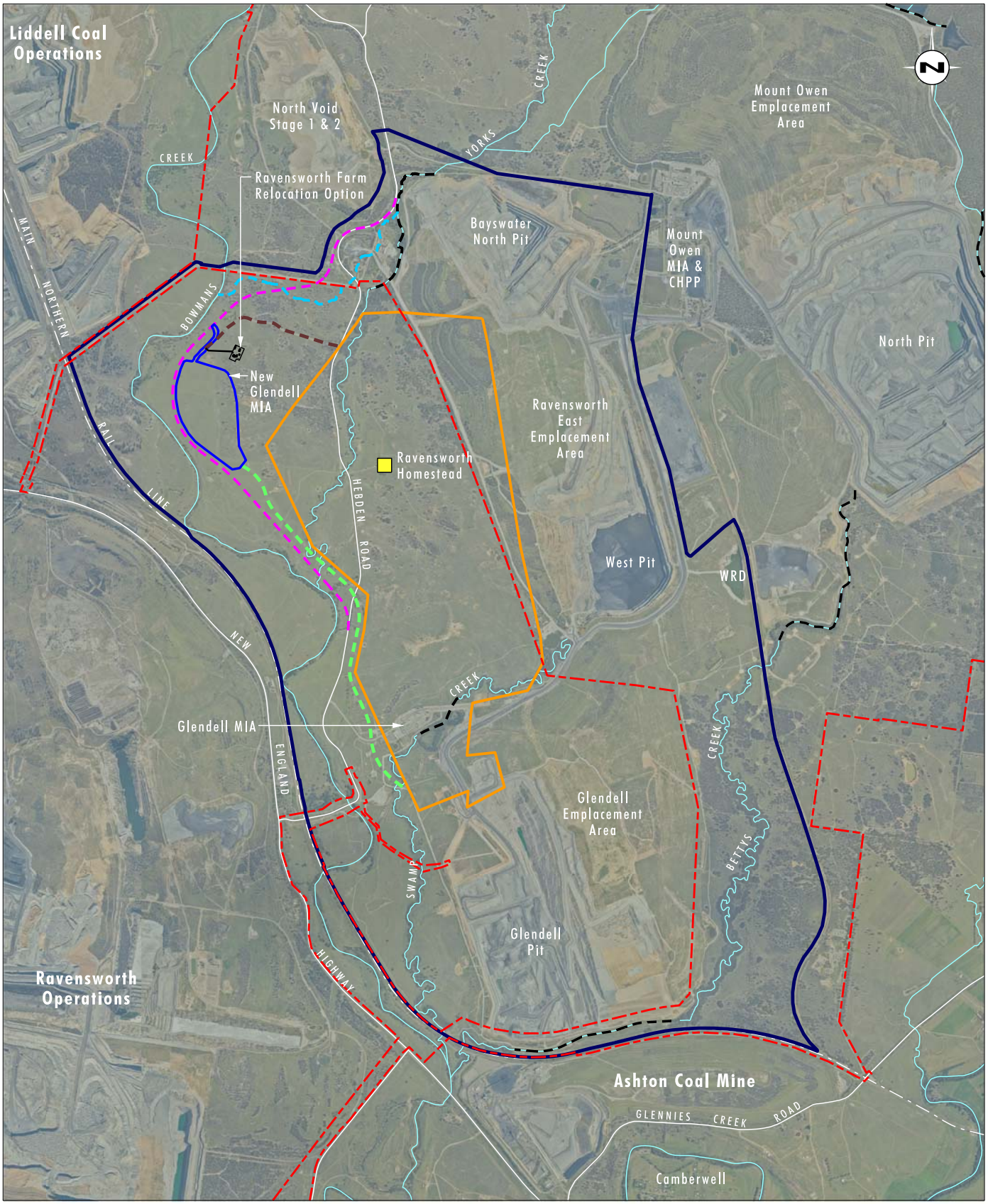


Image Source: Glencore (Dec 2018)
Data Source: Glencore (2019)
Notes: Ravensworth Homestead to be relocated, Mount Owen Consent Boundary assumes Narama Pipeline Modification is approved

0 0.5 1.0 2.0km

Legend

- Project Area
- Glendell Pit Extension
- Mount Owen Consent Boundary
- Ravensworth Homestead
- Existing Creek Diversion
- Construction Access Road

Project Features:

- New Glendell MIA
- Heavy Vehicle Access Road
- Yorks Creek Realignment
- Hebden Road Realignment

FIGURE 1.2

Glendell Continued Operations Project Key Project Features

File Name (A4): R13/4166_559.dgn
20191128 16.03

1.2 Existing approvals

The Glendell Mine currently operates under development consent DA 80/952 (Glendell Consent). The processing of coal mined from the Glendell Pit is regulated by development consent SSD-5850 (Mount Owen Consent). The following sections provide further detail on each development consent.

1.2.1 Glendell Consent

The Glendell Consent regulates the mining of coal from the Glendell Pit and the rehabilitation of the mining area. The Glendell Consent (as modified) contains comprehensive environmental performance conditions, including noise considerations. Relevant noise conditions, including parts of Conditions 1 to 8 in Schedule 3 – Environmental Performance Conditions, are reproduced below.

ACQUISITION OF AFFECTED PROPERTIES

Acquisition Upon Request

1. Upon receiving a written request for acquisition from the owner of the land listed in Table 1, the Applicant must acquire the land in accordance with the procedures in conditions 9-11 of schedule 4.

Table 1: Land subject to acquisition upon request

37a and 37b – Richards	*Lot 13 DP 6830 – Gardner*
61 – Donellan	*Lot 12 DP 6830 – Noble*
62 – Noble (b)	*Lot 1 DP 770733 – Noble*
65 – Noble	

Note: Lands titled 62 – Noble (b), 65 – Noble, Lot 13 DP 6830 – Gardner, Lot 12 DP 6830 – Noble and Lot 1 DP 770773 – Noble have been acquired and are now mine-owned.

NOISE

Noise Impact Assessment Criteria

2. The Applicant must ensure that the noise generated by the development does not exceed the noise impact assessment criteria in Table 2 at any residence on privately-owned land, or on more than 25% of any privately-owned land.

Table 2: Noise impact assessment criteria dB(A)

Land Number/Receiver	***Day/Evening/Night LAeq(15 min)***	***Night LA1(1 min)***
Camberwell Village A		
30 – Ninness *33 – Peachey* *37c – Richards* *53 – Yates*	*42*	*45*
11 – Chisholm *22b – Turner* *35 – Pugh*	*41*	*45*
Other privately-owned land in Camberwell Village A	*40*	*45*
Camberwell Village B		
20 – Foord *21a & 21b – Merchant* *38 – Roberton* *47 & 50 – Vollebregt & Clarke*	*42*	*45*
6 – Bennett	*40*	*45*

Land Number/Receiver	*Day/Evening/Night LAeq(15 min)*	*Night LA1(1 min)*
24 – Lopes		
4 – Standing *40 – Smiles*	*39*	*45*
32 – Green *44 – Stapleton*	*38*	*45*
Other privately-owned land in Camberwell Village B	*37*	*45*
Camberwell Village C		
27 – McInerney	*40*	*45*
31 – Olofsson	*38*	*45*
Other privately-owned land in Camberwell Village C	*35*	*45*
Other privately-owned land		
37a & 37b – Richards *83 – Westcott* *110 – Hall*	*38*	*45*
34 – Poulton *87 – Fairfull*	*37*	*45*
9 – Burgess *18 – Hall* *45 & 46 – Tisdell*	*36*	*45*
All other privately-owned land	*35*	*45*
Camberwell Hall and St Clements Church	*40*	-

However, if the Applicant has a written negotiated noise agreement with any landowner of the land listed in Table 2, and a copy of this agreement has been forwarded to the Department and EPA, then the Applicant may exceed the noise limits in Table 2 in accordance with the negotiated noise agreement.

Notes:

- *The land numbers and receiver references are as described in the EA (Mod 2), and shown on the figures in Appendix 4.*
- *Lands titled 30 – Ninness, 33 – Peachey, 37c – Richards, 53 – Yates, 11 – Chisholm, 35 – Pugh, 20 – Foord, 21a & 21b – Merchant, 38 – Roberton, 6 – Bennett, 24 – Lopes, 4 – Standing, 40 – Smiles, 32 – Green and 44 – Stapleton have been acquired and are now mine-owned.*
- *Noise generated by the development is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy (as may be updated from time-to-time).*

Since the Glendell Consent was approved, a number of private properties identified in the Glendell Consent have been acquired; these properties have been highlighted in grey in the extract from the Glendell Consent above (Table 2). It should also be noted that the current Glendell Consent incorrectly identifies two properties as being acquired (37c Richards, 24 Lopes), these properties are still privately owned.

The identification numbers assigned to the private properties in the Glendell Consent differs to that used in the more recent Mount Owen Consent (refer to **Section 1.2.2**). As the Glendell and Mount Owen operations operate as a complex, the numbering of receivers in this assessment has aligned with the identification numbers used in the Mount Owen Consent.

This is discussed further in **Section 3.2**.

1.2.2 Mount Owen Consent

The Mount Owen Consent regulates the processing and transportation of coal mined from the Glendell Pit. The Mount Owen Consent also regulates mining at the North Pit and Bayswater North Pit, and associated activities. Relevant noise conditions from the Mount Owen Consent are provided below:

ACQUISITION UPON REQUEST

1. *Upon receiving a written request from the owner of any land listed in Table 1, the Applicant must acquire the land in accordance with the procedures in conditions 5 and 6 of Schedule 4.*

Table 1: Land subject to acquisition upon request

Acquisition Basis	***Land***
Air Quality	*105b, 114, 115, 116[e], 133[c], 4, 112, 143[d], 150[d], 152[d], 154[d], 155[d], 156[d], Lot 4 DP 1166047[d], Lot 5 DP 1166047[d], Lot 175 DP 1002770[d] and Lot 106 DP 855187[d]*
Noise	*21, 22[e], 23*

Note: [a] *The location of the land referred to in Table 1 is shown on the figure in Appendix 3.*

[b] *The Applicant is only required to acquire property 105, if its acquisition is not reasonably achievable under the approval for the Rix's Creek North open cut mine.*

[c] *The Applicant is only required to acquire Lot 31 DP6842 and Lot 2 DP1175728 within property 133.*

[d] *The Applicant is only required to acquire the identified land if acquisition is not reasonably achievable under the development consents for the Ashton South East Open Cut Project (MP 08_0182), the Glendell Open Cut Coal Mine (DA 80/952), Ravensworth Operations Project (MP 09_0176), Rix's Creek South Continuation of Mining Project (SSD 6300) or the Rix's Creek North Open Cut Project (MP 08_0102).*

[e] *The identified land has been acquired by the Applicant.*

ADDITIONAL MITIGATION UPON REQUEST

2. *Upon receiving a written request from the owner of any residence listed in Table 1 or Table 2, the Applicant must implement additional mitigation measures at the residence, in consultation with the landowner, in respect of the basis on which that residence is identified in Table 1 or Table 2.*

   These measures must be reasonable and feasible, and directed towards reducing the air quality and/or noise impacts of the development on the residence. In the case of air quality, mitigation may include measures such as air filters, a first flush drainage system and/or air conditioning. In the case of noise, mitigation may include measures such as double-glazing, insulation and/or air conditioning.

   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 mitigation upon request

Mitigation Basis	***Residence***
Noise	*13, 19, 93*

Note: The location of the land referred to in Table 2 is shown on the figure in Appendix 3

NOISE

Construction – Hebden Road and Rail Line Works

3. *The Applicant must manage noise from construction activities associated with the Hebden Road upgrade works and additional rail line, in accordance with the noise management levels defined in Table 2 of the Interim Construction Noise Guideline.*

The Applicant must also ensure that the combined operational and construction noise from the development does not exceed a level of 5 dB(A) above the daytime operational LAeq(15min) noise criteria in Table 3 during Standard Construction Hours (7 am to 6 pm, Monday to Friday; and 8 am to 1 pm on Saturdays) and does not exceed the evening or night time operational LAeq(15min) noise criteria in Table 3, except where an alternative temporary limit has been approved by the Secretary for specific works or where the Applicant has an agreement with the owner/s of the relevant residence/land to generate higher noise levels, and the Applicant has advised the Department in writing of the terms of this agreement.

4. *In seeking an alternative temporary construction noise limit above the levels identified in condition 3, the Applicant must submit a Construction Noise Work Protocol to the Secretary for approval, prior to undertaking the nominated construction works. This protocol must:*

   (a) be prepared to the satisfaction of the Secretary;

   (b) be prepared in consultation with the EPA and any landowners who may be affected by the proposed variation; and

   (c) address the relevant requirements of the Interim Construction Noise Guideline.

   The Applicant may only undertake construction activities that require a Construction Work Noise Protocol, in accordance with an approved Construction Noise Work Protocol as approved from time to time by the Secretary.

Noise Criteria

5. *The Applicant must ensure that the noise generated by the development (including rail movements along the Mount Owen Rail Loop, but excluding the construction works specified in condition 3), does not exceed the criteria in Table 3 at any residence on privately-owned land.*

Table 3: Noise criteria dB(A)

Residence	***Day/Evening/Night LAeq(15 min)***	***Night LA1(1 min)***
41, 48	*36 / 35 / 35*	*45*
91	*37 / 37 / 36*	*45*
14, 92	*37 / 37 / 37*	*45*
10, 11	*37 / 37 / 37*	*46*
13	*38 / 38 / 38*	*45*
12, 94, 95, 112	*38 / 38 / 38*	*46*
111	*39 / 39 / 36*	*45*
19	*39 / 39 / 39*	*45*
93	*40 / 40 / 40*	*46*
21, 22, 23	*41 / 41 / 41*	*45*
122	*42 / 42 / 42*	*50*
All other residences Area 4 – South	*37 / 37 / 36*	*46*
All other residences Area 4 – North and all other residences Area 5	*37 / 37 / 35*	*45*
All other residences Area 6	*40 / 40 / 40*	*50*
All other residences Area 7	*40 / 40 / 38*	*48*
All other residences Area 8 – East	*39 / 39 / 35*	*45*
All other residences Area 8 – West	*44 / 44 / 42*	*52*
All other residences Area 9	*48 / 48 / 43*	*53*
Other privately-owned residences	*35 / 35 / 35*	*45*

Note: The location of the land referred to in Table 3 is shown on the figure in Appendix 3.

Noise generated by the development is to be measured in accordance with the relevant requirements of the NSW Industrial Noise Policy (as may be updated from time-to-time). Appendix 4 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 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.

Noise Operating Conditions

6. The Applicant must:

(a) implement all reasonable and feasible mitigation measures, to minimise the construction, operational, low frequency, road and on-site rail noise of the development, with a particular focus on managing noise impacts during adverse weather conditions;

(b) identify any mobile plant or equipment (other than light vehicles) that will operate in noise sensitive areas (i.e. areas with the potential to generate increased noise at privately-owned residences, such as areas near the boundary of the site or elevated land/overburden emplacements) and ensure that this mobile plant or equipment is fitted with reasonable and feasible noise attenuation within 12 months of commencing development under this consent;

(c) 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;

(d) minimise the noise impacts of the development during meteorological conditions when the noise limits in this consent do not apply (see Appendix 4);

(e) ensure that the Mount Owen Rail Loop is only accessed by locomotives that are approved to operate on the NSW rail network in accordance with the noise limits in ARTC's EPL;

(f) use reasonable endeavours to ensure that rolling stock is selected to minimise noise;

(g) use its best endeavours to co-ordinate noise management with nearby mines (ie. Glendell, Integra Underground and Rix's Creek North Mines) to reasonably and feasibly minimise cumulative noise impacts; and

(h) engage a suitably qualified and experienced person to carry out regular attended monitoring to determine whether the development is complying with the relevant conditions of this consent.

Note: Monitoring under this consent is not required at all residences and the use of representative monitoring locations can be used to demonstrate compliance with criteria, if agreed to by the Secretary.

Noise Management Plan

7.The Applicant must prepare 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 the commencement of development under this consent, unless the Secretary agrees otherwise;

(b) describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions in this consent;

(c) describe the noise management system in detail; and

(d) include a monitoring program that:

- *evaluates and reports on:*
  - *the effectiveness of the noise management system;*
  - *compliance with the noise criteria in this consent; and*

- *compliance with the noise operating conditions;*
- *includes a program to validate the real-time noise monitoring results with the 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 in this consent and a trigger for further attended monitoring);*

- *includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and*
- *includes a protocol for identifying a noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of these events.*

The Applicant must implement the approved Noise Management Plan as approved from time to time by the Secretary.

1.2.3 Environmental Protection Licences (EPL)

Current operations at Glendell are also regulated through Environment Protection Licence (EPL) 12840. The EPL specifies the following limits with respect to noise:

L2 Noise limits

L2.1 Noise generated at the premises that is measured at each noise monitoring point established under this licence must not exceed the noise levels specified in Column 4 of the table below for that point during the corresponding time periods specified in Column 1 when measured using the corresponding measurement parameters listed in Column 2.

POINT 10

Time period	*Measurement parameter*	*Measurement frequency*	*Noise level dB(A)*
Night	*Night-LAeq(15 minute)*	*Monthly*	*40*
Night	*Night-LA1(1 minute)*	*Monthly*	*45*

POINT 11

Time period	*Measurement parameter*	*Measurement frequency*	*Noise level dB(A)*
Night	*Night-LAeq(15 minute)*	*Monthly*	*38*
Night	*Night-LA1(1 minute)*	*Monthly*	*45*

POINT 6

Time period	*Measurement parameter*	*Measurement frequency*	*Noise level dB(A)*
Night	*Night-LAeq(15 minute)*	*Monthly*	*38*
Night	*Night-LA1(1 minute)*	*Monthly*	*45*

POINT 7

Time period	*Measurement parameter*	*Measurement frequency*	*Noise level dB(A)*
Night	*Night-LAeq(15 minute)*	*Monthly*	*38*
Night	*Night-LA1(1 minute)*	*Monthly*	*45*

POINT 8

Time period	*Measurement parameter*	*Measurement frequency*	*Noise level dB(A)*
Night	*Night-LAeq(15 minute)*	*Monthly*	*35*
Night	*Night-LA1(1 minute)*	*Monthly*	*45*

POINT 9

Time period	*Measurement parameter*	*Measurement frequency*	*Noise level dB(A)*
Night	*Night-LAeq(15 minute)*	*Monthly*	*42*
Night	*Night-LA1(1 minute)*	*Monthly*	*45*

L2.2 For the purposes of the noise limits in this licence the 'night' period is defined as 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holiday, however night time noise monitoring can be conducted from 9pm onwards but must be assessed against the night time criteria provided in this licence.

L2.3 The noise emission limits identified in this licence apply under all meteorological conditions except:

(a) during wind speeds greater than 3m/s at 10 metres above ground level; or

(b) under stability category G temperature inversion conditions; or under stability category F temperature inversion conditions and wind speeds greater than 2 metres per second at 10 metres above ground level.

Note: Stability category temperature inversion conditions are to be determined by the sigma-theta method referred to in Part 4E of Appendix E of the NSW Industrial Noise Policy.

M8 Noise monitoring

M8.1 To assess compliance with the noise limits specified within this licence, the licensee must undertake operator attended noise monitoring at each specified noise monitoring point in accordance with the table below.

POINTS 6, 7, 8, 9, 10, 11

Assessment period	*Minimum frequency in a reporting period*	*Minimum duration within assessment period*	*Minimum number of assessment period*
Night	*Monthly*	*15 minutes*	*1 operation day*

Operations at the North Pit, Bayswater North Pit and Mount Owen CHPP (under the Mount Owen Consent) will continue to operate under EPL 4460, no changes to current noise limits under EPL 4460 will be required.

1.3 Project SEARs

The Secretary's Environmental Assessment Requirements (SEARs) for the Project were issued by the DPIE and require the preparation of an EIS including the following, with respect to noise:

> *a detailed assessment of the likely construction, operational and offsite transport noise impacts of the development in accordance with the Interim Construction Noise Guideline, NSW Noise Policy for Industry and the NSW Road Noise Policy respectively, and having regard to the Voluntary Land Acquisition and Mitigation Policy*

This report addresses the operational, construction, and offsite transport noise impacts of the Project.

An assessment of the Project against the Voluntary Land Acquisition and Mitigation Policy is contained in Section 7.3.4 of the EIS.

1.4 Noise assessment pathway

The *Noise Policy for Industry* (NSW EPA, 2017) (NPfI) replaced the *NSW Industrial Noise Policy* (NSW EPA, 2000) (INP) in October 2017. The NPfI recognises that existing activities have been established based on agreed performance requirements and allows established industries to adapt to changes in the noise expectations of the community, where needed. Further discussion on the assessment process under the NPfI is provided in **Section 3.0**.

This Noise Impact Assessment has been prepared in accordance with the NPfI. The assessment has also considered road and rail traffic impacts associated with Project as well as the noise impacts from construction activities in accordance with the NPfI and the NSW Road Noise Policy (DECCW, 2011) (RNP).

1.5 Peer review

This Noise Impact Assessment has been subject to independent peer review by Wilkinson Murray. The independent peer review includes a review of the assumptions, modelling approach (including review of meteorological and source inputs), results and conclusions. The peer review included a review of an earlier draft of the report and peer review comments have been addressed in this assessment. The peer review report has been included as **Appendix A**.

2.0 Proposed Project

The EIS for the Project includes both a development application for a new development consent for the mining of the Glendell Pit Extension as well as a modification of the Mount Owen Consent to cover the ongoing processing and transportation of coal through the Mount Owen CHPP and rail system.

2.1 Glendell Continued Operations Project

Mining at Glendell (including the Glendell Pit Extension) and operations at the Glendell MIA will continue to be undertaken 24 hours per day, 7 days per week for the life of the Project.

The Project has been designed to maximise the use of existing and currently approved infrastructure, however, as outlined in the previous section, the Project will involve a number of significant construction activities including a new MIA, the realignment of a section of Hebden Road, the realignment of the lower reach of Yorks Creek, relocation of Ravensworth Homestead and a new heavy vehicle access road from the new MIA to the active mining area (refer to **Figure 1.2**).

Construction activities will require the development of temporary construction facilities such as offices, construction workforce deployment and parking facilities. These temporary facilities will be constructed within the Additional Disturbance Area. To facilitate an efficient construction program, it may be necessary to establish construction facilities in several locations.

The indicative timing of construction activities is set out in **Table 2.1**.

Table 2.1 Indicative Construction Schedule

Feature	Indicative Construction Period
Temporary Construction Facilities	Year 1 to Year 2
New MIA	Year 1 to Year 2
Heavy Vehicle Access Road	Year 1 to Year 2
Hebden Road Realignment	Year 1 to Year 2
Yorks Creek Realignment	Prior to Year 7 – some aspects constructed as part of Hebden Road realignment
Power and Communications	Year 1 to Year 3
Water Management System and Ancillary Infrastructure to support mining operations	Year 1 to Year 3 and ongoing as mining progresses
Demolition of Glendell MIA	Year 2
Relocation of Ravensworth Homestead	Year 1 to Year 6

Construction activities in some areas may include blasting for cuttings (Hebden Road and Yorks Creek realignments). Crushing of overburden and blasted material from cuttings may also be required for road and MIA construction fill.

Construction activities will generally be undertaken within standard construction hours (7.00 am to 6.00 pm Monday to Friday, 8.00 am to 1.00 pm Saturday). However, work may be required outside of standard hours for construction of the new MIA, product stockpiles and ancillary works including portions of Hebden Road. Construction activities outside these hours will be subject to the ability to meet Project noise criteria.

Blasting associated with construction activities will only be undertaken from 9.00 am to 5.00 pm, Monday to Friday and 9.00 am to 1.00 pm Saturday. Impacts associated with blasting are assessed in a separate Blast Impact Assessment (Enviro Strata Consulting, 2019).

2.2 Modifications to Mount Owen Consent

The Project includes ongoing interactions with the Mount Owen Consent and necessitates a modification of the Mount Owen Consent. As noted in **Section 1.2**, the Mount Owen Consent includes noise criteria for its operations and operations are managed to comply with these criteria at all privately-owned properties.

From a noise perspective, the Project will result in only small changes to the operations regulated under the Mount Owen Consent. These changes are:

- Regulation of the coal haul from Glendell to the Mount Owen CHPP being regulated under the Glendell Consent rather than the Mount Owen Consent (Reduced impact relative the existing modelled conditions to 2024).
- Extended use of ROM coal stockpiles and associated dozer movements due to the extended period of handling Glendell ROM coal at the Mount Owen CHPP.
- Extended duration of CHPP and coal handling operations and rail transportation at Mount Owen beyond current approved life of operation (i.e. extended from 2037 to 2045).

There is no increase in throughput of either CHPP or rail handling and transport facilities relative to what is currently approved under the Mount Owen Consent other than that associated with the extended period of operations beyond 2037.

The Project does not seek any change to the noise operating conditions for operations managed under the Mount Owen Consent.

3.0 Assessment methodology

3.1 Introduction

This report has been prepared in accordance with the requirements of the NPfI, the *Interim Construction Noise Guideline* (DECC, 2009) (ICNG), the *NSW Road Noise Policy* (DECCW, 2011) (RNP) and the *Rail Infrastructure Noise Guideline* (NSW EPA, 2013) (RING).

The NPfI documents the procedures to be used to assess the noise from industrial noise sources scheduled under the *Protection of the Environment Operations Act 1997* (POEO Act). The first step in the application of the NPfI involves determining the project noise trigger levels for the development. These are the benchmark levels above which noise management measures are required to be considered. The aim of the project intrusiveness noise level is to protect against significant changes in noise levels, while the aim of the project amenity noise level is to protect against cumulative noise impacts from industry thereby protecting the amenity for particular land uses. The NPfI notes that setting the project noise trigger level at the most stringent of the project intrusiveness or project amenity noise levels ensures that intrusive noise is limited, and the amenity of the land use is protected.

The project intrusiveness noise levels are based on the measurement of the existing background noise levels. The methodologies for determining the assessment criteria and the monitoring programs required to provide the necessary data are outlined in Fact Sheets A and B of the NPfI and are described in more detail in **Appendix B**. The project amenity noise levels are determined based on the acceptable amenity noise level for the respective land use.

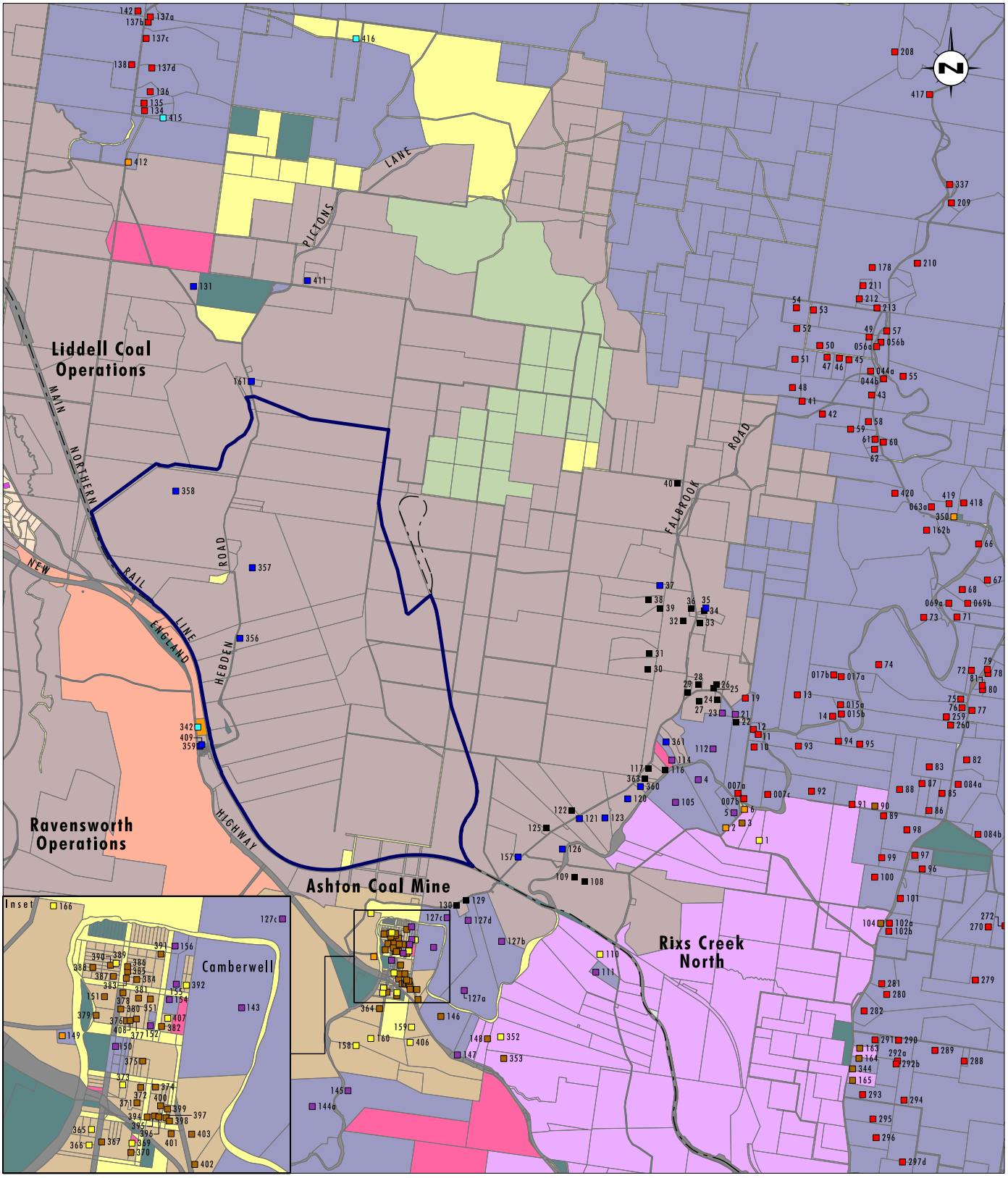
3.2 Receiver identification

A comprehensive review of land ownership and receiver locations was undertaken as part of the EIS process. To maintain consistency with the Mount Owen Consent, receiver identification numbers used in that consent have also been used in this assessment. As discussed in **Section 1.2.1**, the identification numbers differ from the identification numbers referenced in the Glendell Consent. Table 3.1 provides a reconciliation of the identification numbers in the Glendell Consent with the identification numbers used in the Mount Owen Consent and this assessment.

Table 3.1 Reconciliation of Key Glendell Consent and Assessment Identification Numbers

Glendell Consent	Mount Owen Consent/Noise Impact Assessment
9	147
22b	150
24	154
27	143
31	155
37a and 37b	127a and 127b
37c	127c
47 and 50	152
110	111

The location of receivers considered in this NIA are shown in **Figure 3.1**.



Data Source: Glencore (2019), Department of Finance & Innovation (2019)

0 0.5 1.0 1.5km

Inset Scale

0 1 2 4km

Legend

- Project Area
- AGL Macquarie
- Ashton Coal
- Bloomfield Collieries
- Crown Land
- Daracon
- Ausgrid
- Glencore
- Government Authority
- Hunter Valley Operations
- Private
- State Forest
- Private Vacant Land (Acquisition Rights)
- Telstra
- Private
- Private (Acquisition Rights)
- Private Infrastructure
- Community Infrastructure
- Glencore Owned
- Glencore Owned - Vacant
- Other Mine Owned
- Other Mine Owned - Vacant

FIGURE 3.1

Land Ownership and Receiver Locations

File Name (A4): R13/4166_477.dgn
20191128 16.09

3.3 Applying the NPfI

The process for applying the NPfI to existing industrial sites is as follows:

- Undertake an initial evaluation, including whether approvals/licences include noise limits and whether they are being met (refer to **Section 1.2**).
- Establish relevant project noise trigger levels, in accordance with the policy, to establish a benchmark level to assess the need to consider noise mitigation (refer to **Section 5.0**). The NPfI applies the following governing principles when determining the project noise trigger levels and/or assessment requirements for existing industry:
    - The project noise trigger levels should not be applied as mandatory noise limits. The project noise trigger level is the level used to assess noise impact and drive the process of assessing all feasible and reasonable control measures.
    - Where an existing industry has been in operation for more than 10 years and existing site operations exceed the project amenity noise level, the project amenity noise level may be adopted as the project noise trigger level to assess existing, and existing plus proposed site operations, as relevant.
    - Where a development proposal involves a discrete process, and premises-wide mitigation has or is to be considered outside of the development proposal, a project noise trigger level for noise from new/modified components (not the whole site) of the operation may be set at 10 dB(A) or more below existing site noise levels or requirements. This approach means that the increase in noise from the whole site is minimised and provides scope for existing components to achieve noise reductions over time.
- Predict the noise levels produced by the source in question, having regard to meteorological effects such as wind and temperature inversions. Noise from both the whole premises and the upgraded section in isolation should be presented (refer to **Section 4.0**).
- Compare the measured/predicted noise level with the project noise trigger levels (refer to **Section 5.0**).
- Where the project noise trigger levels are exceeded, assess feasible and reasonable noise mitigation strategies (refer to **Section 6.0**).
- Develop and refine achievable noise limits that will become goals for the site (refer to **Section 6.0**) in consultation with the regulator and possibly the community, considering technical practicalities, costs, time frames and environmental consequences of exceeding the project noise trigger levels.
- Monitor compliance with the noise reduction program, and review and amend the program as required (refer to **Section 7.0**).

3.4 Incorporated noise control measures

Consistent with the approach to noise mitigation and management as part of approved operations, Glendell Mine has committed to the ongoing implementation of noise control measures to minimise noise emissions and to meet the relevant noise criteria at surrounding private receivers as part of ongoing operations.

Throughout the development of the conceptual mine plan, a range of iterative noise modelling processes have been undertaken, designed to identify noise controls that can be implemented in the Project. This process was undertaken to inform the operational constraints to the Project that may be required for each mine plan stage to meet noise criteria. This process included revisions to the mine plan progression including:

- optimisation of pit geometry and overburden emplacement sequencing to enable placement of mining equipment lower in the dump and in-pit (thus more shielded locations) during adverse meteorological conditions
- redesign of overburden haulage routes from the pit to emplacement areas to maximise shielding from the pit crest and surrounding topography to limit noise emissions
- detailed review of production planning and mine sequencing to enable the incorporation of required operational controls (such as slow-down in mine progression, provision of low dump (shielded) areas and, where required, selective mining equipment shutdowns) during periods of adverse weather conditions
- detailed review of mine plan sequencing and slowing the ramp-up of production during the earlier years to reduce noise impacts.
- roadside bunding in strategic locations along some haul roads, and where practicable, locating these along the south-eastern side of the ramps, shielding trucks and equipment on exposed sections of the ramps.
- relocation and reorientation of some haul roads such that they are not aligned with the prevailing source to receiver winds where practicable.

In addition to the mine design controls above, the following reasonable and feasible controls have been committed to over the life of the Project. Consistent with the approach and controls identified in the approved Mount Owen Complex Noise Management Plan (NMP), these controls largely relate to operational measures that are implemented in response to the real-time noise monitoring system surrounding the Mount Owen Complex. In general, these additional controls can include the following:

- The management of mobile machines during adverse weather conditions when wind conditions or inversion conditions enhance noise propagation towards sensitive receiver locations. In order to control/eliminate noise impacts this would likely include:
    - providing alternative dumping locations,
    - moving parts of the fleet to shielded locations deeper in the pit or shielded operating areas having regard to the prevailing condition, and/or
    - revising mining operations to reduce noise impacts including the implementation of a hierarchy of controls ranging from review of equipment locations and nature of activities, through to shut down of equipment as required to maintain compliance with noise criteria.
- Managing a number of ancillary activities to limit their occurrence during adverse meteorological conditions, such as those which may occur during winter night-times, including:
    - limiting ancillary mining equipment (e.g. dozers on overburden dumps, drills) during times of adverse weather conditions,
    - reducing dozer activity on exposed rehabilitation areas, and/or
    - managing activities located at or near the ground surface, such as top-soil and pre-strip.

Additionally, all reasonable and feasible noise attenuation on key plant and equipment is implemented consistent with current best practice.

Where relevant, all reasonable and feasible controls (as advised by Glencore) have been factored into the noise model.

This assessment includes both the operations to be covered under a new development consent covering the mining operations at Glendell and minor modifications to the Mount Owen Consent.

While the Project includes potentially increased cumulative noise levels above those assessed for the current Mount Owen Consent (i.e. resulting from the proposed mining at the Glendell Pit Extension, beyond the currently planned cessation of mining as assessed for the existing Mount Owen Consent), Glencore will manage operations under the Mount Owen Consent consistent with existing noise criteria specified under the Mount Owen Consent. Accordingly, no review of the Mount Owen Consent criteria has been undertaken as part of this assessment.

The following sets out the assessment of relevant noise criteria for the operations to be managed under the new development consent for the Project. This process has been undertaken in accordance with the NPfI.

3.5 Acoustic environment

3.5.1 Background noise levels

The underlying ambient noise level is referred to as the background noise level and is represented by the $L_{A90,15minute}$ descriptor. The intrusiveness of an industrial noise source is generally considered acceptable if the predicted $L_{Aeq,15minute}$ from the noise source does not exceed the background noise level by more than 5 dB when measured in the absence of the source. The background noise level, or Rating Background Level (RBL), is determined in accordance with Fact Sheet A of the NPfI and is the median value of the Assessment Background Levels (ABL) determined for the monitoring period.

For new developments, the background noise levels are measured without the subject development operating. However, if the premises have been operating for greater than 10 years, is operating in accordance with noise limits and is applying best practice, the development can be considered part of the acoustic environment. The existing Glendell Mine satisfies these requirements.

Fact Sheet A of the NPfI notes that the assessment of the existing background noise levels needs to consider:

- Transportation noise levels when traffic is constant and continuous, and it can be demonstrated that the existing acoustic environment is affected by transportation-related noise sources.
- Weather conditions, with monitoring data excluded when the average wind speeds are greater than 5 m/s or when it is raining.
- The time and duration of monitoring periods to obtain sufficient valid data covering the days and times of operation of the development. The monitoring period may need to account for variations due to seasonal changes such as the presence of inversions or variations due to wildlife activity and operational activities of other developments.

The assessment of the existing background noise levels is presented in **Appendix B.**

3.5.2 Recommended ambient noise levels

The NPfI recommends amenity noise levels on the basis of studies that relate industrial noise to levels of annoyance in communities. They are subjectively scaled to reflect perceived differential expectations and ambient noise environments of rural, suburban and urban communities for residential receivers. They are based on protecting the majority of the community (90%) from being highly annoyed by industrial noise.

To control and/or limit the increase in industrial noise levels, the EPA has identified recommended ambient noise levels for typical receiver areas and land uses. The NPfI represents the existing ambient noise level by the $L_{Aeq, period}$ descriptor where the period is the day, evening and/or night during which the proposed development will operate. The acceptable amenity noise levels at a specific location depend on the type of receiver/land use of each receiver location. Receiver/land use categories relevant to the assessment include rural residential, school, place of worship, commercial and industrial premises, and community building. The guidelines in NPfI Table 2.2 have been used to assign the relevant receiver noise categories with the relevant amenity noise levels provided below in Table 3.2. It should be noted that the existing St Clements Church in Camberwell is a deconsecrated church that is not currently in use, the relevant amenity criteria under the NPfI only applies to places of worship 'when in use'.

Table 3.2 Recommended L_{Aeq} noise levels (Table 2.2 NPfI)

Receiver/land use category	Noise Amenity Area	Time of Day[1]	Recommended L_{Aeq} Noise Level, dB(A)
Residence	Rural	Day	50
		Evening	45
		Night	40
School Classroom - Internal	All	Noisiest 1-hour period when in use	35 (internal) 45 (external)
Place of worship	All	When in use	40 (internal) 50 (external)
Commercial Premises	All	When in use	65
Industrial Premises	All	When in use	70
Community Buildings	Active recreation area	When in use	55

Notes: 1 Day period is 7.00 am-6.00 pm Monday-Saturday and 8.00 am-6.00 pm Sunday and Public Holidays, evening period is 6.00 pm-10.00 pm and night period is 10.00 pm to commencement of day period.

In the case where existing schools are affected by noise from existing industrial noise sources, the acceptable LAeq noise level may be increased to 40 dB LAeq(1hr).Where an external noise level has been derived from internal noise level it has been assumed that the building face provides a 10 dB reduction.

3.6 Operational noise criteria

The NPfI sets out two noise criteria to assess the potential noise impacts resulting from industrial activity. The first is used to control short-term intrusive noise and its impacts on residences whilst the second is used to protect against cumulative noise impacts and maintain noise level amenity for particular land uses including residences. Applying the more stringent of the two as the project noise trigger level ensures that intrusive noise is limited, and amenity is protected and that no single industry can unacceptably change the noise level of an area.

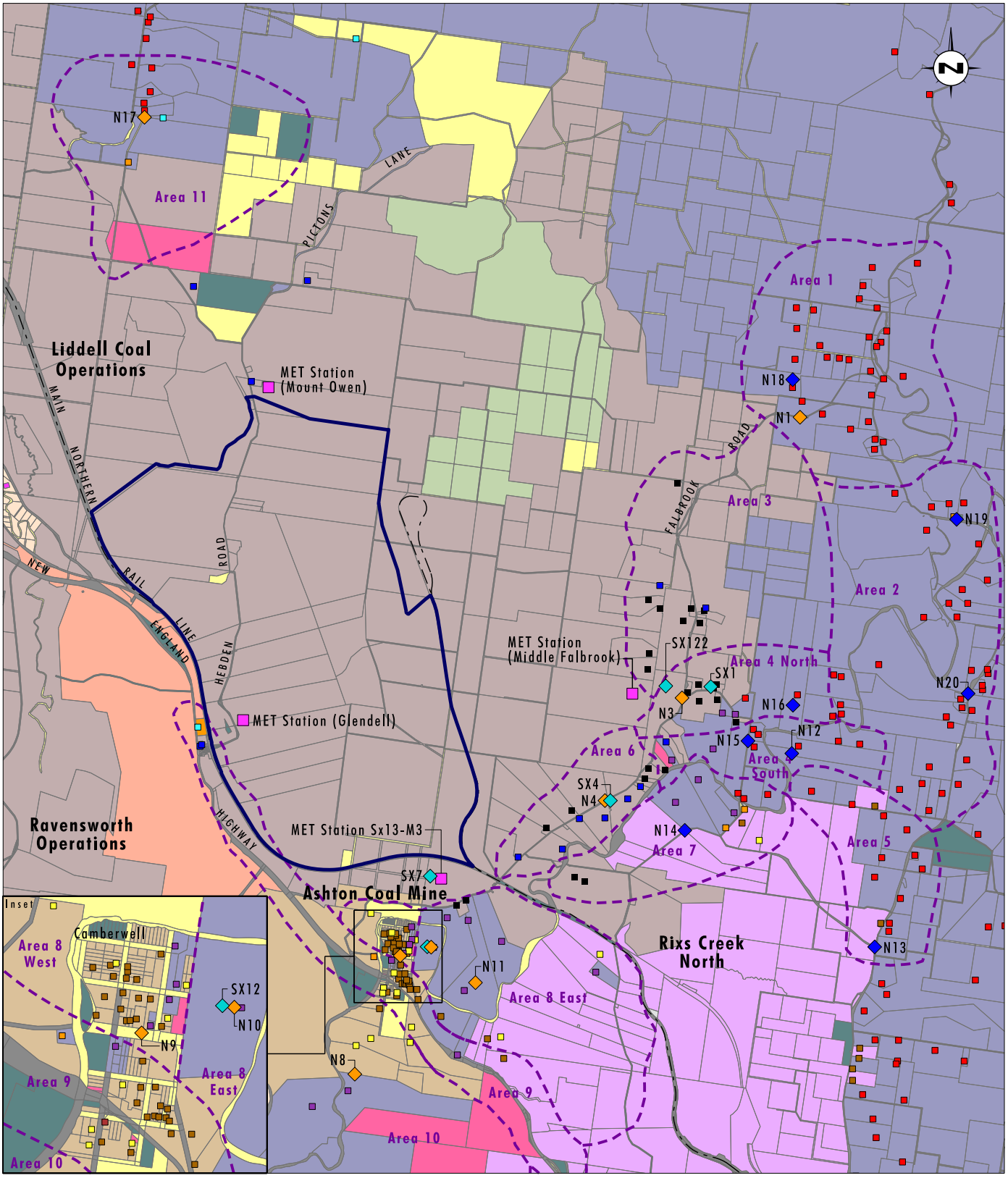
3.6.1 Project intrusiveness noise levels

The intrusiveness of an industrial noise source may generally be considered acceptable if the level of noise from the source, measured over a 15-minute period, does not exceed the background noise level by more than 5 dB when beyond a minimum threshold. This intrusiveness noise level seeks to limit the degree of change a new noise source introduces to an existing environment.

The project intrusiveness noise level ($L_{Aeq,15\ minute}$) is defined as the RBL + 5 dB. The RBL is determined by measurement of the long-term background noise level L_{A90} and calculated in accordance with the NPfI Fact Sheets A and B.

Residences in the region surrounding the Project have been grouped into localities or areas that have similar representative background noise levels. This grouping is consistent with the noise assessment areas used for the Mount Owen Continued Operations Modification 2 Noise Impact Assessment (Umwelt, 2018). These areas have been defined giving consideration to topographical features that may enhance or attenuate the transmission of noise and the relative location of other noise sources (such as industrial, rail and road traffic). The noise receiver areas are shown on **Figure 3.2**.

The details of each receiver and associated project trigger noise level are presented in **Appendix D**.



Data Source: Glencore (2019), Department of Finance & Innovation (2019)

0 1 2 4 km

Legend

- Project Area
- Defined Receiver Areas
- AGL Macquarie
- Ashton Coal
- Bloomfield Collieries
- Crown Land
- Daracon
- Ausgrid
- Glencore
- Government Authority
- Hunter Valley Operations
- Private
- State Forest
- Private Vacant Land (Acquisition Rights)
- Telstra
- Private
- Private (Acquisition Rights)
- Private Infrastructure
- Community Infrastructure
- Glencore Owned
- Glencore Owned - Vacant
- Other Mine Owned
- Other Mine Owned - Vacant
- Attended Noise Monitoring Location
- Real Time Continuous Noise Monitoring Location
- Meteorological Station Location
- Supplementary Performance Management Attended Noise Monitoring Location

FIGURE 3.2

Defined Receiver Areas and Noise Assessment Monitoring Locations

File Name (A4): R13/4166_475.dgn
20191129 9.55

The RBLs for the Project have been derived from multiple continuous noise monitoring units in the vicinity of the Mount Owen Complex. In addition to the continuous noise monitoring units that make up the Mount Owen monitoring network, data from SX46 (Ravensworth Operations) and SX37 (Liddell Coal Operations) was also utilised. The RBLs from these units may include existing noise from Glendell and other mines as it is not possible to obtain background levels in this area without the presence of these existing operations. Additionally, in accordance with the NPfI, these sources have been present for a significant period (more than 10 years) and are considered a normal part of the acoustic environment.

The units and the defined receiver areas they represent are shown in **Table 3.3**.

Table 3.3 Continuous noise monitoring network data

Unit number	Location	Receiver Area represented
SX1	Middle Falbrook	Area 4 North and South, Area 7
SX12	Camberwell	Area 8 East and West, Area 9
SX37[1]	Hebden Road	Area 11
SX46[1]	Camberwell South	Area 10

Note: 1 SX37 Liddell Coal Operations Monitor, SX46 Ravensworth Operations Monitor

Data from the 2017 calendar year was filtered for appropriate meteorological conditions as per the procedures outlined in the NPfI Fact Sheet B to determine the RBLs. The first step of this procedure is to determine the Assessment Background Level (ABL) using the 10th percentile method for each period. The second step is to derive the Rating Background Level (RBL) as the median ABL value for each period. The derived project intrusiveness noise levels based on the RBLs are shown in **Table 3.4**.

Table 3.4 Derived project intrusiveness noise levels, $L_{Aeq\ 15\ minute}$ dB(A)

Unit number/ Receiver Area	Rating Background Level			Project Intrusiveness Noise Level		
	Day [1]	Evening [1]	Night [1]	Day [1]	Evening [1,3]	Night [1]
SX1/Area 4 North and South, Area 7	35 (28) [2]	30	30	40	35	35
SX12/Area 8 East and West, Area 9	35 (32) [2]	36	35	40	40 (41) [4]	40
SX37/Area 11[6]	35 (25) [2]	30 (29) [5]	30 (29) [5]	40	35	35
SX46/Area 10[7]	35 (30) [2]	33	32	40	38	37

Note:
[1] Day period is 7.00 am-6.00 pm Monday-Saturday and 8.00 am-6.00 pm Sunday and Public Holidays, evening period is 6.00 pm-10.00 pm and night period is 10.00 pm to commencement of day period.
[2] Where the Day ABL is less than 35 dB(A) then RBL is set at 35 dB(A).
[3] Night project intrusiveness noise level should be no higher than evening, as per Section 2.3 of the NPfI.
[4] Evening project intrusiveness noise level should be no higher than day, as per Section 2.3 of the NPfI.
[5] Where the evening or night ABLs are less than 30 dB(A) then RBL is set at 30 dB(A).
[6] Liddell Coal Operations Noise Monitor
[7] Ravensworth Operations Noise Monitor

Section 2.3 of the NPfI recommends that when determining the project noise trigger levels the project intrusiveness noise level for the evening should be set at no greater than the project intrusiveness noise level for daytime, and that the project intrusiveness noise level for night time should be no greater than the project intrusiveness noise level for day or evening. The NPfI notes that if an alternative approach to this aspect of the assessment can be justified it may be adopted. This NIA has applied the method recommended in Section 2.3 of the NPfI.

3.6.2 Project amenity noise levels

The $L_{Aeq, period}$ project amenity noise levels at receivers are defined as the acceptable amenity noise levels taken from NPfI Table 2.2 minus 5 dB. In order to derive the project noise trigger levels, the period-based project amenity noise levels are converted to equivalent 15-minute levels ($L_{Aeq, 15minute}$) by the addition of 3 dB.

The project amenity noise levels for all receivers surrounding the Project Area are shown in **Table 3.5**.

Table 3.5 Project amenity noise levels

Receiver/land use category	Time of day [1]	Recommended amenity noise level LAeq(period) dB(A)	Project amenity noise level LAeq(period) dB(A)	Project amenity noise level LAeq(15 minute) dB(A)
Rural Residential	Day	50	45	48
	Evening	45	40	43
	Night	40	35	38
School Classroom - Internal	Noisiest 1-hour period when in use	35 (internal) 45 (external)	30 (internal) 40 (external)	30 (internal) 40 (external)
Place of worship	When in use	40 (internal) 50 (external)	35 (internal) 45 (external)	35 (internal) 45 (external)
Commercial Premises	When in use	65	60	60
Industrial Premises	When in use	70	65	65
Community Buildings - Active recreation area	When in use	55	50	50

Note: [1] Day period is 7.00 am-6.00 pm Monday-Saturday and 8.00 am-6.00 pm Sunday and Public Holidays, evening period is 6.00 pm-10.00 pm and night period is 10.00 pm to commencement of day period.

3.6.3 Project noise trigger levels

The project noise trigger level provides a benchmark or objective for assessing a proposal or site and is not intended for use as a mandatory requirement (NPfI 2017). The project noise trigger level, if exceeded, indicates a potential noise impact on the community and so triggers a management response e.g. further investigation of mitigation measures.

The project noise trigger level is the lower or most stringent value of the project intrusiveness noise level and the project amenity noise level. Where background monitoring data is not available, i.e. in Areas 1, 2 and 5, the minimum acceptable RBL has been adopted. Project noise trigger levels for the residential receivers within the defined receiver areas are shown in Table 3.6 and the non-residential receivers shown in Table 3.7.

Table 3.6 Project noise trigger levels for residential receivers, $L_{Aeq,15minute}$ dB(A)

Receiver Area	Period [1]	Intrusiveness	Amenity	Project Noise Trigger Level
Area 1 [2]	Day	40	48	40
	Evening	35	43	35
	Night	35	38	35
Area 2 [2]	Day	40	48	40
	Evening	35	43	35
	Night	35	38	35
Area 3[5]	No project noise trigger level applies – Area 3 contains privately owned land however there are no privately-owned residences			
Area 3 (Based off SX1)	Day	40	48	40
	Evening	35	43	35
	Night	35	38	35
Area 4 – North Area 4 – South (Based off SX1)	Day	40	48	40
	Evening	35	43	35
	Night	35	38	35
Area 5 [2]	Day	40	48	40
	Evening	35	43	35
	Night	35	38	35
Area 6	No project noise trigger level applies - no privately-owned land in Area 6			
Area 7 (Based off SX1)	Day	40	48	40
	Evening	35	43	35
	Night	35	38	35
Area 8 – West Area 8 – East (Based off SX12)	Day	40	48	40
	Evening	40	43	40
	Night	40	38	38
Area 9 (Based off SX12)	Day	40	48	40
	Evening	40	43	40
	Night	40	38	38
Area 10 (Based off SX46)[4]	Day	40	48	40
	Evening	38	43	38
	Night	37	38	37
Area 11 (Based off SX37)[3]	Day	40	48	40
	Evening	35	43	35
	Night	35	38	35

Notes: [1] Day period is 7.00 am - 6.00 pm Monday - Saturday and 8.00 am - 6.00 pm Sunday and Public Holidays, evening period is 6.00 pm - 10.00 pm and night period is 10.00 pm to commencement of day period.

[2] Based on minimum assessable RBL and recommended amenity noise level

[3] SX37 is a Liddell Coal Operations Noise Monitor

[4] SX46 is a Ravensworth Operations Noise Monitor

[5] Area 3 contains privately owned land only (no residential receiver) subject to assessment under the VLAMP only

The project noise trigger levels for each individual residential receiver is provided in **Appendix D**.

Table 3.7 Project noise trigger levels for non-residential receivers, $L_{Aeq,15minute}$ dB(A)

Receiver Area/ID	Period	Amenity	Project Noise Trigger Level
Area 2 350 Mount Pleasant School	Day	40	40
	Evening	40	40
	Night	40	40
Area 7 2Glennies Creek Community Hall	Day	50	55
	Evening	50	55
	Night	50	55
Area 7 6 Rural Fire Service Depot	Day	50	55
	Evening	50	55
	Night	50	55
Area 9 149 St Clements Church	Day	45	45
	Evening	45	45
	Night	45	45
Area 9 342 Daracon Site	Day	65	65
	Evening	65	65
	Night	65	65
Area 11 412 Hebden Community Hall	Day	50	55
	Evening	50	55
	Night	50	55
Area 11 415 Wild Quarry	Day	65	65
	Evening	65	65
	Night	65	65

The assessment of predicted operational noise levels is discussed in **Section 5.1**.

3.6.4 Correction factors for annoying noise characteristics

Where a noise source contains characteristics, such as tonality, intermittency, irregularity or dominant low frequency content, there is evidence to suggest that it can cause greater annoyance than other noise at the same noise level. Conversely, some noise sources may cause less annoyance where only a single event occurs for a limited duration.

Fact Sheet C of the NPfI outlines how correction factors should be applied to source noise levels at the receiver before comparison with the respective project noise trigger levels. These correction factors account for the additional annoyance caused by the factors that modify the noise.

The assessment of modifying factors and application of correction factors for annoying noise characteristics are discussed in **Appendix G**.

3.6.5 Maximum noise level event (sleep disturbance) criteria

The potential for sleep disturbance from maximum noise level events from premises during the night time period needs to be considered. According to the NPfI, where the development's night-time noise levels at a residential location exceed:

- LAeq,15min 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater; and/or
- LAFmax 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater,

- a detailed maximum noise level event assessment should be undertaken.

The sleep disturbance noise goal for each defined receiver area is provided in Table 3.9 and for individual receivers in **Appendix D**. The assessment of maximum noise level events is discussed in **Section 5.4**.

Table 3.8 Sleep disturbance noise goal for residential receiver areas, $L_{Aeq,15minute}$ and L_{AFmax} dB(A)

Receiver Area	Sleep Disturbance Noise Goal			
	$L_{Aeq,15minute}$		L_{AFmax}	
	RBL +5	Max 40 or RBL + 5	RBL + 15	Max 52 or RBL + 15
Area 1	40	40	50	52
Area 2	40	40	50	52
Area 3[1]	No sleep disturbance noise goal applies – Area 3 contains privately owned land however there are no privately-owned residences			
Area 4 North	40	40	50	52
Area 4 South	40	40	50	52
Area 5	40	40	50	52
Area 6	No privately-owned land in Area 6 – no sleep disturbance goal applies			
Area 7	40	40	50	52
Area 8 West	45	45	55	55
Area 8 East	45	45	55	55
Area 9	45	45	55	55
Area 10	42	42	52	52
Area 11	40	40	50	52
All other sensitive receivers	40	40	50	52

Note: 1 Area 3 contains privately owned land only (no residential receiver) subject to assessment under the VLAMP only.

3.7 Cumulative noise criteria

The NPfI notes that "where the project amenity noise level applies and it can be met, no additional consideration of cumulative industrial noise is required". The NIA has taken this into consideration when assessing cumulative noise. Based on Table 3.9, the most stringent project amenity noise level that could be used as a screening noise level for the cumulative industrial noise assessment would be an $L_{Aeq,15minute}$ of 38 dB(A).

Where the suggested screening noise level for the cumulative industrial noise assessment cannot be met a cumulative noise assessment will be required. If required, the cumulative noise assessment method will be consistent with the cumulative assessment undertaken in the NIA prepared as part of the Mount Owen Continued Operations Project (Umwelt, 2014).

3.8 Construction noise criteria

As described in **Section 2.1**, the Project will require construction activities. Construction activities will generally be undertaken within standard construction hours (7.00 am to 6.00 pm Monday to Friday, 8.00 am to 1.00 pm Saturday). However, work may be required outside of standard hours for construction of the new MIA, product stockpiles and ancillary works including portions of Hebden Road.

The EPA recognises that construction activities could potentially generate higher noise levels than those of an industrial operation. The ICNG provides noise management criteria for construction activities. The criteria are intended to guide the need for, and the selection of, feasible and reasonable work practices to minimise construction noise impacts.

The ICNG notes that a residential receiver is 'noise affected' if the $L_{Aeq,15minute}$ construction noise level exceeds the RBL by more than 10 dB during recommended standard hours. Outside recommended standard hours a residential area is 'noise affected' if the $L_{Aeq,15minute}$ construction noise level exceeds the RBL by more than 5 dB.

For commercial and industrial areas, the ICNG notes that the $L_{Aeq,15minute}$ construction noise management levels are 70 dB(A) and 75 dB(A) respectively.

The construction noise goals for each potential sensitive receiver are provided in **Appendix D**. The assessment of predicted construction noise levels is discussed in **Section 5.5**.

3.9 Road traffic noise criteria

Hebden Road provides local access to the New England Highway at Ravensworth in the south and near Muswellbrook in the north. Hebden Road primarily provides access to rural properties and to the Mount Owen Complex. Additionally, there are two quarries located to the north of the Mount Owen Complex that are also accessed from Hebden Road. The overall workforce at the Mount Owen Complex will remain similar to current workforce numbers of approximately 1,220 full time equivalent (FTE) positions during concurrent operations. The Glendell workforce will progressively increase in number over the duration of the Project from approximately 300 FTE to a maximum of approximately 690 FTE positions during maximum production. The increasing workforce at Glendell coincides with a reduced workforce at the Bayswater North Pit and North Pit as production declines and then stops.

While there will be minor changes in traffic volume on Hebden Road, the impact on the road traffic noise at the nearest privately-owned residence (approximately 4.5 km from the southern end of Hebden Road) will not be discernible. As a result, the NIA does not include an assessment of road traffic noise for Hebden Road due to changes in traffic volume due to the on-going operations as part of the Project. There will be an increase in traffic volumes associated with the construction phase of the Project peaking in approximately Year 2 of the Project. The only location where residential receivers could be impacted by this increase in traffic is in Camberwell at the receivers located in proximity to the New England Highway. An assessment of the potential change in road traffic noise from the New England Highway within Camberwell has been undertaken, the results are presented in **Section 5.5**.

The RNP sets out criteria for road traffic noise through the provision of a framework that addresses traffic noise issues associated with new developments, new or upgraded road developments or planned building developments.

Table 3.9 outlines the road traffic noise criteria for the Project along the New England Highway and Hebden Road. Under the road category definitions provided in Table 2 of the RNP, the New England Highway is considered an arterial road. Hebden Road is defined as a sub-arterial road by the RNP as it supports non-local traffic serving a major traffic-generating development.

Table 3.9 Road noise criteria, dB(A)

Road Category	Type of Project/Land Use	Assessment Criteria dB(A)	
		Day (7.00 am – 10.00 pm)	Night (10.00 pm – 7.00 am)
Freeway/arterial/ sub-arterial roads	Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{Aeq, 15\ hour}$ 60 (external)	$L_{Aeq, 9\ hour}$ 55 (external)

Source: NSW Road Noise Policy (DECCW, 2011)

Section 3.4 of the RNP notes that when assessing noise impacts and the effectiveness of feasible and reasonable mitigation measures, an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person.

3.10 Rail noise criteria

The Project will include the extension of the operating life of Mount Owen CHPP and associated coal handling infrastructure to 2045. The current CHPP throughput of 17 Mtpa ROM coal and export coal transportation via rail will not change due to the Project. As a result, the NIA does not include an assessment of the rail traffic noise as there will be no increase in rail traffic volume due to the Project.

4.0 Noise Prediction

4.1 Model Parameters

The noise modelling was undertaken using the proprietary software ENM. The software utilises terrain data, source and receptor locations and heights, source sound power levels and input meteorological conditions to predict noise levels. The software accounts for ground effects, geometric spreading, air absorption, acoustic shielding and meteorological enhancement in its predictions.

The model incorporated 3D terrain based on LiDAR data and conceptual mine plans provided by the Proponent. The noise modelling process incorporated several haul route variants for each stage (refer to **Appendix E**), based on the proposed work areas identified on the conceptual stage plans. Each haul route variant was modelled independently.

4.2 Operational noise model

4.2.1 Mine stages and progression

The noise modelling inputs for the Project consider proposed mining operations for Year 1, Year 6, Year 13 and Year 18 of the Project. Year 1 of the Project is assumed to be 2021. The Year 6 and Year 13 modelling years coincide with the Year 8 and Year 15 modelling years for the Mount Owen Continued Operations Modification 2 (Umwelt, 2018).

The conceptual mine plans (Years 1, 6, 13, 18) for the Project are outlined in **Figure 4.1** to **Figure 4.4** and have been selected as they are considered to represent indicative key features of the proposed conceptual mining progression for the Project. The progression of mining and rehabilitation activities depicted in the conceptual mine plans represent the most likely mine plans available for the Project, however these conceptual plans are subject to change throughout the life of the Project due to a range of variables such as geological and geotechnical conditions, variations in coal quality and market conditions, and changes to mining equipment and available technology. The conceptual mine progression is outlined below:

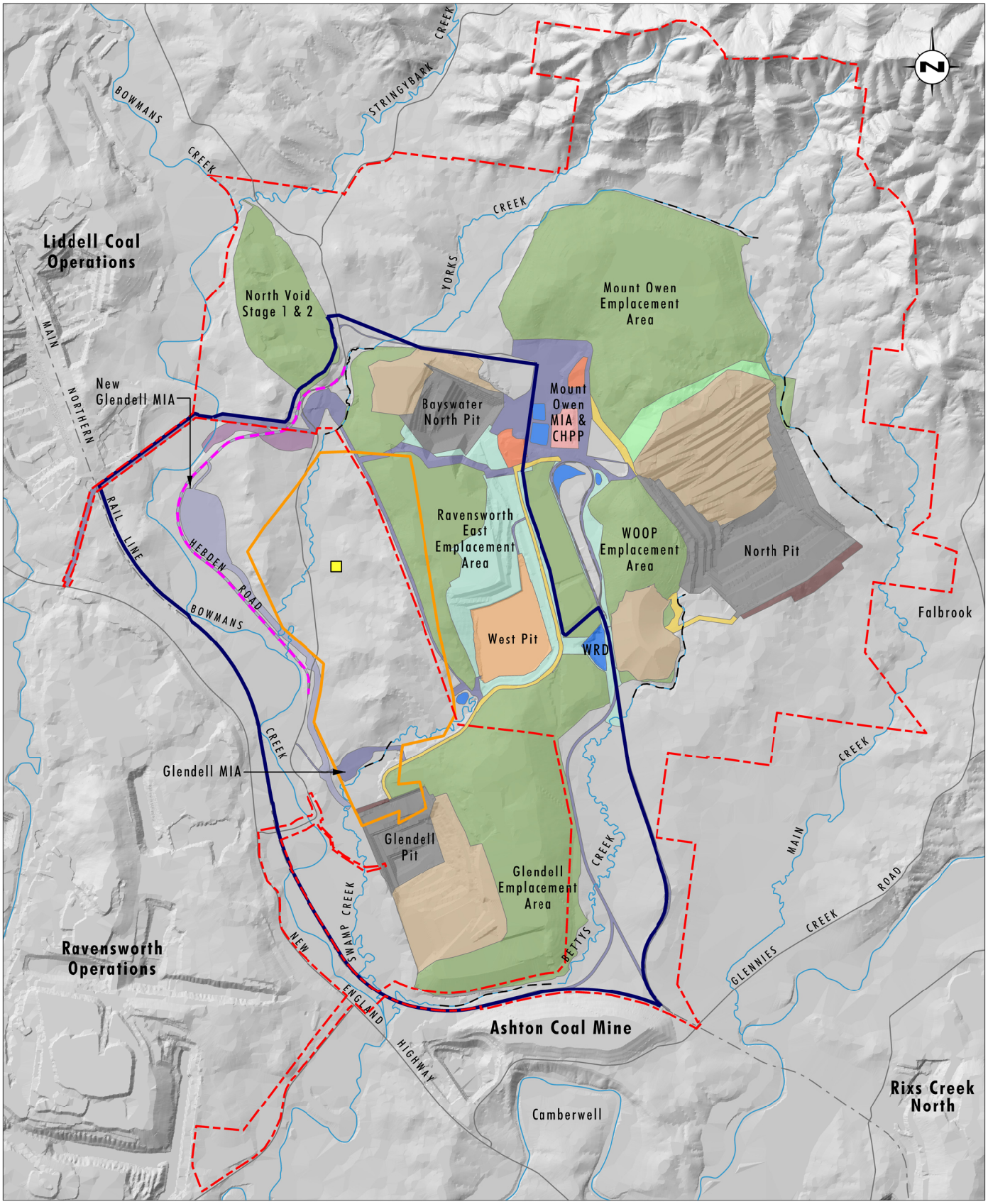
- Year 1 (approximately 2021): Year 1 of the Project is a continuation of the existing Glendell Pit. The mine plan varies from the currently approved mine plan as the mine will continue overburden emplacement to a height of approximately 160 mAHD. There will also be an increase in the production rate of mining with the addition of new machines. Mining operations are located at their closest to Camberwell in Year 1.

- Year 6 (approximately 2026): In Year 6, mining in the Glendell Pit Extension has progressed from the currently approved mining area in a northerly direction away from Camberwell. This represents the earliest year at which overburden emplacement occurs up to a maximum height of approximately 200 mAHD (current approved operations are to approximately 160 mAHD); additionally the production rate of mining has increased to approximately 6 Mtpa.

- Year 13 (approximately 2033): Year 13 represents the maximum production rate (up to 10 Mtpa ROM), maximum workforce numbers, maximum equipment numbers and overburden emplacement high in the landform for the Project.

- Year 18 (approximately 2038): Year 18 represents mining close to the northernmost extent of the Glendell Pit Extension. Production rates after Year 18 decline, with impacts on northern receptors considered to be lower in later years despite a slight increase in proximity. Mining in the North Pit will have been completed by this stage, with activities focussed on rehabilitation and the processing of coal from the Glendell Pit Extension.

The production rates for the proposed mining operations for Year 1, Year 6, Year 13 and Year 18 of the Project are provided in **Table 4.1**.



Data Source: Glencore (2019)
Note: Mount Owen Consent Boundary assumes Narama Pipeline Modification is approved

0 1.0 2.0 3.0km

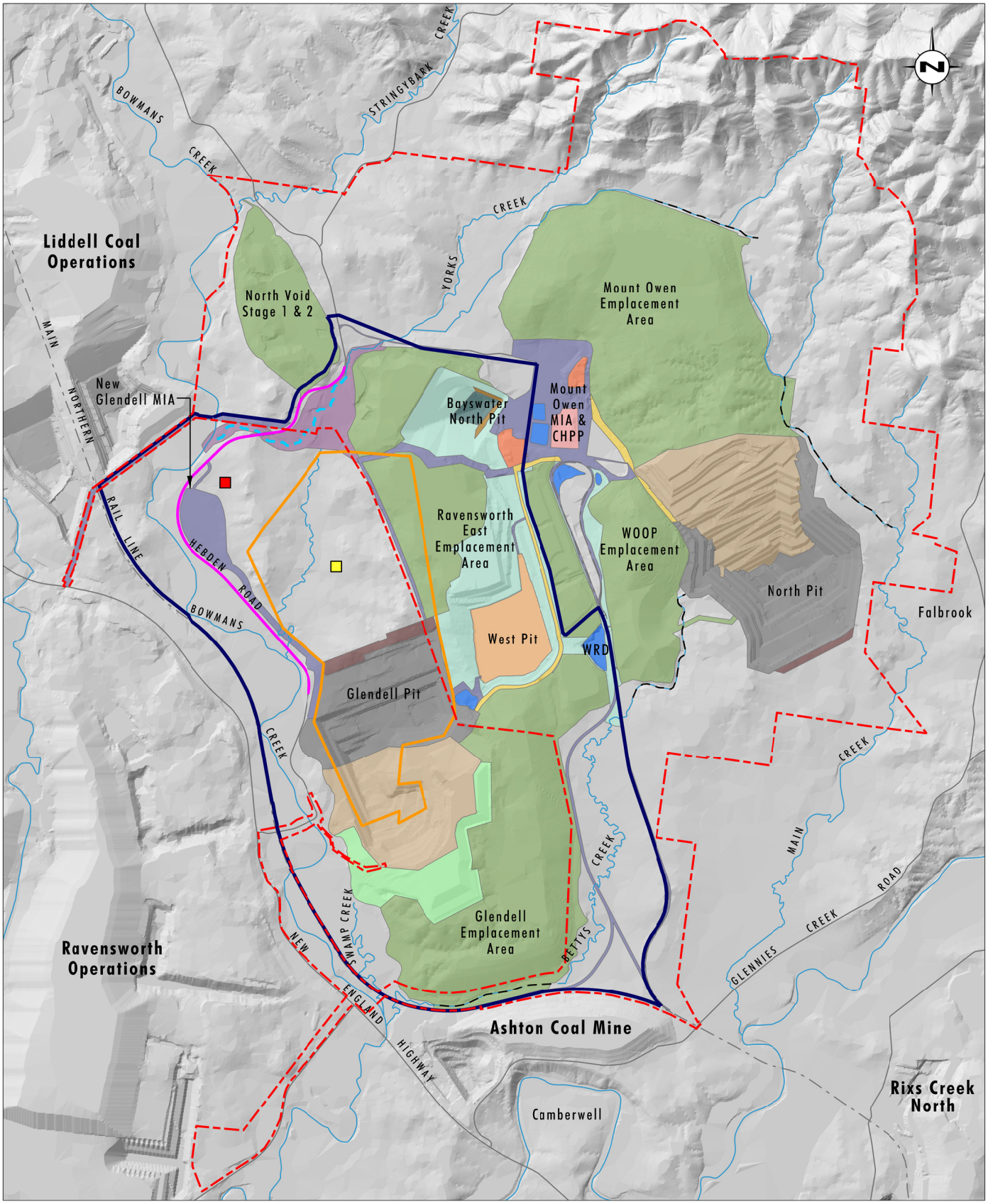
Legend

- Project Area
- Glendell Pit Extension
- Mount Owen Consent Boundary
- Existing Creek Diversion
- Hebden Road Realignment (Construction)
- Ravensworth Homestead
- Active Pit/Working Area
- Active Overburden Emplacement Area
- Topsoil Removal Strip
- Shaping for Final Landform
- Temporary Rehabilitation
- Rehabilitation
- Creek Realignment (Construction)
- Infrastructure/Internal Access
- Infrastructure (Construction)
- Haul Road
- Coal Stockpile ROM
- Coal Stockpile Product
- Tailings Emplacement Area
- Water Storage

FIGURE 4.1

Mount Owen Complex Conceptual Mine Plan - Year 1

File Name (A4): R13/4166_471.dgn
20191121 15.54



Data Source: Glencore (2019)
Note: Mount Owen Consent Boundary assumes Narama Pipeline Modification is approved

0 1.0 2.0 3.0km

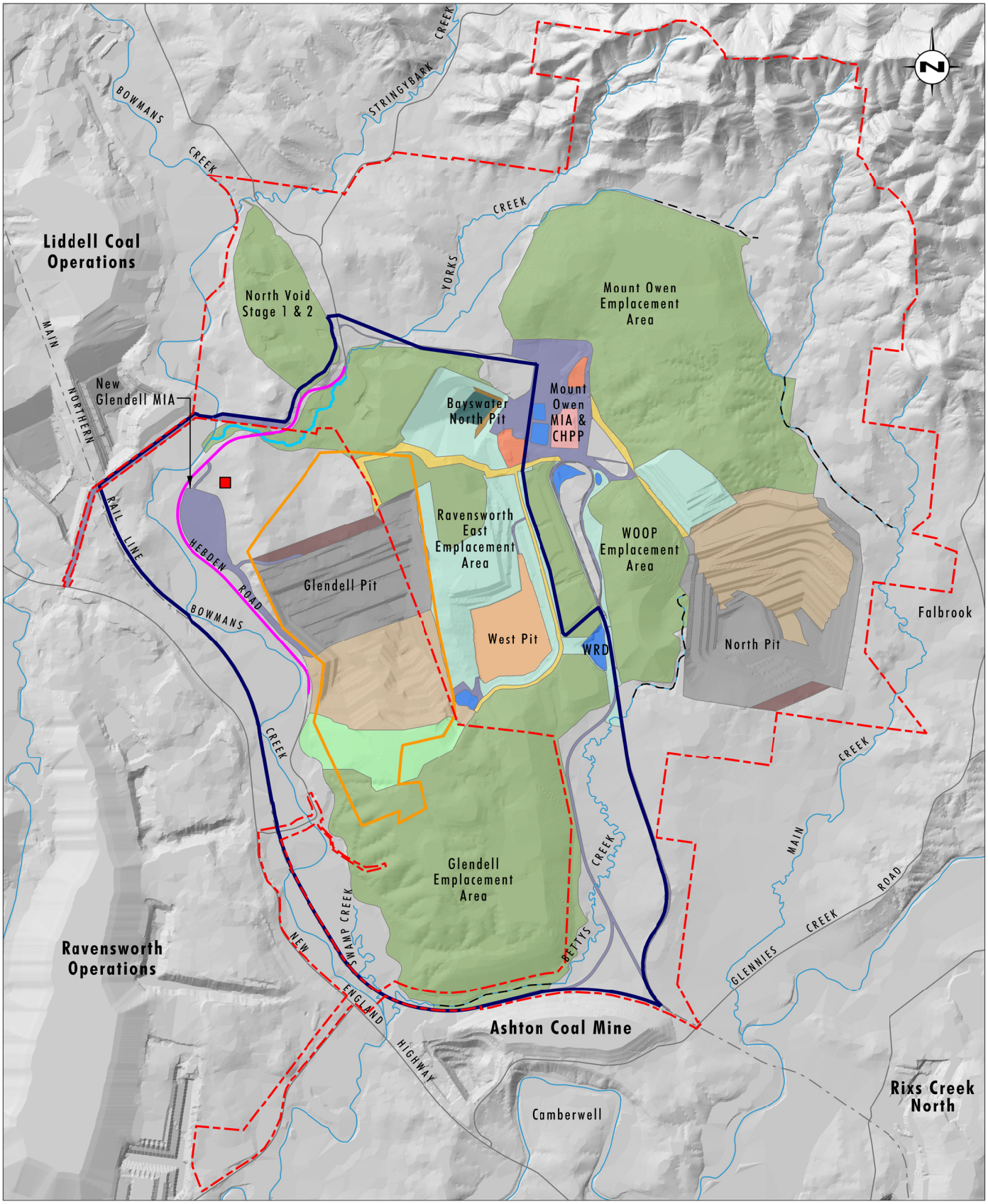
Legend

- Project Area
- Glendell Pit Extension
- Mount Owen Consent Boundary
- Existing Creek Diversion
- Yorks Creek Realignment (Establishment)
- Hebden Road Realignment
- Ravensworth Homestead
- Ravensworth Farm Relocation Option
- Active Pit/Working Area
- Active Overburden Emplacement Area
- Topsoil Removal Strip
- Shaping for Final Landform
- Temporary Rehabilitation
- Rehabilitation
- Creek Realignment (Establishment)
- Infrastructure/Internal Access
- Haul Road
- Coal Stockpile ROM
- Coal Stockpile Product
- Tailings Emplacement Area
- Water Storage
- Water Storage/Tailings Emplacement Area
- Highwall

FIGURE 4.2

Mount Owen Complex Conceptual Mine Plan - Year 6

File Name (A4): R13/4166_472.dgn
20191121 15.55



Data Source: Glencore (2019)
Note: Mount Owen Consent Boundary assumes Narama Pipeline Modification is approved

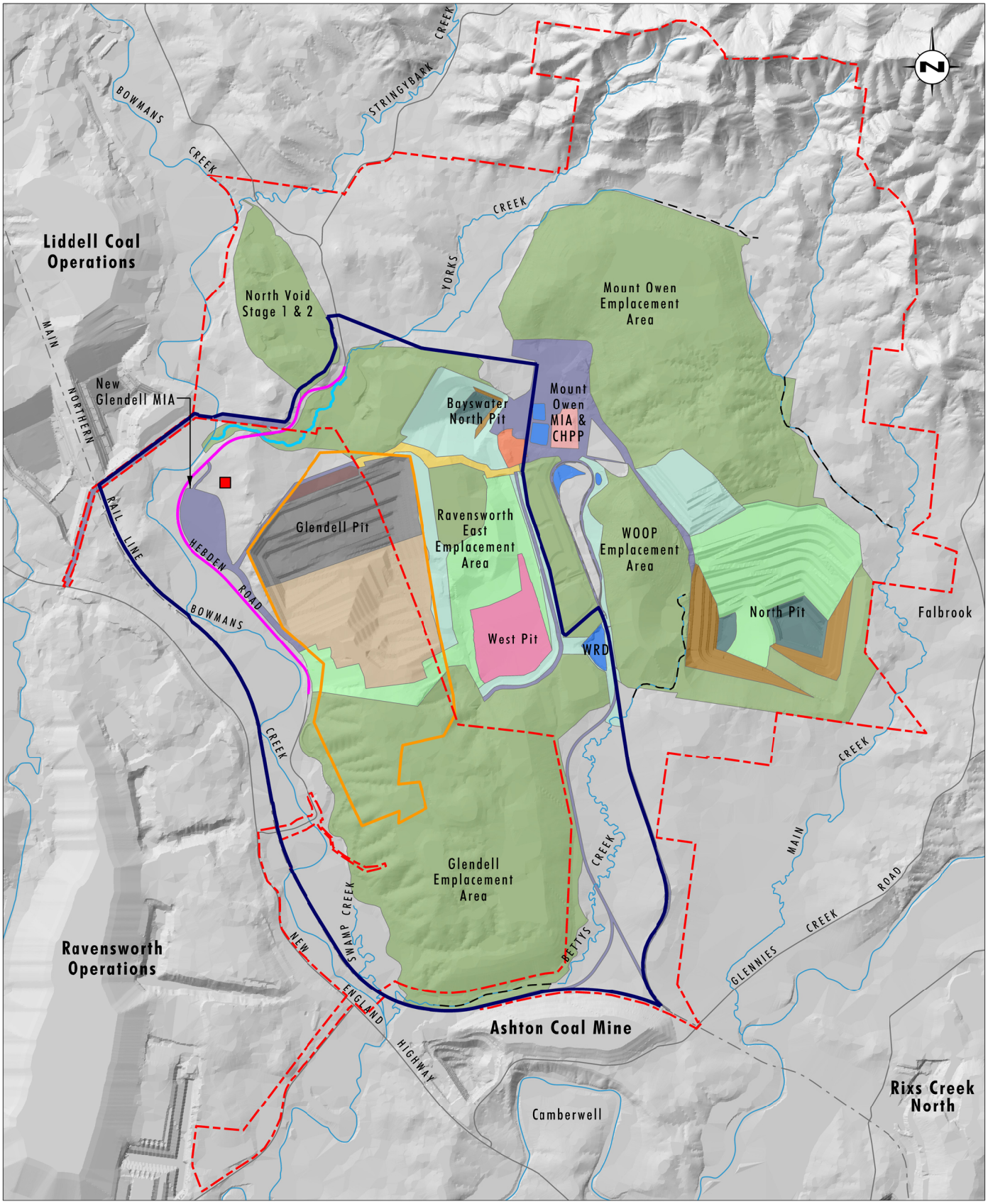
Legend

- Project Area
- Glendell Pit Extension
- Mount Owen Consent Boundary
- Existing Creek Diversion
- Yorks Creek Realignment (Commissioned)
- Hebden Road Realignment
- Ravensworth Farm Relocation Option
- Active Pit/Working Area
- Active Overburden Emplacement Area
- Topsoil Removal Strip
- Shaping for Final Landform
- Temporary Rehabilitation
- Rehabilitation
- Infrastructure/Internal Access
- Haul Road
- Coal Stockpile ROM
- Coal Stockpile Product
- Tailings Emplacement Area
- Water Storage
- Water Storage/Tailings Emplacement Area
- Highwall

FIGURE 4.3

Mount Owen Complex Conceptual Mine Plan - Year 13

File Name (A4): R13/4166_473.dgn
20191121 15.57



Data Source: Glencore (2019)
Note: Mount Owen Consent Boundary assumes Narama Pipeline Modification is approved

Legend

- Project Area
- Glendell Pit Extension
- Mount Owen Consent Boundary
- Existing Creek Diversion
- Yorks Creek Realignment (Commissioned)
- Hebden Road Realignment
- Ravensworth Farm Relocation Option
- Active Pit/Working Area
- Active Overburden Emplacement Area
- Topsoil Removal Strip
- Shaping for Final Landform
- Temporary Rehabilitation
- Rehabilitation
- Infrastructure/Internal Access
- Haul Road
- Coal Stockpile ROM
- Coal Stockpile Product
- Water Storage
- Water Storage/Tailings Emplacement Area
- Highwall
- Tailings Capping in Progress

FIGURE 4.4

Mount Owen Complex Conceptual Mine Plan - Year 18

File Name (A4): R13/4166_474.dgn
20191121 15.59

4.2.2 Noise source data

The equipment schedules for the four years modelled are presented in **Table 4.1**. The actual fleet composition may vary over the life of the Project, however the modelled equipment is considered to be indicative of operations in each modelled stage. Actual fleet numbers modelled for evening and night time operating scenarios may differ from that set out in **Table 4.1** due to consideration of reasonable and feasible operating arrangements during the modelled meteorological conditions.

Table 4.1 Proposed production and indicative equipment schedule

		Year 1	Year 6	Year 13	Year 18
Production Summary					
Total overburden (waste) (Mbcm)		26.2	35.7	59.0	34.1
ROM coal (Mt)		4.2	5.9	10.0	5.9
Equipment modelled					
Excavators	Liebherr 996	1	3	5	3
	Liebherr 9400	-	1	2	1
	Hitachi EX2500	1	1	2	1
Trucks	Cat 793F	14	12	23	15
	Hitachi EH5000	-	6	11	5
	Cat 789	5	10	19	10
	Cat 785	-	-	1	1
Dozers	Dozer D10	5	7	12	7
	Dozer D11	3	3	7	4
	Rubber Tyred Dozer	3	3	3	2
	Ancillary Drills	2	3	5	3
	Service Truck	4	4	5	4
	Water Trucks	3	3	6	3
	Grader 16M	1	1	3	1
	Grader 24M	2	2	3	2
Indicative Fleet Allocation					
Exc101_996 - Haul		4 793 trucks (100% waste)	6 793 trucks (100% waste); (mixed fleet required)	6 793 trucks (100% waste); (mixed fleet required)	5 793 trucks (100% waste)
Exc102_996 – Haul		5 793 trucks (100% waste)	6 EH5000 trucks (100% waste); (mixed fleet required)	6 EH5000 trucks (100% waste)	5 EH5000 trucks (100% waste)
Exc103_996 – Haul		-	-	6 793 trucks (100% waste)	7 793 trucks (100% waste)
Exc104_996 – Haul		-	-	7 793 trucks (100% waste)	-
Exc113_996 – Haul		5 793 trucks (100% waste)	7 793 trucks (100% waste)	7 793 trucks (100% waste)	-
Exc134_9400 - Haul		-	6 789 trucks on coal, 4 789 trucks on waste (70% waste/30% coal)	7 789 trucks on coal, 4 789 trucks on waste (40% waste/60% coal)	-

	Year 1	Year 6	Year 13	Year 18
Exc135_9400 - Haul	-	-	8 789 trucks on coal, 3 789 trucks on waste (80% waste/20% coal)	7 789 trucks on coal, 4 789 trucks on waste (60% waste/40% coal)
Exc151_2500 - Haul	5 789 trucks on coal, 4 789 trucks on waste (50% waste/50% coal)	7 789 trucks on coal, 4 789 trucks on waste (50% waste/50% coal)	5 789 trucks on coal, 5 789 trucks on waste (50% waste/50% coal)	6 789 trucks on coal, 4 789 trucks on waste (50% waste/50% coal)
Exc152_2500 - Haul	-	-	6 789 trucks on coal, 3 789 trucks on waste (50% waste/50% coal)	-

Note: The equipment list are considered indicative rather than mandatory, the actual performance of the mining operation as a whole will be determined by monitoring noise levels at select receptors and implementing control measures or modifying the mobile fleet mix to meet noise criteria.

The proposed equipment sound power levels (including alternate sound power levels to be modelled for the Liebherr and Hitachi Excavators and D10 and D11 dozers) are presented in Table 4.2, which also includes a reference to the source documentation for each nominated sound power level.

Table 4.2 Proposed Equipment Indicative Sound Power Schedule (or equivalent)

Item	Label	Activity	dB(Lin)	dB(A)	Data Source
1	Liebherr 996 excavator	Digging	123	117	Mount Owen/Liddell Coal Operations
2	Liebherr R9400 excavator	Digging	121	116	Mount Owen
3	Hitachi EX2500 excavator	Digging	125	115	Glendell
4	Cat 793FXQ Mine Truck	Idle loading	110	103	Mount Owen/Bulga Coal
		Pulling away	125	116	Mount Owen/Bulga Coal
		Flat	125	114	Mount Owen
		Up hill	125	116	Mount Owen
		Dumping	122	113	Mount Owen
		Down hill	125	114	Mount Owen
5	EH5000 Mine Truck (EH4500 Data)	Flat	118	111	Mount Owen
		Up hill	125	115	Mount Owen
		Down hill	126	114	Mount Owen
6	Cat 789 Mine Truck	Up hill	122	116	Glendell
		Down hill	125	115	Mount Owen
7	Cat 785CXQ Mine Truck	Idle loading	110	103	Mount Owen/Glendell
		Flat	120	111	Mount Owen
		Up hill	123	117	Mount Owen
		Dumping	120	111	Mount Owen
		Down hill	120	109	Mount Owen

Item	Label	Activity	dB(Lin)	dB(A)	Data Source
8	D11 Dozer	Forward	123	112	Mount Owen/Mangoola Open Cut
		Reverse 2nd gear	126	122	Mount Owen/Mangoola Open Cut
		Reverse 1st gear	124	120	Mount Owen/Mangoola Open Cut
9	D10 Dozer	Forward	122	113	Mount Owen/Mangoola Open Cut
		Reverse 2nd gear	126	120	Mount Owen/Mangoola Open Cut
		Reverse 1st gear	124	118	Mount Owen/Mangoola Open Cut
10	Rubber Tyred Dozer	Forward	116	110	Glendell/Mangoola Open Cut
11	CAT 992D FEL	Working on raw coal	121	113	Mount Owen
12	CAT 785 Water Cart	Road maintenance	126	115	Mount Owen
13	CAT 777 Water Cart	Road maintenance	122	115	Mount Owen/Glendell
14	CAT 16M Grader	Road maintenance	115	108	Glendell
15	CAT 24M Grader	Road maintenance	119	112	Mount Owen/Glendell
16	Reedrill SK50 Drill	Drilling	119	114	Mount Owen/Glendell
17	Service Truck	Ancillary - flat	112	112	-

The dynamic sound power levels in **Table 4.2** were sourced, where possible, from sound power level equipment noise monitoring at Glendell, Mount Owen and Liddell Coal Operations. Where representative dynamic sound power level data was not available for the equipment at these operations supplementary data was used from other Glencore mining operations (Mangoola Open Cut and Bulga Coal). The preferred sound power levels (i.e. not the alternate numbers) are consistent with the sound power levels used in the modelling for operational management purposes at Glendell. The sound power levels should be considered as indicative of the level of control required to facilitate good management of the Project, not mandatory limits. Consistent with existing operations, proactive and reactive mine management will be undertaken to manage noise impacts with operational decisions, such as to relocate or switch-off parts of the fleet, used in conjunction with the ongoing management of machine sound power levels.

4.3 Meteorological conditions

Certain meteorological conditions may increase noise levels by focusing soundwave propagation paths at a single point. Such refraction of sound waves will occur during temperature inversions (atmospheric conditions where temperatures increase with height above ground level) and where there is a wind gradient i.e. wind velocities increasing with height above ground level) with wind direction from the source to the receiver.

The NPfI approach to account for noise-enhancing weather conditions is to state the meteorological conditions under which the project noise trigger levels and limits will apply, rather than stipulating the noise modelling parameters that must be used. NPfI Fact Sheet D requires that noise impacts be assessed under weather conditions that would be expected to occur at a particular site for a significant period of time. Standard meteorological conditions and noise-enhancing meteorological conditions have been defined in Table D1 of the NPfI and are reproduced in **Table 4.3**.

Table 4.3 Standard and noise-enhancing meteorological conditions

Meteorological conditions	Meteorological parameters
Standard meteorological conditions	Day/evening/night: Stability categories A to D with wind speed up to 0.5 m/s at 10 m above ground level.
Noise-enhancing meteorological conditions	Day/evening: Stability categories A to D with light winds (up to 3 m/s at 10 m above ground level) Night: Stability categories A to D with light winds (up to 3 m/s at 10 m above ground level) and/or stability category F with winds up to 2 m/s at 10 m above ground level.

Notes: Where a range of conditions is nominated, the meteorological condition delivering the highest predicted noise level should be adopted for assessment purposes. However, feasible and reasonable noise limits in consents and licences derived from the process would apply under the full range of meteorological conditions nominated under standard or noise-enhancing conditions as relevant.

The two options provided by the NPfI to consider meteorological effects are as follows:

1. Adopt the **noise-enhancing meteorological conditions** for all assessment periods for noise impact assessment purposes without an assessment of how often these conditions occur – a conservative approach that considers source-to-receiver wind vectors for all receivers and F class temperature inversions with wind speeds up to 2 m/s at night.

2. Determine the **significance of noise-enhancing conditions**. This involves assessing the significance of temperature inversions (F and G class stability categories) for the night time period and the significance of light winds up to and including 3 m/s for all assessment periods during stability categories other than E, F or G. Significance is based on a threshold of occurrence of 30% determined in accordance with the NPfI provisions. Where noise-enhancing meteorological conditions occur for less than 30% of the time, standard meteorological conditions may be adopted for the assessment.

In this NIA Option 2 was used based on a meteorological data set obtained from Glencore for the period from January to December 2014 (inclusive) using data from the Glendell Meteorological Station (SX 13) which is located close to the proposed Glendell Pit Extension (refer to **Figure 3.2**). The data set included 34,052 15-minute weather measurements equating to 97.2% data availability. Meteorological data from seven recent years (2012 to 2018) have been analysed in order to identify a representative year for the noise and air quality modelling for the Project. The 2014 calendar year was selected as the meteorological modelling year based on the high data capture rate, similar wind patterns to other years and rainfall being slightly below the long-term average (the preference was for a slightly drier than average year). Selection of the 2014 meteorological year also maintains consistency with the NIA for the Mount Owen Continued Operations Modification 2 (Umwelt, 2018) and the Air Quality Impact Assessment (AQIA) for the Project (Jacobs, 2019).

The identification of significance of noise-enhancing conditions is presented in **Appendix C** and discussed in more detail below.

4.3.1 Wind

The NPfI requires that wind effects need to be assessed when wind is considered a feature of the area. Wind is considered a feature of the area where source-to-receiver winds of 3 m/s occur for 30% of the time in any assessment period.

Fact Sheet D of the NPfI requires that noise impacts be assessed under weather conditions that would be expected to occur at a particular site for a significant period of time. The collated 2014 meteorological dataset, provided in **Appendix C**, was analysed to determine prevailing wind conditions likely to influence the propagation of noise at the Project site.

4.3.2 Temperature inversions

Temperature inversions, when they occur, can increase noise levels by focusing sound waves. Temperature inversions occur predominantly at night during the winter months. For temperature inversions (F and G class stability conditions) to be a significant characteristic of the area they need to occur for approximately 30% of the total night time (i.e. the evening and night-time periods) during winter, or about two nights per week.

Meteorological data was assessed in accordance with NPfI methodology to determine the likelihood of temperature inversions during the winter evening and night time periods. The results of the analysis of the 2014 meteorological dataset are presented in **Appendix C**.

Wind speed analysis of the prevailing winds during inversions has also been conducted and is summarised in **Appendix C**.

4.3.3 Modelling parameters

In accordance with NPfI Fact Sheet D, the detailed approach to the analysis of the meteorological data was used to determine if specific wind effects and/or inversion conditions warranted further analysis. The vectored wind analysis and review of the wind roses, undertaken in accordance with the requirements of the NPfI, identified the presence a range of conditions that could enhance the propagation of noise from the Project towards sensitive receivers. In addition to calm neutral conditions, the analysis of the 2014 meteorological dataset identified a range of meteorological conditions that should be considered in the assessment. The meteorological conditions and modelling parameters used in the predictive noise model are presented in **Table 4.4**.

Table 4.4 Modelling parameters

Season	Period	Wind Conditions	% Occurrence	Modelling Parameters
Summer	Day	ESE to S 0.5 to 3.0 m/s	28%	3 m/s SE wind
	Night	SE to S 0.5 to 3.0 m/s	39%	3 m/s SE wind
Autumn	Day	ESE to S 0.5 to 3.0 m/s	30%	3 m/s SE wind
	Evening	ESE to S 0.5 to 3.0 m/s	37%	3 m/s SE wind
	Night	WNW to NNW 0.5 to 3.0 m/s	41%	3 m/s NW wind
Winter	Evening	ESE to S 0.5 to 3.0 m/s	29%	3 m/s SE wind
	Night [1]	WNW to NNW 0.5 to 3.0 m/s	36%	3 m/s NW wind
	Evening /Night	Calm (Evening/Night) F and G Class	6% / 9% 34%	F class as 3°/100 m inversion with 2 m/s drainage flow from NNW representing 21% of the Evening/Night period

Note [1] Percentages include periods of time that may be represented in more than one condition description

The meteorological conditions presented in **Table 4.4** have also been used in the analysis of sleep disturbance and modifying factors such as low-frequency noise.

4.3.4 Probabilistic modelling parameters

The NPfI meteorological assessment method (Option 2 described above) was developed further through the use of a probabilistic modelling approach to help design the operating parameters of the Project. The difference between the Option 2 method described above and the probabilistic noise modelling approach is that the latter approach considers the implication of standard, noise-enhancing and very noise-enhancing meteorological conditions irrespective of the percentage of occurrence.

The probabilistic noise modelling approach allows the impact of the temporal variations in the meteorological conditions on the propagation of sound from the source to the receiver to be considered. The probabilistic modelling approach includes the iterative implementation of the noise control strategies to determine the percentage of the time each strategy, such as machine rerouting or shut down, needs to be implemented.

The probabilistic noise model uses a detailed set of meteorological conditions that are representative of the meteorological conditions that would be expected during the life of the mine. The modelling approach involves analysing the local meteorological conditions to determine the percentage of occurrence of inversions and wind effects in the region for each respective season and time period. The predictive noise model is then run for each set of meteorological conditions described by the wind speed interval, wind direction interval and temperature gradients representing A to G class stability conditions for each source-receiver transmission path. The proportion of time each of these combinations applies is then combined with the resulting predicted sound pressure level to determine the noise level at the receiver location.

It is important to note that the aim of the probabilistic approach is not to simply model a preferred operational alternative, but rather to enable consideration of operational alternatives that are available to allow the Project to continue to operate during a range of standard, noise-enhancing and very noise-enhancing meteorological conditions and achieve the approved noise criterion at each receiver location. The operational implications of these alternatives were considered in the assessment of the reasonable and feasible operational scenarios used in the NPfI Option 2 assessment.

The meteorological conditions and modelling parameters used in the probabilistic noise modelling are presented in **Appendix C**.

The analysis of the meteorological data in **Appendix C** identified 470 meteorological conditions that were considered representative of the local meteorological conditions. The modelling parameters are presented in **Table 4.5**.

Table 4.5 Meteorological modelling parameters

Stability Class	Temperature Gradient	Wind Direction	Wind Speed (m/s)	No. of Calm Conditions	Total No. Conditions Modelled
A, B, C, D	0°/100 m	All modelling based on an 8-point compass, represented by: N, NE, E, SE, S, SW, W, NW	0.3, 0.7, 0.9, 1.2, 1.4, 1.7, 1.9, 2.3, 2.8, 3.3, 3.8, 4.3, 4.8	1	105
E	1.5°/100 m		0.3, 0.7, 0.9, 1.2, 1.4, 1.7, 1.9, 2.3, 2.8, 3.3, 3.8, 4.3, 4.8	1	105
F	2.25°/100 m 3°/100 m		0.3, 0.7, 0.9, 1.2, 1.4, 1.7, 1.9, 2.3, 2.8	2	146
G	4°/100 m 6°/100 m		0.3, 0.7, 0.9, 1.2, 1.4, 1.7, 1.9	2	114
				Total	**470**

The results of the noise modelling for the Project based on the probabilistic method are presented as noise levels that could be exceeded 10% of the time. This is reported as a 10^{th} percentile (10^{th} %ile). The results of the probabilistic method are also presented in **Appendix F**. The results of the probabilistic modelling approach are used to inform the Project on the likely levels of control required during noise-enhancing meteorological conditions to proactively and reactively manage the noise impacts based on operational decisions such as relocating or switching-off parts of the fleet. This approach to managing the noise impacts is consistent with the existing operation of the Glendell Mine.

4.4 Presentation of predictions

The results of the noise modelling for the Project based on noise-enhancing meteorological conditions (Option 2) are presented as noise contours representing 35, 38, 40 and 43 dB(A) for the meteorological conditions identified in Table 4.5. These specific contour levels have been selected in order to demonstrate the various/variable noise criteria relevant to each receiver area can be achieved i.e. the 35 dB(A) contour level describes the relevant predicted noise into the Hebden area for the night period, while 38 dB(A) contour level describes the relevant predicted noise into Camberwell for the night period. The noise contours are described as follows:

- 35 dB(A) the minimum project intrusiveness noise levels $L_{Aeq,15minute}$ for the evening and night periods
- 38 dB(A) the minimum project amenity noise levels $L_{Aeq,15minute}$ for the night period
- 40 dB(A) the minimum project intrusiveness noise levels $L_{Aeq,15minute}$ for the day periods
- 43 dB(A) the minimum project amenity noise levels $L_{Aeq,15minute}$ for the evening period

The results of the assessment of noise-enhancing meteorological conditions are presented in **Section 5.0** and **Appendix F**. The assessment of noise-enhancing meteorological conditions has been completed in accordance with the requirements of NPfI Fact Sheet D.

5.0 Results

5.1 Operational noise - Project

5.1.1 Noise-enhancing meteorological conditions

ENM's Single Point calculation feature was used to determine noise levels from the Project at the identified receiver locations. Table 5.1 and Table 5.2 provide a summary of the compliance of the Project against the project noise trigger levels discussed in **Section 4.0** and presented in **Appendix D** for each individual receiver (including rural residential and non-residential). Detailed results for each receiver location are set out in **Appendix F**.

The predicted operational noise levels for the Year 1, 6, 13 and 18 conceptual mine plans under likely noise enhancing meteorological conditions with operational management controls in place are presented as noise contours (predicted 35, 38, 40 and 43 dB(A)) in **Figure 5.1** to **Figure 5.16**. As discussed in **Section 5.3**, the likely noise enhancing meteorological conditions (in accordance with NPfI Fact Sheet D) which may affect the Project include:

- calm neutral conditions
- 3 m/s wind from the south-east (a vectored wind condition that can occur greater than 30% of the time during the evening and night time)
- 3 m/s wind from the north-west (a vectored wind condition that can occur up to 30% of the time during the day time)
- F Class stability, modelled as a 3°C/100 m inversion with 2 m/s drainage flow from the north west (the vectored wind condition can occur greater than 30% of the time during inversion conditions during winter night times (6pm to 7am)).

As discussed in **Section 4.0**, an iterative process has identified reasonable and feasible mine design controls and effective noise management measures which are incorporated into the model to demonstrate that compliance with the project noise trigger levels can be achieved under noise-enhancing meteorological conditions. It should be noted that the maximum level of noise management control required to meet the project noise trigger level at each receiver is only required under certain noise enhancing meteorological conditions. The scenarios modelled reflect operations with reasonable and feasible mitigation measures applied during the modelled prevailing meteorological condition to demonstrate the operation can comply with the project noise trigger levels. The actual mine layout will fluctuate on a daily basis as mining progresses to the north and overburden is emplaced in-pit to the south. The actual operational controls implemented at any given time will depend on the position of mining related activities, the fleet make-up and the actual meteorological conditions at the time of operations. Consistent with current operational management practices, operations will be managed in real time to ensure that the noise criteria applicable to the operations are being met.

Table 5.1 Compliance with noise criteria for modelled operational scenarios (residential receivers)

Receiver Area	Period	Project Noise Trigger Level	Year 1	Year 6	Year 13	Year 18
Area 1	Day	40	All receivers less than 40 dB(A)			
	Evening	35	All receivers less than 35 dB(A)			
	Night	35	All receivers less than 35 dB(A)			
Area 2	Day	40	All receivers less than 40 dB(A)			
	Evening	35	All receivers less than 35 dB(A)			
	Night	35	All receivers less than 35 dB(A)			
Area 3	Contains privately owned vacant land only - no privately-owned residence					
Area 4 - North	Day	40	All receivers less than 40 dB(A)			
	Evening	35	All receivers less than 35 dB(A)			
	Night	35	All receivers less than 35 dB(A)			
Area 4 - South	Day	40	All receivers less than 40 dB(A)			
	Evening	35	All receivers less than 35 dB(A)			
	Night	35	All receivers less than 35 dB(A)			
Area 5	Day	40	All receivers less than 40 dB(A)			
	Evening	35	All receivers less than 35 dB(A)			
	Night	35	All receivers less than 35 dB(A)			
Area 6	No privately-owned land					
Area 7	Day	40	All receivers less than 40 dB(A)			
	Evening	35	All receivers less than 35 dB(A)			
	Night	35	All receivers less than 35 dB(A)			
Area 8 West	Day	40	All receivers less than 40 dB(A)			
	Evening	40	All receivers less than 40 dB(A)			
	Night	38	All receivers less than 38 dB(A)			
Area 8 East	Day	40	All receivers less than 40 dB(A)			
	Evening	40	All receivers less than 40 dB(A)			
	Night	40	All receivers less than 40 dB(A)			
Area 9	Day	40	All receivers less than 40 dB(A)			
	Evening	40	All receivers less than 40 dB(A)			
	Night	38	All receivers less than 38 dB(A)			
Area 10	Day	40	All receivers less than 40 dB(A)			
	Evening	38	All receivers less than 38 dB(A)			
	Night	37	All receivers less than 37 dB(A)			
Area 11	Day	40	All receivers less than 40 dB(A)			
	Evening	35	All receivers less than 35 dB(A)			
	Night	35	All receivers less than 35 dB(A)			
All Other Private Residences	Day	40	All receivers less than 40 dB(A)			
	Evening	35	All receivers less than 35 dB(A)			
	Night	35	All receivers less than 35 dB(A)			

Table 5.2 Compliance with noise criteria for modelled operational scenarios (non-residential receivers)

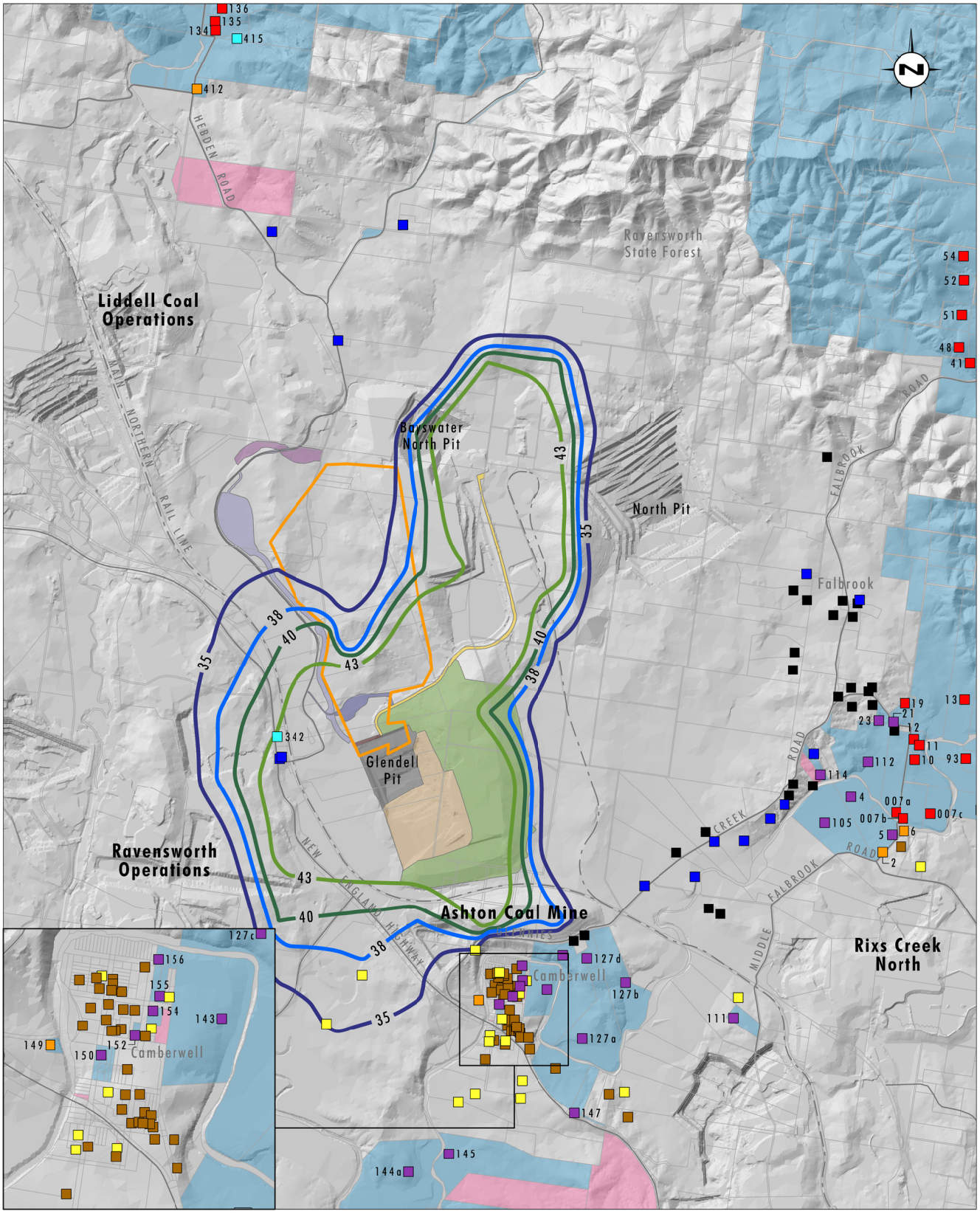
Receiver Area/ID	Period	Project Noise Trigger Level	Year 1	Year 6	Year 13	Year 18
Area 2 – 350 Mount Pleasant School [1]	Day	40	Less than 40 dB(A) – all modelled years			
	Evening	40	Less than 40 dB(A) – all modelled years			
	Night	40	Less than 40 dB(A) – all modelled years			
Area 7 – 2 Glennies Creek Hall [1]	Day	55	Less than 55 dB(A) – all modelled years			
	Evening	55	Less than 55 dB(A) – all modelled years			
	Night	55	Less than 55 dB(A) – all modelled years			
Area 7 – 6 Rural Fire Service Depot [1]	Day	55	Less than 55 dB(A) – all modelled years			
	Evening	55	Less than 55 dB(A) – all modelled years			
	Night	55	Less than 55 dB(A) – all modelled years			
Area 9 – 149 St Clements Church [1,2]	Day	45	Less than 45 dB(A) – all modelled years			
	Evening	45	Less than 45 dB(A) – all modelled years			
	Night	45	Less than 45 dB(A) – all modelled years			
Area 9 – 342 Daracon Site [1]	Day	65	Less than 65 dB(A) – all modelled years			
	Evening	65	Less than 65 dB(A) – all modelled years			
	Night	65	Less than 65 dB(A) – all modelled years			
Area 11 412 Hebden Community Hall [1]	Day	55	Less than 55 dB(A) – all modelled years			
	Evening	55	Less than 55 dB(A) – all modelled years			
	Night	55	Less than 55 dB(A) – all modelled years			
Area 11 – 415 Wild Quarry [1]	Day	65	Less than 65 dB(A) – all modelled years			
	Evening	65	Less than 65 dB(A) – all modelled years			
	Night	65	Less than 65 dB(A) – all modelled years			

Note:

1 As per the NPfI, applicable project noise trigger levels for school classrooms, places or worship, commercial and industrial premises, and community buildings apply only when they are in use.

2 St Clements Church is a deconsecrated church, criteria only applies when in use.

No receivers exceed the project noise trigger level as a result of the Project.



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

0 1.0 2.0 4.0 km

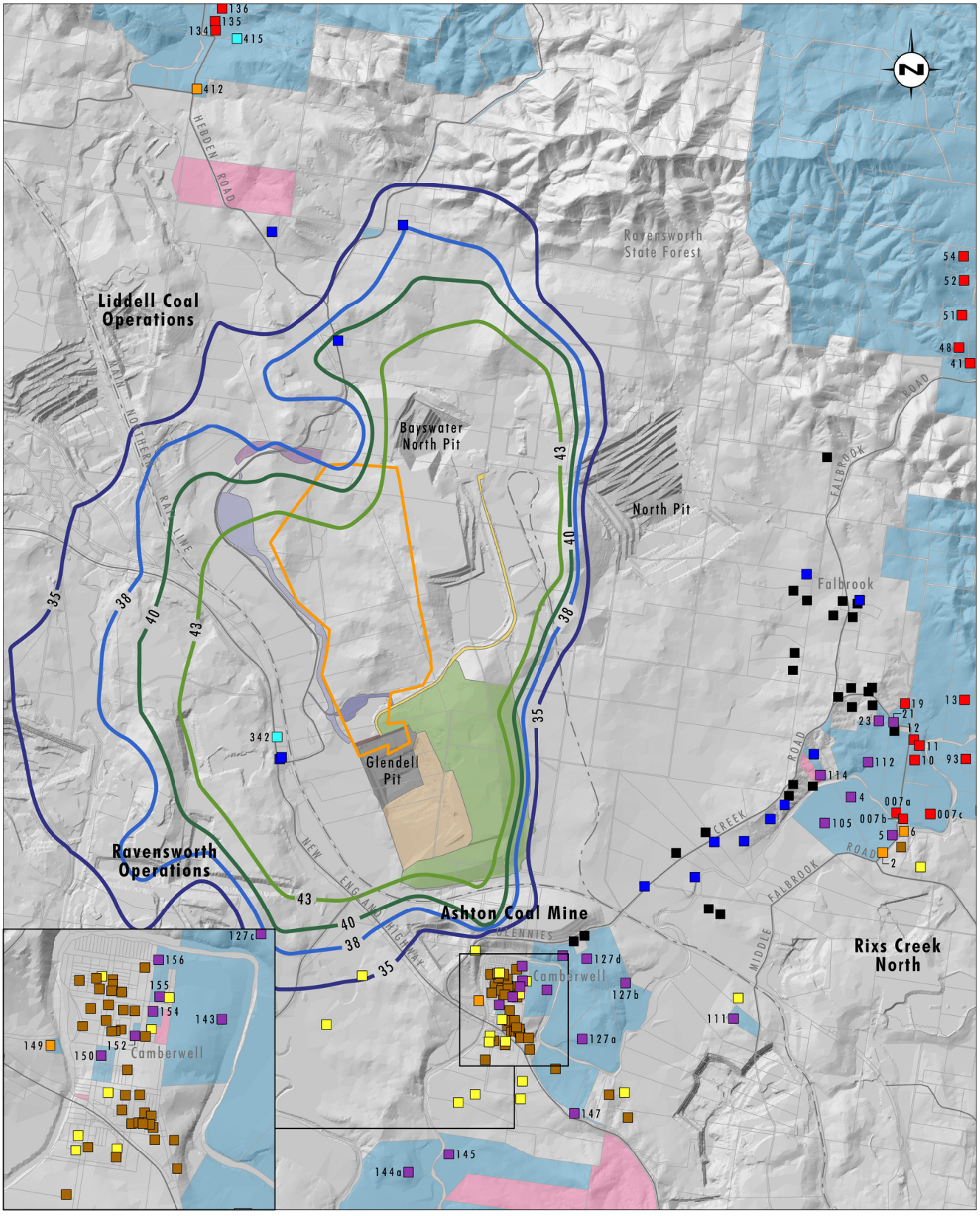
Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
- Active Overburden Emplacement Area
- Topsoil Removal Strip
- Rehabilitation
- Creek Realignment (Construction)
- Infrastructure (Construction)
- Infrastructure/Internal Access
- Haul Road
- Receptor (Private)
- Receptor (Private - Acquisition Rights)
- Receptor (Private Infrastructure)
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.1

Year 1 (2021) Predicted Noise Impacts (calm neutral conditions)

File Name (A4): R13/4166_433.dgn
20191129 9.58



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

0 1.0 2.0 4.0 km

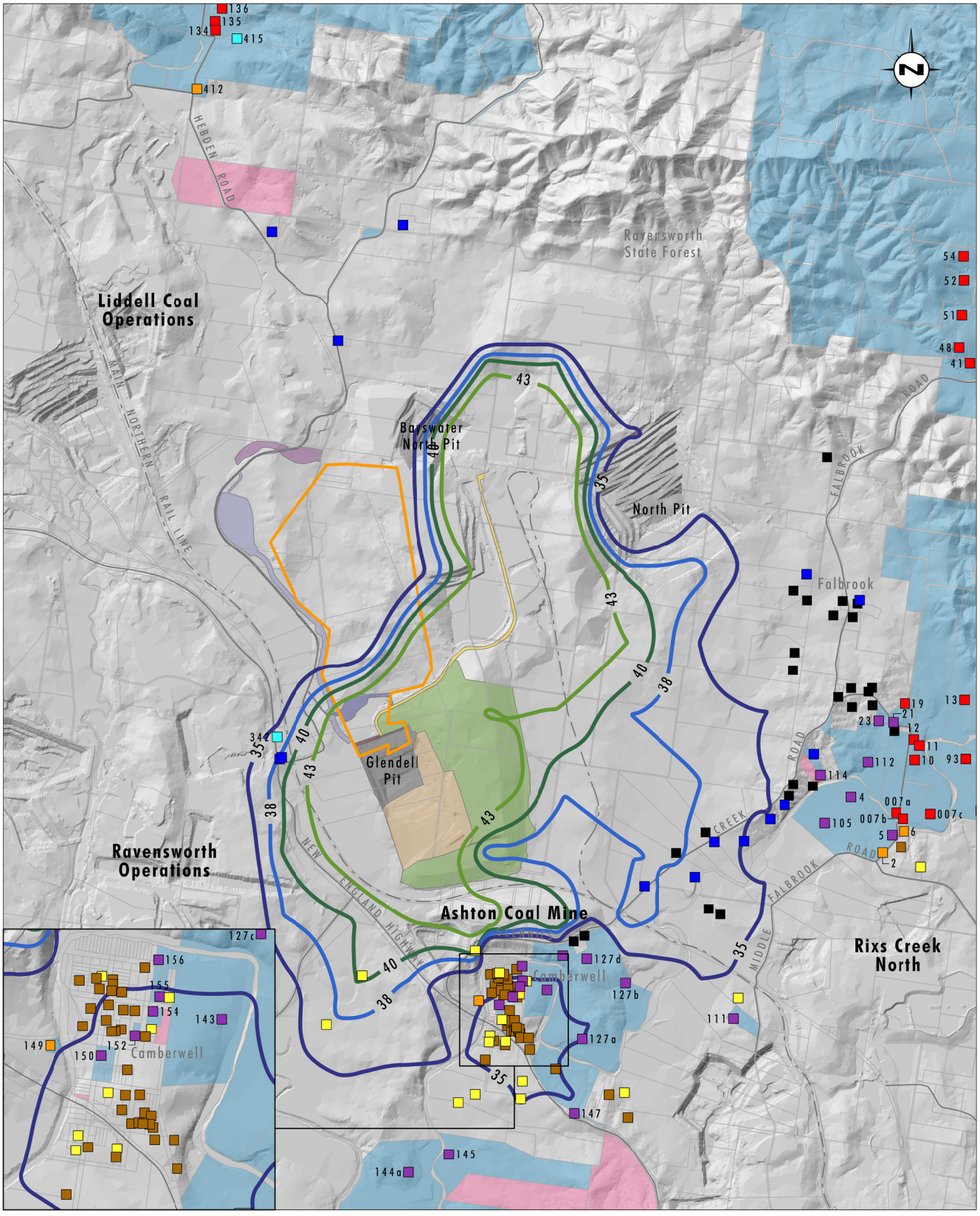
Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
- Active Overburden Emplacement Area
- Topsoil Removal Strip
- Rehabilitation
- Creek Realignment (Construction)
- Infrastructure (Construction)
- Infrastructure/Internal Access
- Haul Road
- Receptor (Private)
- Receptor (Private - Acquisition Rights)
- Receptor (Private Infrastructure)
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.2

Year 1 (2021) Predicted Noise Impacts (3m/s wind from the south east evening/night)

File Name (A4): R13/4166_434.dgn
20191129 9.59



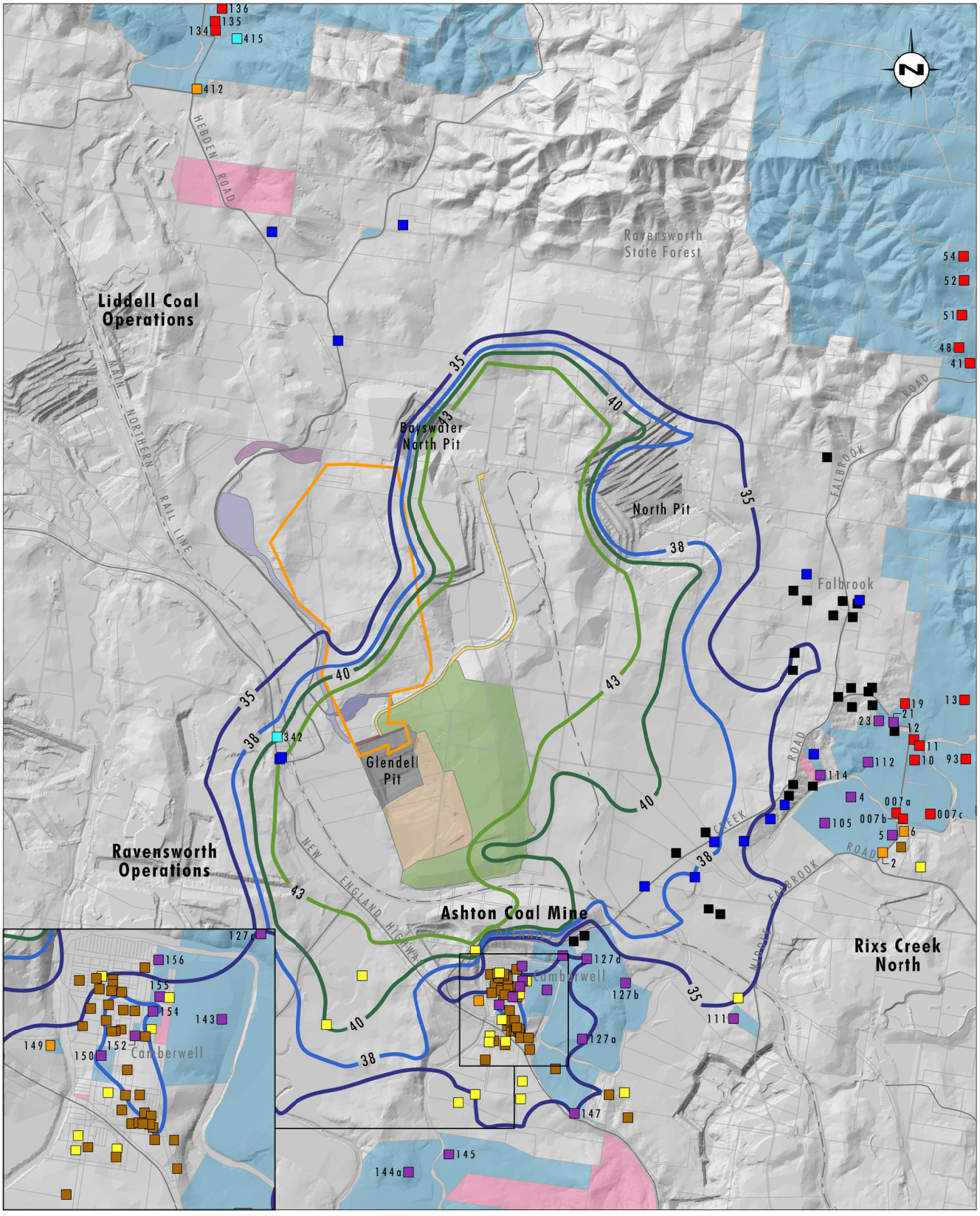
Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
- Active Overburden Emplacement Area
- Topsoil Removal Strip
- Rehabilitation
- Creek Realignment (Construction)
- Infrastructure (Construction)
- Infrastructure/Internal Access
- Haul Road
- Receptor (Private)
- Receptor (Private - Acquisition Rights)
- Receptor (Private Infrastructure)
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.3

Year 1 (2021) Predicted Noise Impacts (3m/s wind from the north west daytime)



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
- Active Overburden Emplacement Area
- Topsoil Removal Strip
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- Creek Realignment (Construction)
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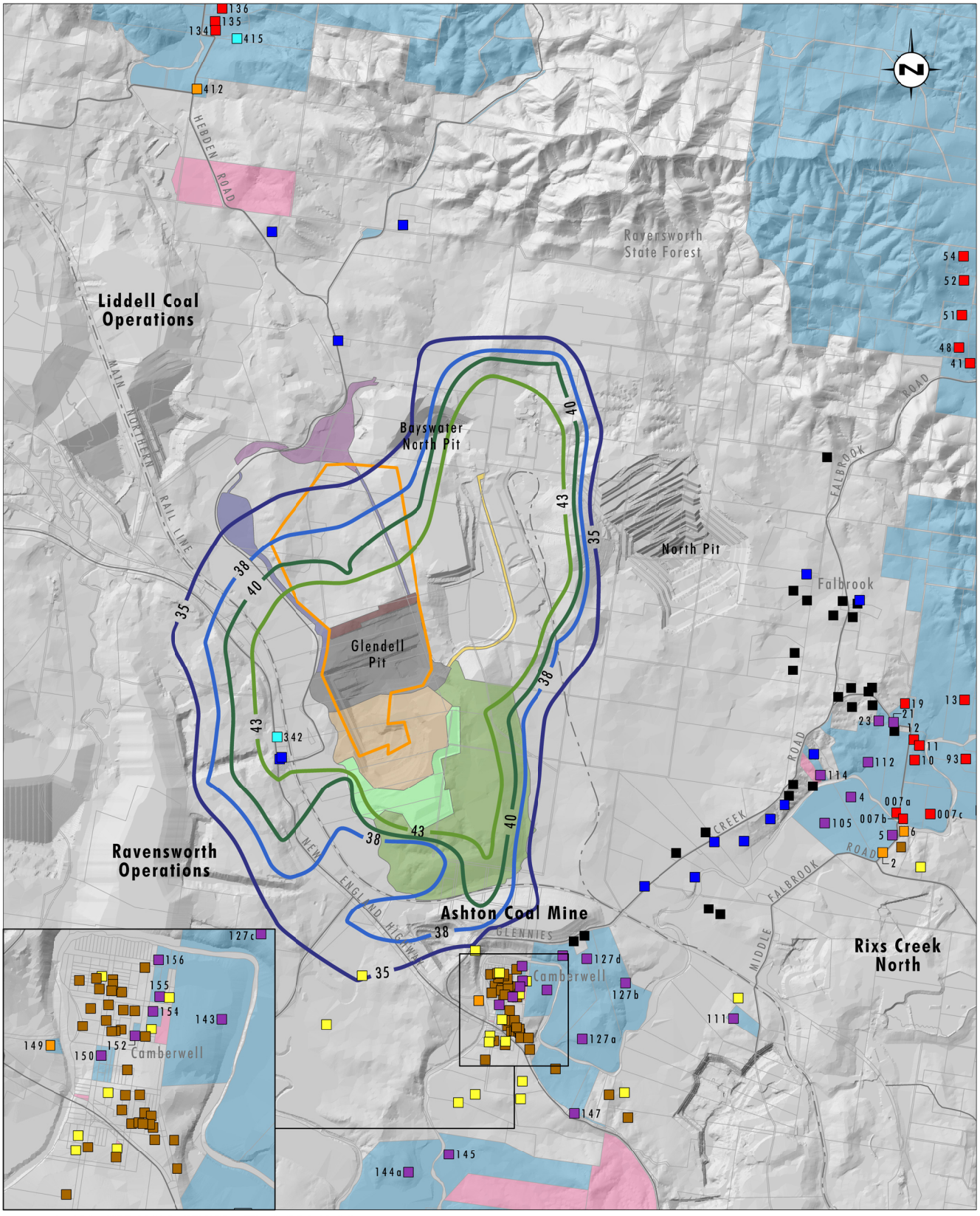
- Receptor (Private - Acquisition Rights)
- Receptor (Private Infrastructure)
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.4

Year 1 (2021) Predicted Noise Impacts (F class stability during inversion conditions winter nights)

File Name (A4): R13/4166_436.dgn
20191129 10.01



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
- Active Overburden Emplacement Area
- Topsoil Removal Strip
- Shaping for Final Landform
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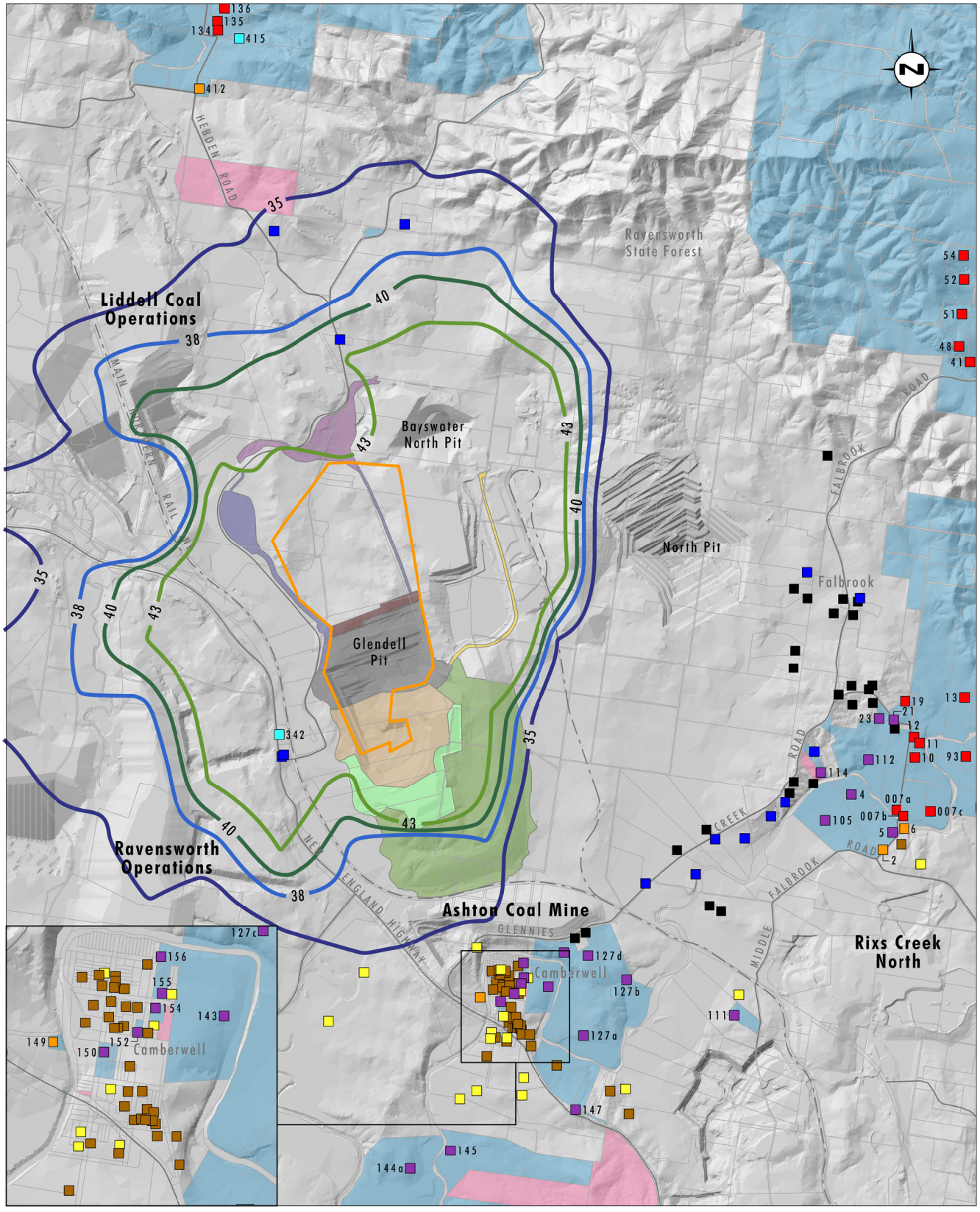
- Receptor (Private - Acquisition Rights)
- Receptor (Private Infrastructure)
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.5

Year 6 (2026) Predicted Noise Impacts (calm neutral conditions)



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
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- Receptor (Private Infrastructure)
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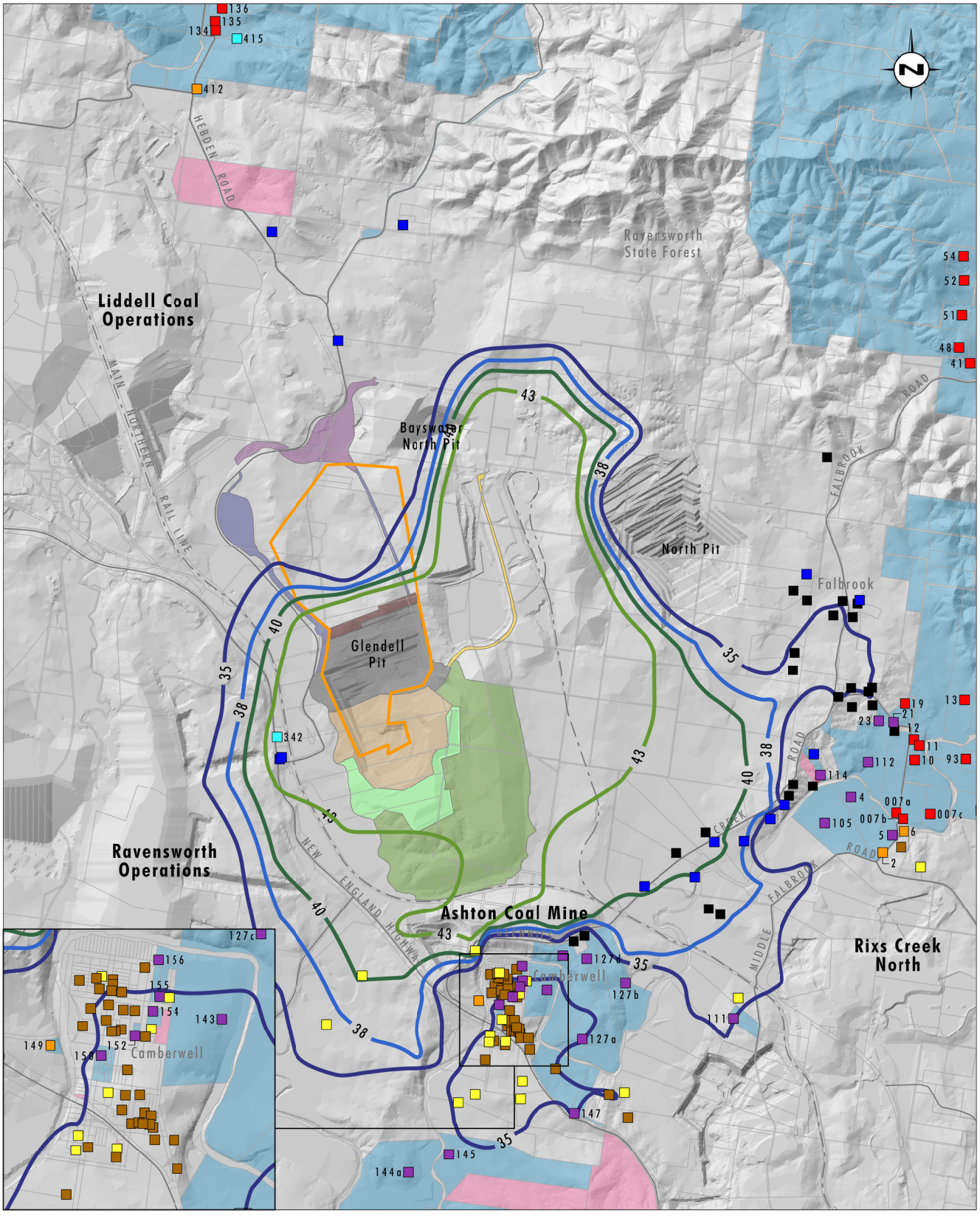
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.6

Year 6 (2026) Predicted Noise Impacts (3m/s wind from the south east evening/night)

File Name (A4): R13/4166_441.dgn
20191129 10.06



Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
- Active Overburden Emplacement Area
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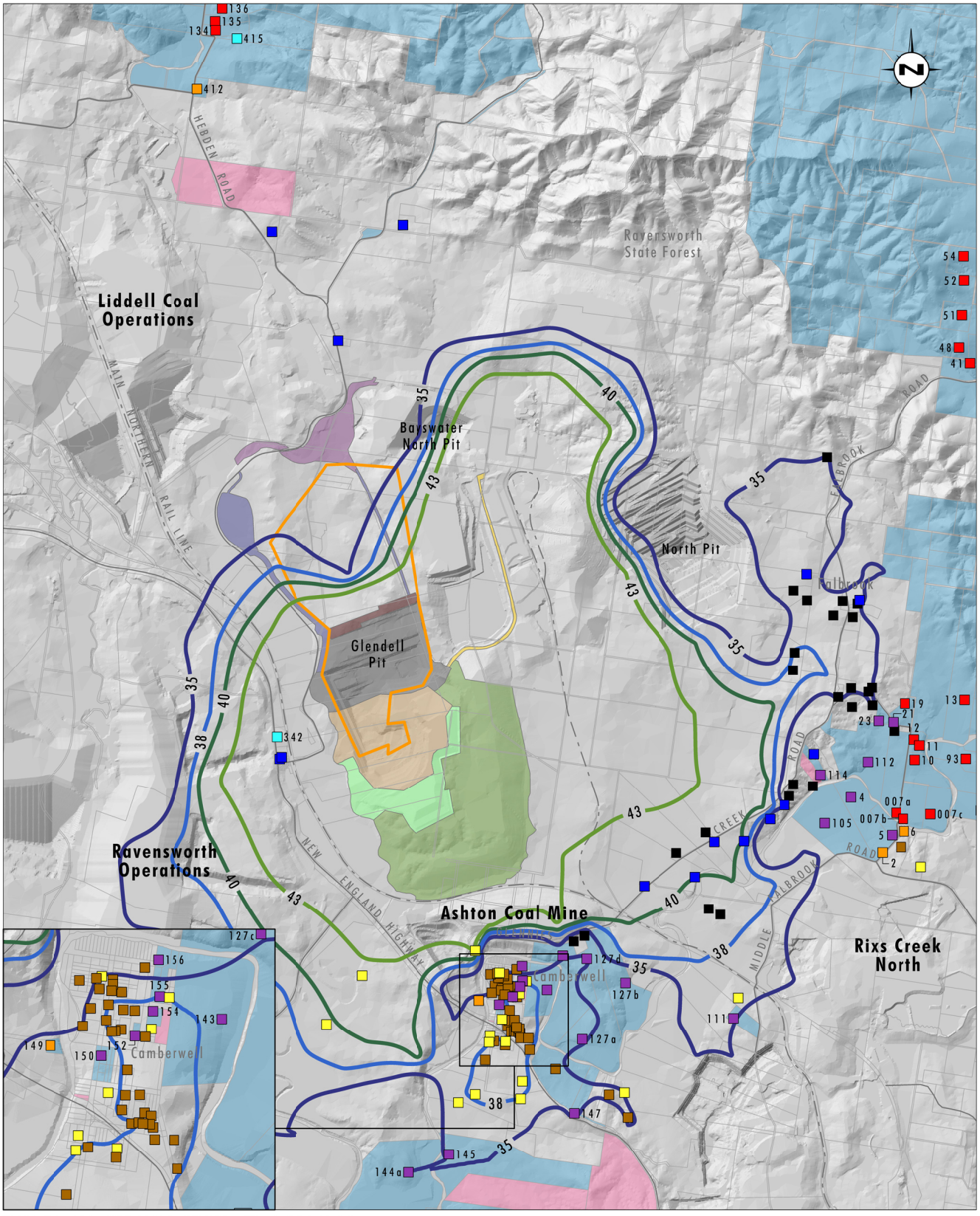
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.7

Year 6 (2026) Predicted Noise Impacts (3m/s wind from the north west daytime)



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
- Active Overburden Emplacement Area
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- Receptor (Private - Acquisition Rights)
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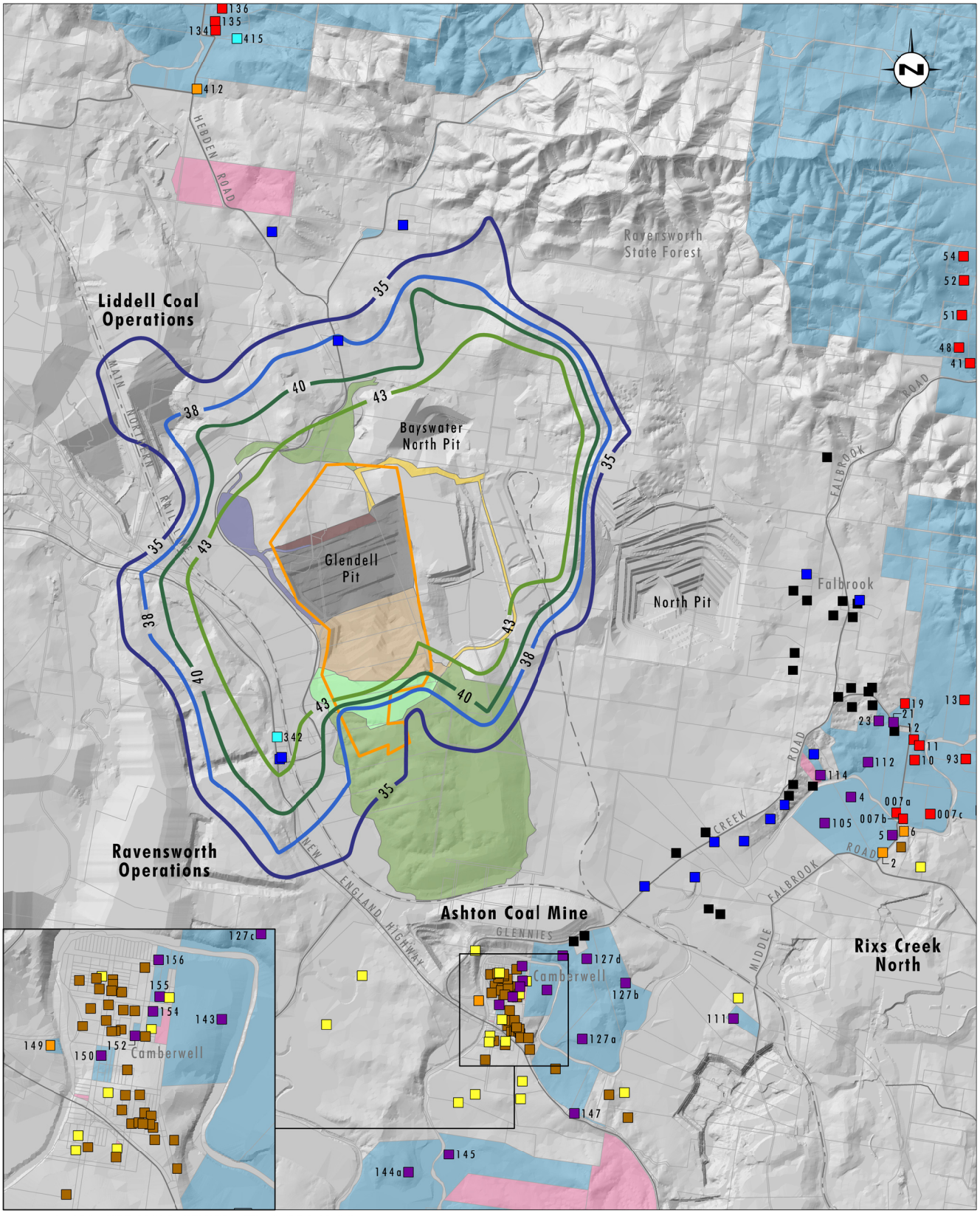
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.8

Year 6 (2026) Predicted Noise Impacts (F class stability during inversion conditions winter nights)

File Name (A4): R13/4166_443.dgn
20191129 10.08



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

0 1.0 2.0 4.0km

Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
- Active Overburden Emplacement Area
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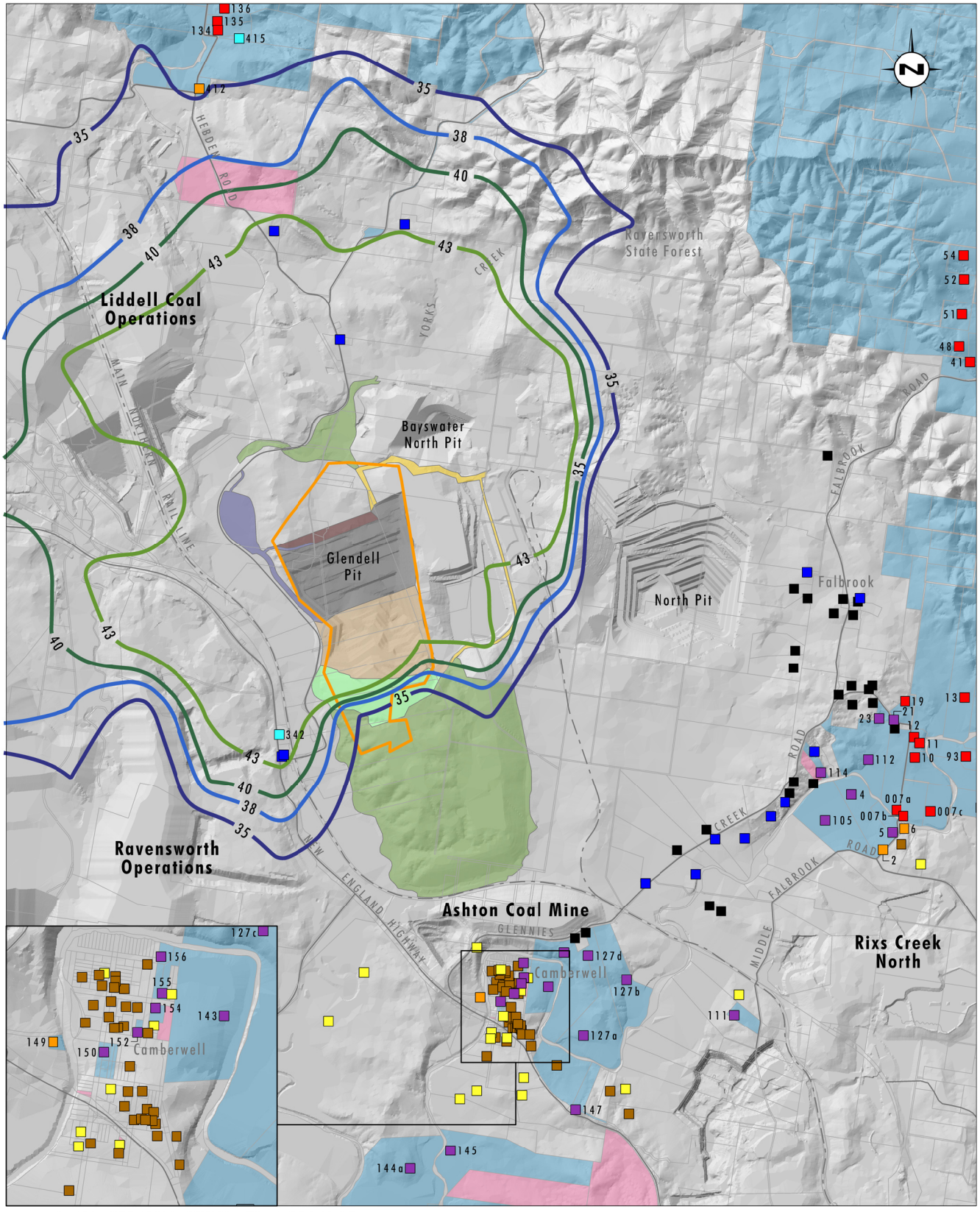
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.9

Year 13 (2033) Predicted Noise Impacts (calm neutral conditions)

File Name (A4): R13/4166_444.dgn
20191129 10.12



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
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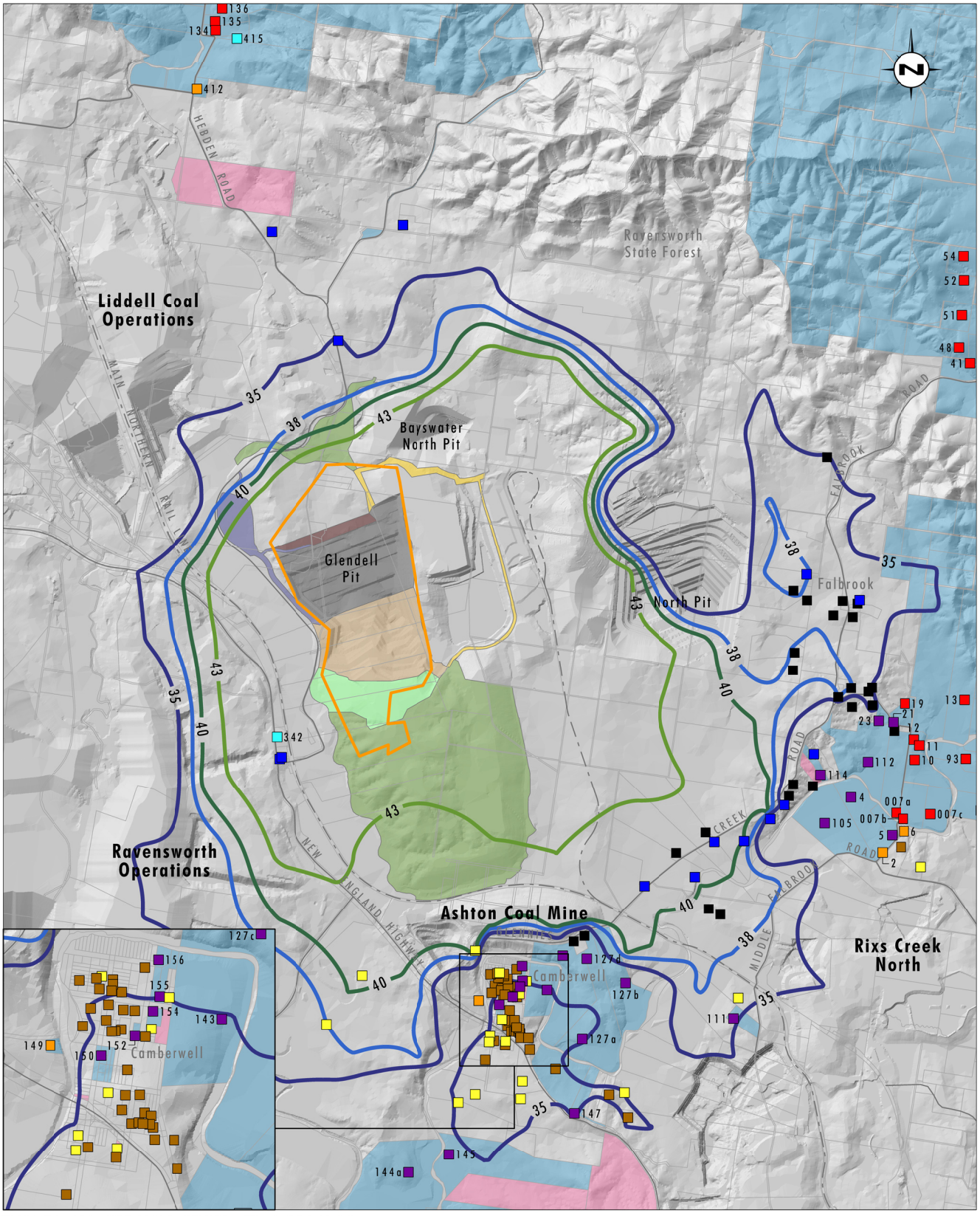
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.10

Year 13 (2033) Predicted Noise Impacts (3m/s wind from the south east evening/night)

File Name (A4): R13/4166_445.dgn
20191129 10.14



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

0 1.0 2.0 4.0km

Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
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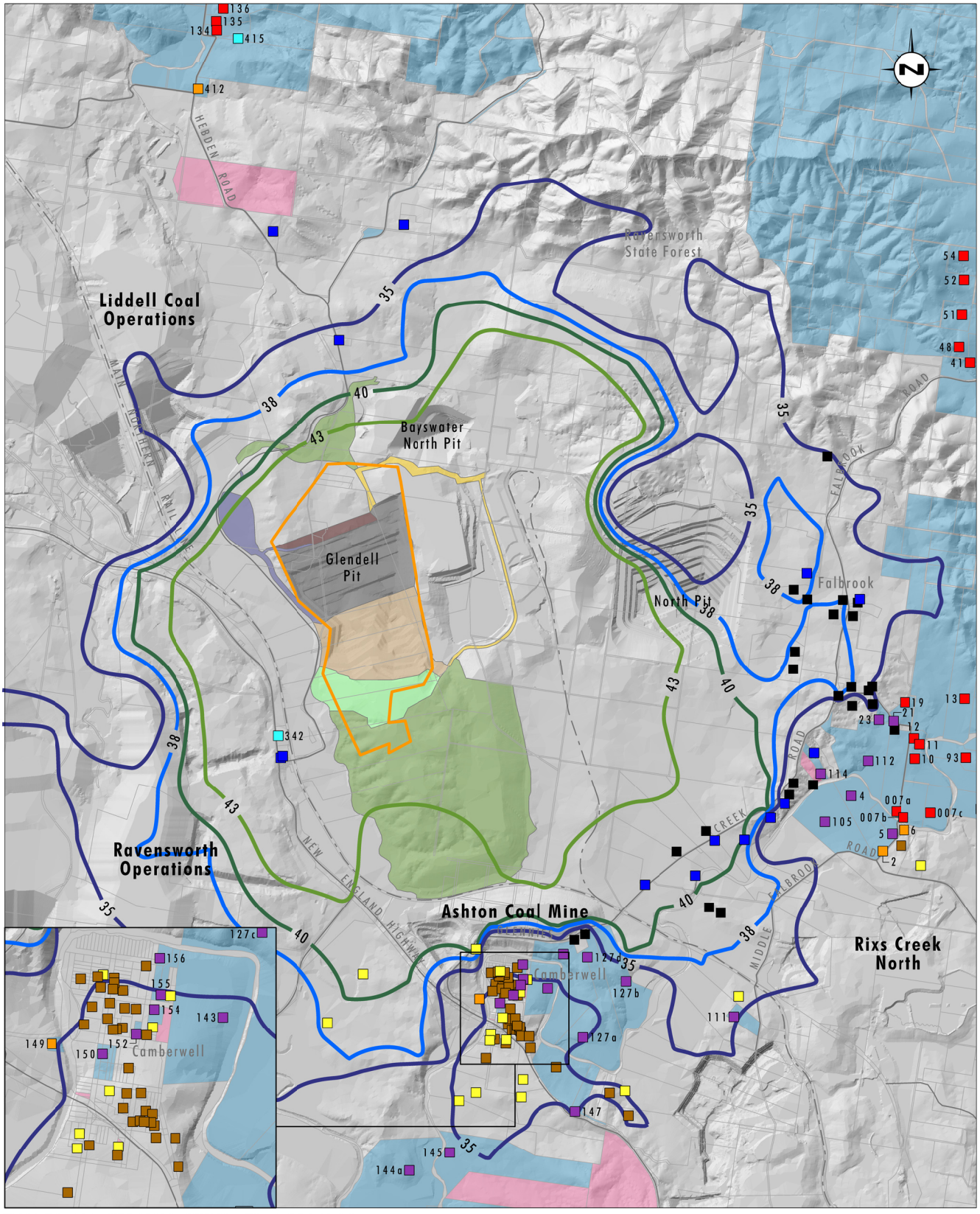
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.11

Year 13 (2033) Predicted Noise Impacts (3m/s wind from the north west daytime)

File Name (A4): R13/4166_446.dgn
20191129 10.15



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

0 1.0 2.0 4.0km

Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
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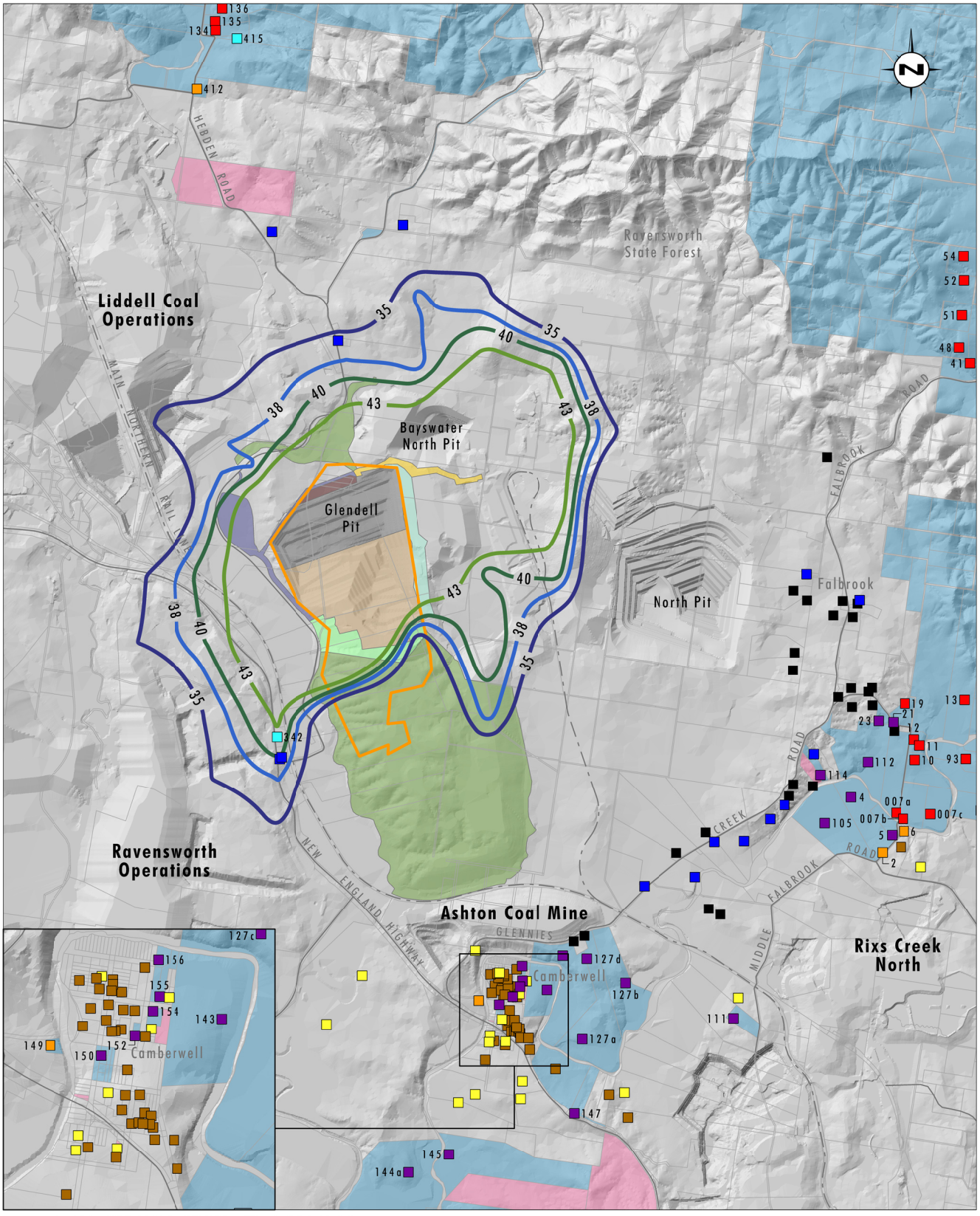
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.12

Year 13 (2033) Predicted Noise Impacts (F class stability during inversion conditions winter nights)

File Name (A4): R13/4166_447.dgn
20191129 10.16



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

0 1.0 2.0 4.0km

Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
- Active Overburden Emplacement Area
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- Receptor (Private)
- Receptor (Private - Acquisition Rights)
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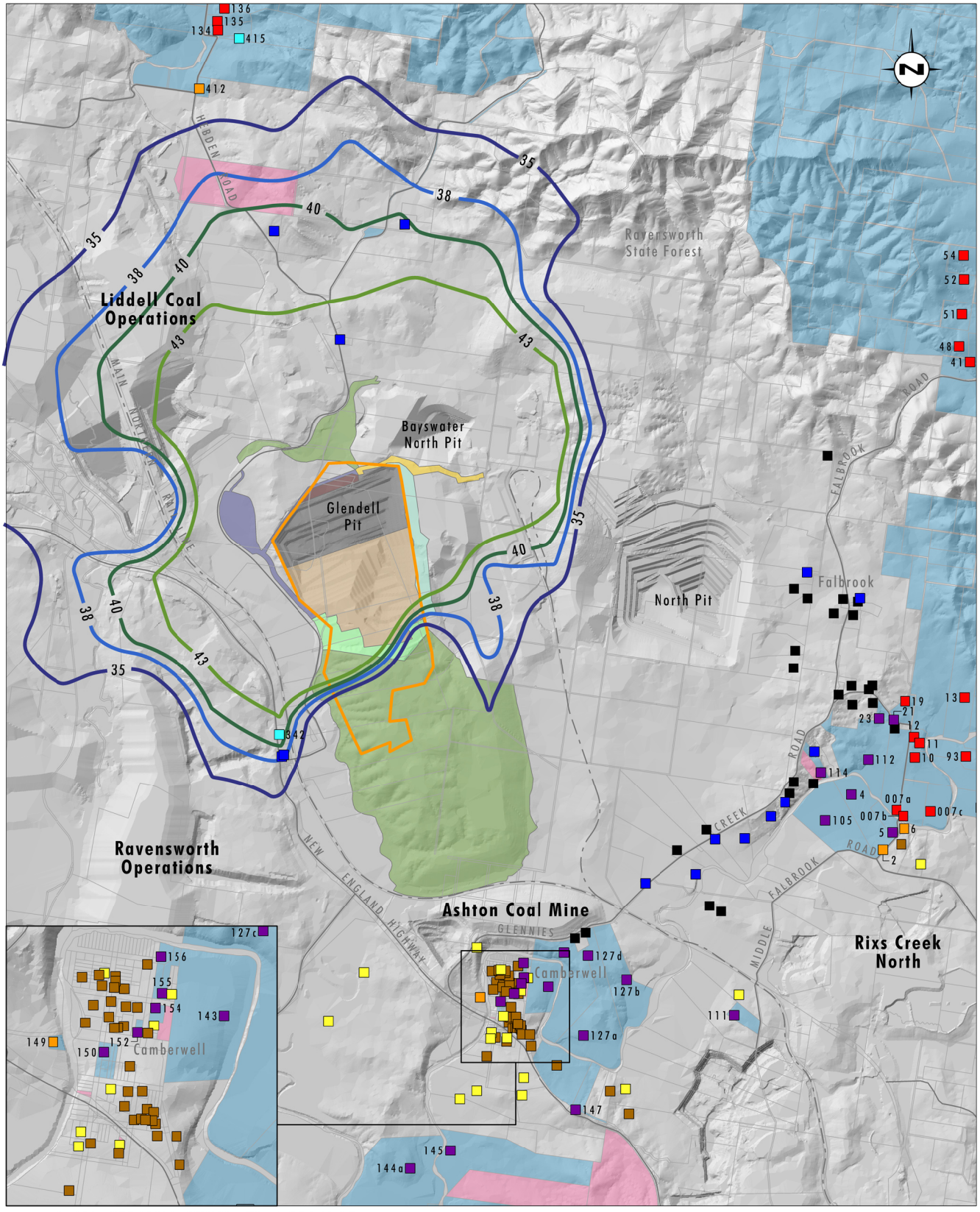
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.13

Year 18 (2038) Predivted Noise Impacts (calm neutral conditions)

File Name (A4): R13/4166_448.dgn
20191129 10.17



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
- Active Overburden Emplacement Area
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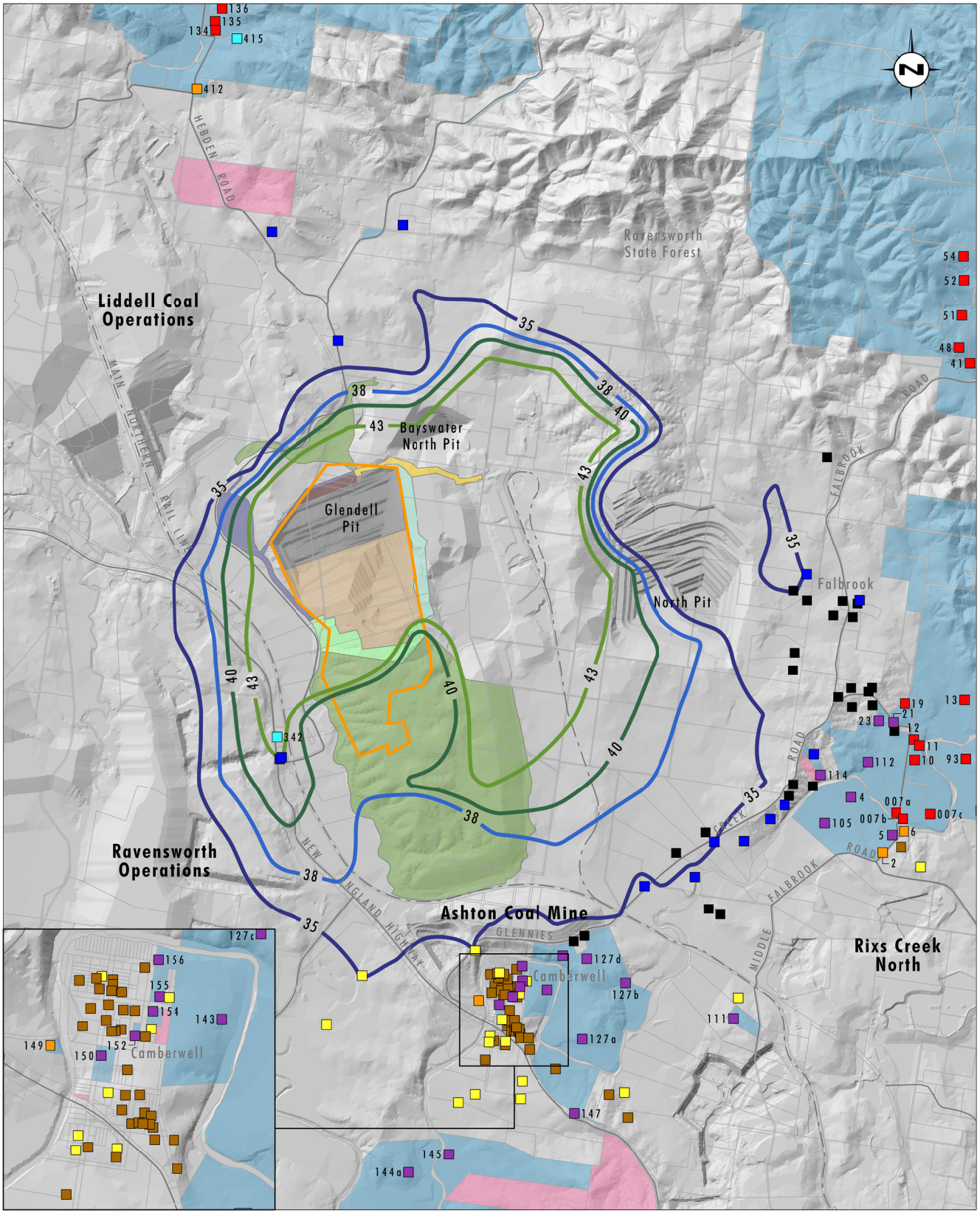
- Receptor (Private - Acquisition Rights)
- Receptor (Private Infrastructure)
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.14

Year 18 (2038) Predicted Noise Impacts (3m/s wind from the south east evening/night)

File Name (A4): R13/4166_449.dgn
20191129 10.19



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

0 1.0 2.0 4.0km

Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
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- Topsoil Removal Strip
- Shaping for Final Landform
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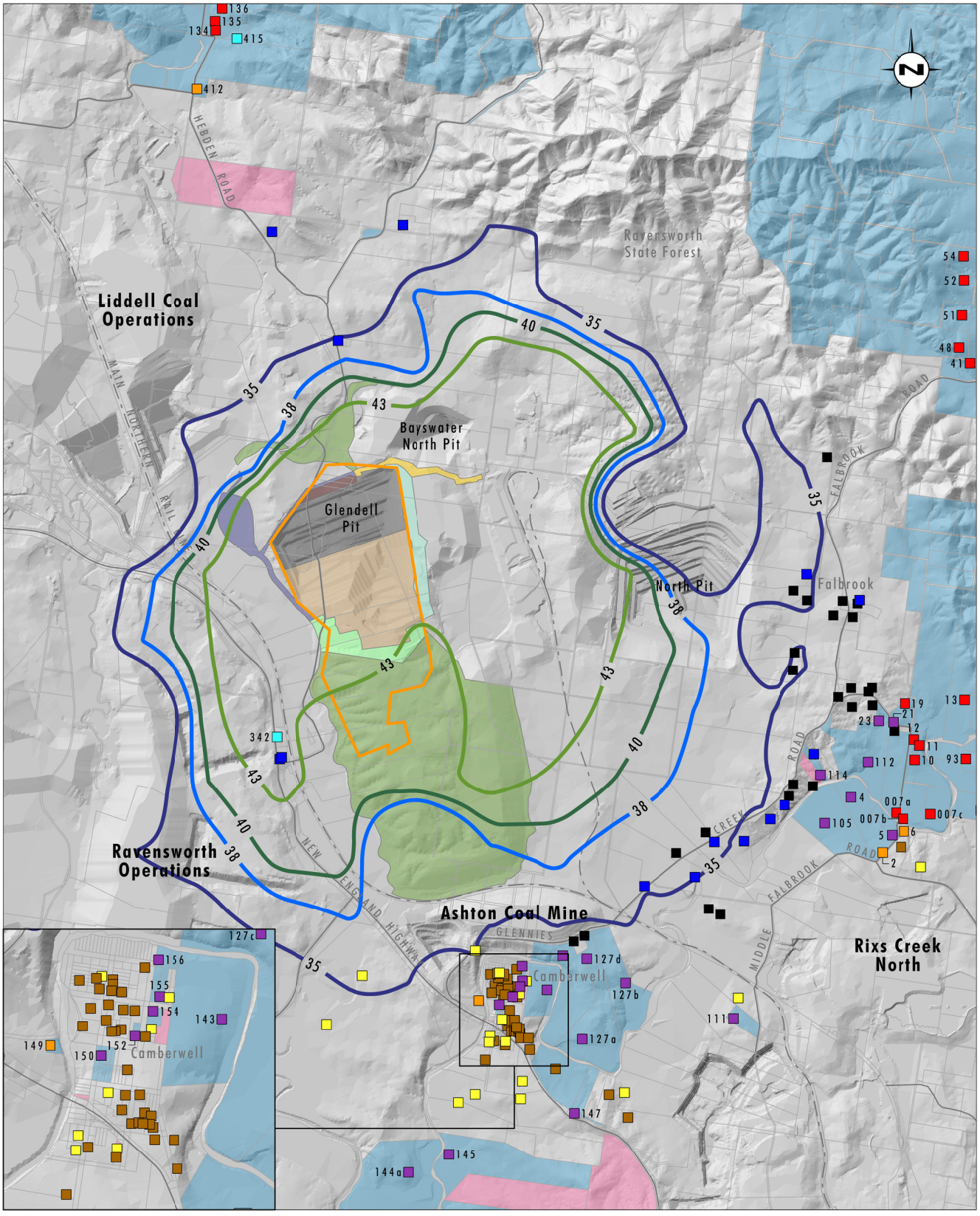
- Temporary Rehabilitation
- Infrastructure/Internal Access
- Haul Road
- Receptor (Private)
- Receptor (Private - Acquisition Rights)
- Receptor (Private Infrastructure)
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.15

Year 18 (2038) Predicted Noise Impacts (3m/s wind from the north west daytime)

File Name (A4): R13/4166_450.dgn
20191129 10.21



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

0 1.0 2.0 4.0km

Legend

- Glendell Pit Extension
- 35 dB(A) Noise Contour
- 38 dB(A) Noise Contour
- 40 dB(A) Noise Contour
- 43 dB(A) Noise Contour
- Active Mining Area
- Active Overburden Emplacement Area
- Topsoil Removal Strip
- Shaping for Final Landform
- Rehabilitation
- Temporary Rehabilitation
- Infrastructure/Internal Access
- Haul Road
- Receptor (Private)
- Receptor (Private - Acquisition Rights)
- Receptor (Private Infrastructure)
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.16

Year 18 (2038) Predicted Noise Impacts (F class stability during inversion conditions winter nights)

File Name (A4): R13/4166_451.dgn
20191129 10.22

5.1.2 Probabilistic modelling results

As discussed earlier, the probabilistic modelling approach was used to help design the operating parameters of the Project during the full range of standard, noise-enhancing and very noise-enhancing meteorological conditions. This includes conditions that are not identified by NPfI Fact Sheet D Table D1 but could occur over the life of the Project. Importantly, the probabilistic modelling approach includes meteorological conditions that would be excluded by the NPfI Fact Sheet D Table D1 but are very noise-enhancing and could be excluded by the NPfI modelling approach. While such conditions are excluded by the NPfI, there is an expectation that the noise controls that would be implemented under the worst-case conditions identified by the NPfI would also be in place during these periods.

The results of the probabilistic modelling are presented in **Appendix F** and summarised in Table 5.3 as the percentage of time noise control measures may need to be implemented in order to achieve the project noise trigger levels within each of the defined receiver areas shown in **Figure 3.2**.

Table 5.3 Percentage of time noise controls may need to be implemented to achieve project noise trigger levels

Receiver Area	Period	Year 1	Year 6	Year 13	Year 18
Area 1	All-seasons Day	0%	0%	0%	0%
	Non-winter Evening	0%	0%	0%	0%
	Non-winter Night	0%	0%	0%	0%
	Winter Evening/Night	0%	0%	0%	0%
Area 2	All-seasons Day	0%	0%	0%	0%
	Non-winter Evening	0%	0%	0%	0%
	Non-winter Night	0%	0%	0%	0%
	Winter Evening/Night	0%	0%	0%	0%
Area 3	Contains privately owned vacant land only - no privately-owned residence				
Area 4 North	All-seasons Day	0%	0%	0%	0%
	Non-winter Evening	0%	0%	0%	0%
	Non-winter Night	0%	0%	1%	0%
	Winter Evening/Night	0%	8%	13%	0%
Area 4 South	All-seasons Day	0%	0%	0%	0%
	Non-winter Evening	0%	0%	0%	0%
	Non-winter Night	0%	0%	0%	0%
	Winter Evening/Night	0%	3%	3%	0%
Area 5	All-seasons Day	0%	0%	0%	0%
	Non-winter Evening	0%	0%	0%	0%
	Non-winter Night	0%	0%	0%	0%
	Winter Evening/Night	0%	0%	0%	0%
Area 6	No privately-owned land				
Area 7	All-seasons Day	0%	0%	0%	0%
	Non-winter Evening	0%	0%	0%	0%
	Non-winter Night	0%	0%	0%	0%
	Winter Evening/Night	10%	11%	11%	0%

Receiver Area	Period	Year 1	Year 6	Year 13	Year 18
Area 8 West	All-seasons Day	20%	15%	0%	0%
	Non-winter Evening	15%	9%	0%	0%
	Non-winter Night	17%	12%	0%	0%
	Winter Evening/Night	45%	38%	11%	0%
Area 8 East	All-seasons Day	23%	12%	0%	0%
	Non-winter Evening	17%	6%	0%	0%
	Non-winter Night	21%	9%	1%	0%
	Winter Evening/Night	52%	31%	13%	0%
Area 9	All-seasons Day	0%	12%	0%	0%
	Non-winter Evening	0%	6%	0%	0%
	Non-winter Night	0%	11%	1%	0%
	Winter Evening/Night	8%	38%	13%	0%
Area 10	All-seasons Day	0%	0%	0%	0%
	Non-winter Evening	0%	2%	0%	0%
	Non-winter Night	0%	3%	0%	0%
	Winter Evening/Night	0%	18%	3%	0%
Area 11	All-seasons Day	0%	0%	0%	0%
	Non-winter Evening	0%	0%	0%	0%
	Non-winter Night	0%	0%	0%	0%
	Winter Evening/Night	0%	0%	0%	0%

5.1.3 Modifying factors

Modifying factors were assessed in accordance with Fact Sheet C of the NPfI and the full assessment is contained in **Appendix G**. The assessment considered tonal noise, low frequency noise and intermittent noise. The analysis results presented in **Appendix G** under the NPfI default worst case meteorological conditions (3°C/100 m inversion with 2 m/s drainage flow from the north-west) demonstrates that modifying factor corrections are not applicable to the predicted noise levels.

5.2 Operational noise – Mount Owen Consent

From a noise perspective, the Project will result in only small changes to the operations regulated under the Mount Owen Consent. These changes, as described in **Section 2.2** are:

- regulation of the coal haul from Glendell to the Mount Owen CHPP being regulated under the Glendell Consent rather than the Mount Owen Consent (reduced impact relative the existing modelled conditions to 2024)
- extended use of ROM coal stockpiles and associated dozer movements due to the extended period of handling Glendell ROM coal at the Mount Owen CHPP
- Extended duration of CHPP and rail transportation operations at Mount Owen beyond current approved life of operation (i.e. extended from 2037 to 2045).

There is no increase in throughput of either CHPP or rail handling relative to what is currently approved under the Mount Owen Consent other than that associated with the extended period of operations beyond 2037.

From a noise impact modelling perspective, CHPP operations, loading and rail traffic impacts on the Mount Owen Rail Loop have been modelled for the Mount Owen Continued Operations Modification 2 (Umwelt, 2018) assuming worst case production scenarios and these modelled conditions are consistent with the impacts associated with all stages of the Project; accordingly, the Project will not increase noise impacts associated with the Mount Owen CHPP in any year relative to what has previously been modelled. The only additional impact in Years 6, 13 and 18 of the Project are the extended use of a dozer or front-end loader at the ROM stockpiles at the Mount Owen CHPP.

The noise impacts of a dozer or front-end loader working on this stockpile have been modelled under the most noise enhancing conditions during winter nights (i.e. F-class with 2m/s supporting wind from the north-west) at the most likely affected residences in the Middle Falbrook area. The dozer $L_{Aeq,15minute}$ noise level component is relatively insignificant for receiver 114 at 17 dB(A) and 112 at 14 dB(A). As an individual noise source amongst the bigger operation, the noise impacts from this dozer should be easily managed to meet the existing Mount Owen Consent criteria as this additional dozer is a low noise level contributor to the far-field noise levels at the receivers.

The Project will extend the life of the Mount Owen CHPP to 2045. Noise impacts associated with the operation of the ROM coal stockpile, the CHPP, product stockpiles, rail loading facilities and trains on the Mount Owen Rail Loop will continue during this period as would some plant movement associated with rehabilitation activities. The noise impacts from these activities will be significantly lower than during the earlier mining phases at all receivers due to the removal of mining related plant at North Pit during this period.

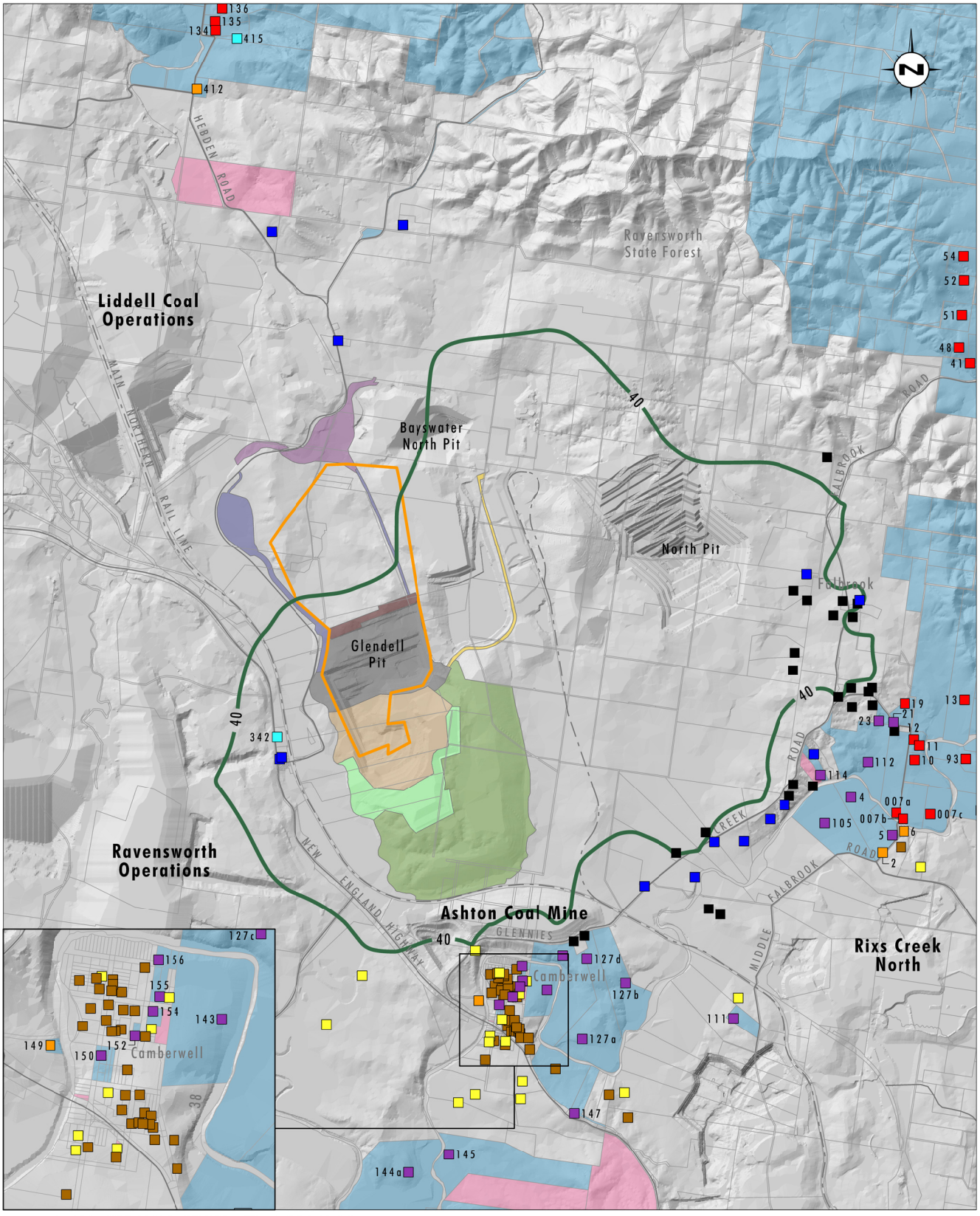
Accordingly, operations managed under the Mount Owen Consent can continue to be managed to comply with the existing noise criteria under the Mount Owen Consent for the duration of the Project.

5.3 Cumulative noise

The amenity noise levels calculated for the Project (refer to **Section 3.6.2**) for all receivers for the day, evening and night time periods are 48, 43 and 38 dB(A) $L_{Aeq(15\ minute)}$ respectively. The assessment results provided in **Table 5.1** and **Table 5.2** confirm that these amenity noise levels are able to be met by the Project at all private receiver locations. Therefore, in accordance with the NPfI no additional consideration of cumulative industrial noise is required.

Notwithstanding this, and due to synergies within operations, the cumulative noise impacts of the existing Mount Owen Complex and the Project have been assessed for the two representative years where there will be overlap in full operations to confirm compliance with relevant recommended amenity noise levels under the NPfI. As discussed in **Section 4.1**, the recommended rural amenity noise level (during nightime) under the NPfI is 40 (dBA) $L_{Aeq(9\ hour)}$.

The results of this assessment are shown in **Figure 5.17** and **Figure 5.18** for Year 6 and Year 13 respectively, for winter nights under NPfI default worst case meteorological conditions based on the operational scenarios with reasonable and feasible controls implemented. The results show that the period based ($L_{Aeq,\ 9\ hour}$) amenity noise levels from the operation of the Mount Owen Complex as a whole, do not encroach onto the nearby receivers.



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

0 1.0 2.0 4.0km

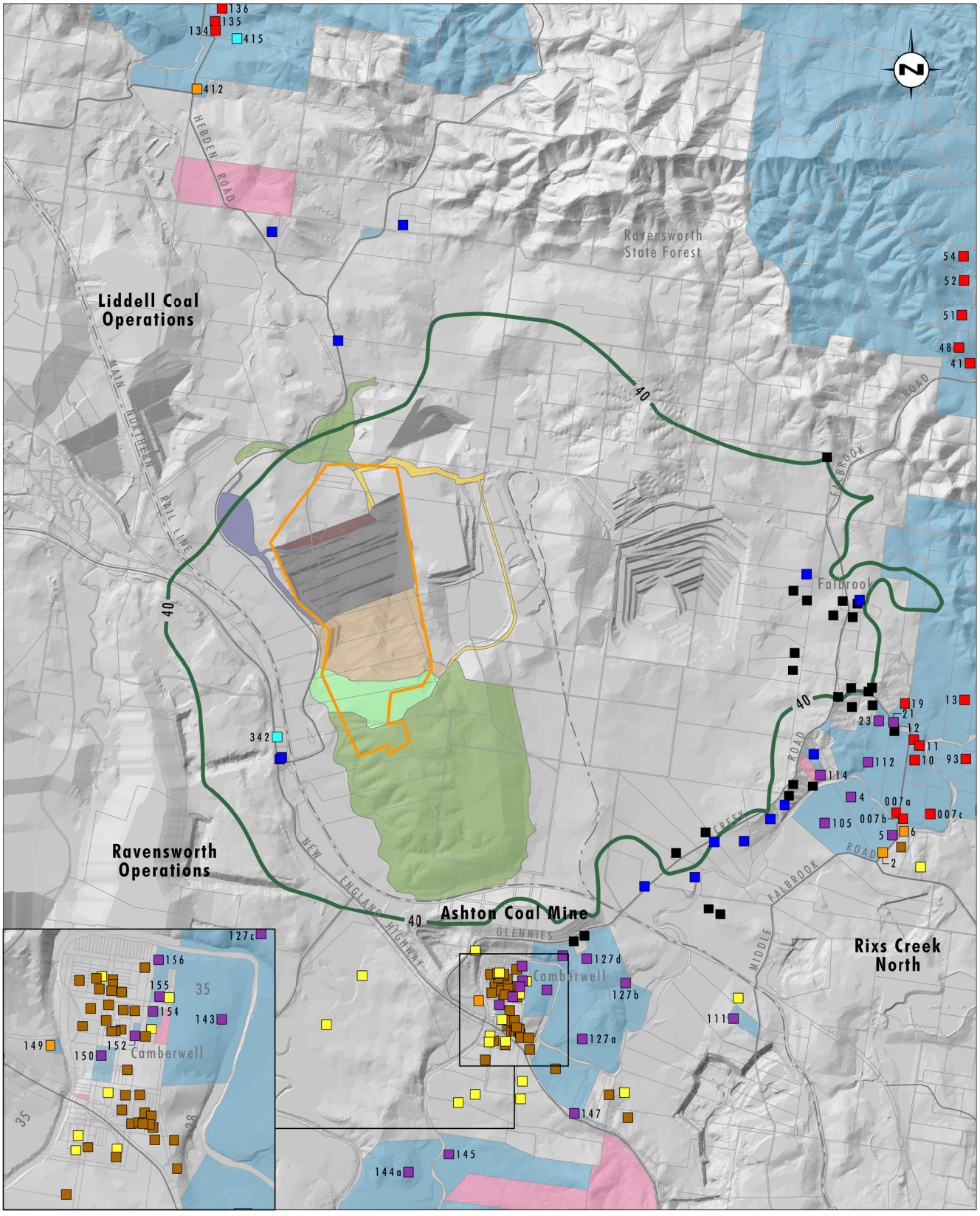
Legend

- Glendell Pit Extension
- 40 dB(A) Noise Contour
- Active Mining Area
- Active Overburden Emplacement Area
- Topsoil Removal Strip
- Shaping for Final Landform
- Rehabilitation
- Creek Realignment (Construction)
- Infrastructure/Internal Access
- Haul Road
- Receptor (Private)
- Receptor (Private - Acquisition Rights)
- Receptor (Private Infrastructure)
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.17

Year 6 (2026) Period Based Noise Impacts - Worst Case Scenario

File Name (A4): R13/4166_478.dgn
20191129 10.28



Data Source: Glencore (2019), Department of Finance, Services & Innovation (2019), Umwelt (2019)

Legend

- Glendell Pit Extension
- 40 dB(A) Noise Contour
- Active Mining Area
- Active Overburden Emplacement Area
- Topsoil Removal Strip
- Shaping for Final Landform
- Rehabilitation
- Infrastructure/Internal Access
- Haul Road
- Receptor (Private)
- Receptor (Private - Acquisition Rights)
- Receptor (Private Infrastructure)
- Receptor (Community Infrastructure)
- Receptor (Glencore Owned)
- Receptor (Glencore Owned - Vacant)
- Receptor (Other Mine Owned)
- Receptor (Other Mine Owned - Vacant)
- Private Land
- Private Vacant Land (Acquisition Rights)

FIGURE 5.18

Year 13 (2033) Period Based Noise Impacts - Worst Case Sceanrio

File Name (A4): R13/4166_479.dgn
20191129 10.30

5.4 Maximum noise level event (sleep disturbance)

The assessment of sleep disturbance noise levels was based on the noise-enhancing meteorological conditions identified in accordance with NPfI Fact Sheet D. ENM's Single Point Calculation feature was used to determine the maximum sleep disturbance noise levels at receiver locations for each of four meteorological conditions identified in **Sections 5.3** and **6.0**.

The predicted $L_{A1,1minute}$ noise levels associated with activities that could result in sleep disturbance are presented in **Appendix F**. Results show that night time noise levels will not exceed sleep disturbance noise goals at any residential receivers.

5.5 Road impacts

5.5.1 Modelling scenarios

As discussed in **Section 4.4**, no significant changes to traffic volumes associated with the operational phase of the Project are expected. However, there will be an increase in traffic volumes associated with the construction phase of the Project peaking in approximately Year 1-2 of the Project. The road noise impacts associated with traffic movements generated by the construction phase of the Project were modelled using the US Federal Highway Administration (FHWA) Traffic Noise Model (TNM) Version 2.5 Look-Up Tables (U.S. Department of Transportation, 2004). TNM is a highway traffic noise prediction and analysis model used to analyse highway geometries including vehicle speeds, vehicle type, setback distances and the effectiveness of barriers.

Given there are no residential receivers between the New England Highway and the Project Area, the residential receivers identified in Table 5.4 are considered to be representative of the receivers that could be affected by the changes to traffic levels. The setback distances (distance from the centre line of the road to the building facade) for the nearest private receivers to the New England Highway are provided in **Table 5.4**.

Table 5.4 Assessed Camberwell properties

Receiver ID	Setback Distance[1]
147	60 m from the New England Highway
150	298 m from the New England Highway

Note: [1] Setback distance is defined as the distance between the centre line of the road and the building facade.
Properties 147 and 150 are currently subject to acquisition

5.5.2 Traffic noise sources

Construction traffic volumes are expected to peak in Year 2 of the Project. The traffic volumes in the Traffic and Transport Impact Assessment undertaken for the Project (Puliyapang, 2019) have been used as the basis for the road traffic noise assessment. The following information was used in the assessment of the road traffic noise:

- the greatest road traffic noise impacts will be experienced by receivers in Camberwell along the New England Highway
- the existing and the Project construction phase road traffic noise impacts have been modelled
- morning and evening peak traffic volumes were used to estimate noise impacts

- the predictions are based on an average speed on the New England Highway at Camberwell of 100 km/hr.

The predicted road traffic noise impacts are based on the traffic volumes in **Table 5.5**.

Table 5.5 Peak (Year 1-2) Two-way traffic volumes - New England Highway, Camberwell

Vehicle Classification	Existing Traffic Volumes		Predicted Total Traffic Including Construction Phase Traffic	
	Morning peak	Evening peak	Morning peak	Evening peak
Light	1292	1200	1642	1550
Heavy	103	107	103	107
Total	1395	1307	1,745	1,675

Note: Morning Peak Hour 5.45 am - 6.45 am, Evening Peak Hour 5.00 pm – 6.00 pm.

Source: Existing Traffic Volumes derived from the Traffic and Transport Impact Assessment traffic counts (Puliyapang, 2019)

The predicted road traffic noise impacts at the closest private receivers and the relevant assessment criteria are presented in Table 5.6.

Table 5.6 Predicted noise impacts for peak traffic volumes (Year 1-2), dB(A)

Receiver Location	Existing Traffic		Peak Traffic Including Construction Phase Traffic		Criteria	
	Morning Peak	Evening Peak	Morning Peak	Evening Peak	Night time[1]	Day time [2]
147	63.2	63.2	63.7	63.6	55	60
150	49.6	49.6	50.1	50.0	55	60

Note [1] Night-time criteria, NSW Road Noise Policy, OEH 2011
[2] Day time criteria, NSW Road Noise Policy, OEH 2011
Internal noise criteria of 40 dB(A) (OEH 2011), assume 10 dB(A) drop from external noise level (NPfI)
Open Space (passive use) criteria, NSW Road Noise Policy, OEH 2011
Morning Peak Hour 05.45 to 06.45 am, Evening Peak Hour 5 to 6 pm.

The existing and Project noise impacts presented in Table 5.6 for property 150 are below the relevant road traffic noise criteria. The predicted existing and project noise impacts for property 147 are both above the relevant road traffic noise criteria and therefore the relative increase criteria of 2 dB(A) need to be considered. Relative increases in the road traffic noise levels associated with the construction phase of the Project at property 147 are 0.5 dB(A) for the AM period and 0.4 dB(A) for the PM Peak which are well within 2 dB(A) of the existing traffic noise levels. This increase will not be discernible from existing noise levels.

5.6 Rail noise

The Project will include the extension of the operating life of Mount Owen CHPP and associated coal handling infrastructure to 2045. The current Mount Owen CHPP throughput of 17 Mtpa ROM coal and export coal transportation via rail will not change due to the Project.

As a result, there will be no increase in approved rail traffic volume due to the Project.

5.7 Construction noise

The schedule of activities that would be covered by the ICNG includes the construction of:

- Hebden Road realignment

- Relocation of Ravensworth Homestead
- Heavy Vehicle Access Road
- new Glendell MIA
- Yorks Creek Realignment.

Construction activities will generally be undertaken within standard construction hours (7.00 am to 6.00 pm Monday to Friday, 8.00 am to 1.00 pm Saturday). However, work may be required outside of standard hours for construction of the new MIA, product stockpiles and ancillary works including portions of Hebden Road. Construction activities outside these hours will be subject to the ability to meet Project noise criteria (refer to **Section 4.4** and **Appendix D**).

Blasting associated with construction activities will only be undertaken 9.00 am to 5.00 pm, Monday to Friday and 9.00 am to 1.00 pm Saturday. Operational blast criteria will apply to construction blasting.

In accordance with the ICNG, an assessment of construction noise has been carried out with results showing construction noise is unlikely to be audible at the closest residential receiver (receiver 134), which is located more than 5 km to the north of the proposed construction activity area. The noise impacts at the nearest residential receivers were predicted using ENM for these activities based on SWLs for an indicative construction fleet presented in Table 5.7.

Table 5.7 Indicative construction equipment SWL, dB(A) and dB(Lin)

Equipment Description	Sound Power Level	
	dB(A)	dB(Lin)
Excavator (x3)	116	125
Dozer (x2)	111	112
Truck (x3)	108	120
Reversing Beeper (x1)	121	125
Generator (x1)	103	107
Pump (x1)	104	111
Concrete Truck (x3)	111	114

ENM's Single Point Calculation feature was used to determine the construction noise levels at the nearest residential receiver locations under the NPfI default worst case meteorological conditions.
The predicted received LAeq,15min noise levels associated with the simultaneous operation of the construction fleet under the NPfI default worst case meteorological conditions is 28 dB(A) at receiver 134. All other residential receivers have lower predicted noise levels.

This falls well under the LAeq (15 min) limits of 45 dB(A) day and 40 dB(A) evening/night. Any construction noise at this receiver would contribute to an acoustic environment that includes noise from adjoining mining and quarry operations (not just the Project), road traffic on Hebden Road and rail traffic on the Main Northern Railway Line. The masking effect of the other contributing noise sources would likely make the construction activities indistinguishable from similar-sounding noise sources.

6.0 Noise mitigation measures

The noise control measures detailed in **Section 3.4** represent a level of commitment by Glencore to ensure the Project is operable within the existing noise limits. Glencore has committed to the implementation of these controls over the life of the Project as will be detailed as part of a revised Noise Management Plan (NMP).

As outlined in **Section 3.4**, the identification and assessment of reasonable and feasible noise controls have been considered through the design process for the Project and incorporated into detailed noise modelling. The incorporation of these reasonable and feasible controls has reduced the noise affectation area and related noise impacts associated with the Project as far as practicable. Glencore commits to the implementation of the following reasonable and feasible controls over the life of the Project, which have been factored into the noise model:

- Managing mobile machines during adverse weather conditions when wind conditions or inversion conditions enhance noise propagation towards sensitive receiver locations. In order to control/eliminate noise impacts this would likely include:
    - providing alternative dumping locations;
    - moving parts of the fleet to shielded locations; and/or
    - revising mining operations to reduce noise impacts including the implementation of a hierarchy of controls ranging from review of equipment locations and nature of activities, through to shut down of equipment as required to maintain compliance with noise criteria.
- Managing ancillary activities such that they do not occur during adverse meteorological conditions, particularly those which may occur during winter night-times, including:
    - limiting ancillary mining equipment (e.g. dozers on overburden dumps, drills) during times of adverse weather conditions;
    - reducing dozer activity on exposed rehabilitation areas; and/or
    - managing activities located at or near ground surface, such as topsoil pre-strip.
- Inclusion of bunds in strategic locations along some haul roads and ramps to shield trucks and equipment on exposed sections.
- Location of key haul roads below ground surface to maximise topographical shielding to surrounding receiver areas.
- Location and orientation of haul roads such that they are not aligned with prevailing source to receiver winds where practicable.
- Incorporation of reasonable and feasible noise attenuation on key plant and equipment.

Glencore will continue to manage operations to achieve the approved operations noise limits throughout the life of the Project through the continued implementation of an adaptive management approach, focused on implementing appropriate operational controls and management strategies to minimise noise impacts. The approach will vary during different mine stages and weather conditions and will also consider evolving technology and associated equipment noise levels. Following is a range of controls and strategies that may be adopted as required to meet noise performance requirements:

Dozer operations:

- using a low gear when reversing
- remaining in gear when reversing down the stockpiles
- moving track dozer operations off exposed locations during adverse weather conditions
- using rubber tyred dozers on elevated or exposed dump locations during adverse weather conditions
- re-scheduling topsoil pre-strip prior to adverse weather conditions

Waste haulage:

- the use of exposed dumping locations may be restricted during periods when the weather conditions can potentially enhance the noise impacts
- creating sheltered dumping locations that can be used during adverse weather conditions, where practical
- scheduling the dump sequence to enable shielded dumping locations deep in-pit to be used during adverse weather conditions

Excavator operations:

- using 'silent horns' to communicate with trucks
- managing the drop of the first load into truck bodies to minimise impact noise from the material

Drilling operations:

- re-scheduling drilling in exposed locations for periods when the weather conditions do not enhance the noise impacts

In addition to the implementation of noise mitigation strategies during periods of adverse weather conditions, Glencore will implement the following general noise mitigation measures as part of the Project:

- use of smart broadband 'Quacker' reversing alarms
- regular inspection and maintenance of noise attenuation systems
- implement a process for periodic review of noise performance of the equipment fleet
- implement work area specific controls for high risk areas

The implementation of these controls to meet the approved noise criteria over the life of the Project will be detailed as part of the revised NMP for the Mount Owen Complex (refer to **Section 7.1**). Central to the management of noise impacts is the implementation of an extensive continuous noise monitoring system to enable proactive and real time management of operations during noise propagating conditions. The use of a continuous noise monitoring system to proactively inform operational noise management has been implemented at Mount Owen Complex since 2004 and will be continued as part of the Project.

In addition to the above, Glencore's approach to effective noise management at sites it operates and/or manages includes:

- identification of effective noise management controls during the mine planning, assessment and operational phases
- minimum requirements to be implemented for effective noise management to reduce the potential for impacts, including the implementation of activity-specific noise controls and site-wide management systems and procedures
- use of automated systems for early identification of adverse meteorological conditions which are likely to result in noise impacts, i.e. gradient winds and temperature inversions
- monitoring and reporting requirements for noise management
- requirements for the implementation of noise awareness training for the workforce to facilitate effective noise management.

The approach taken by Glencore is not designed to replace or override environmental legislation or external requirements but to maintain a minimum standard for the implementation of the noise control measures required for effective noise management at all Glencore sites.

The recommended approach to managing the noise impacts associated with the Project, as outlined in **Section 8.0**, is a combination of statutory requirements, approval conditions, and Glencore's approach to effective noise management.

7.0 Monitoring and management

7.1 Noise management plan

The approved operations currently operate in accordance with the approved Mount Owen Complex Noise Management Plan (NMP) which will be reviewed and updated to reflect the relevant aspects of the Project following approval. The suitability of the noise management controls is to be assessed on an annual basis as part of ongoing review of operational risks to the Project. It is noted that any revisions to the NMP will focus on the changes relevant to the Project with the existing noise management processes identified in the approved NMP being applied to the Project where relevant and remaining valid for activities and areas outside the Project.

7.2 Proactive noise management

7.2.1 Predictive forecasting system

During adverse weather conditions, Glencore will continue to initiate changes to operations to mitigate potential noise impacts. Glencore uses predictive forecasting of adverse weather conditions to identify when and where management measures are likely to be required as a result of an adverse weather event. The current NMP outlines the procedural requirement for the predictive forecasting of adverse weather conditions. A typical response to the prediction of an adverse weather event could include:

- Key operational personnel are alerted by the environmental forecast system, or other similar system(s) that operations may need to be modified to avoid noise impact at sensitive receivers.
- Monitoring the noise levels recorded by the real-time noise monitoring network to assess when the noise levels are approaching predefined noise conditions and the modification of operations to adapt to the situation as required.
- Temporarily ceasing or modifying part of the operations, if required, to prevent noise criteria being exceeded.
- Recording the actions taken when management measures are implemented.

The meteorological monitoring sites are linked to the real time monitoring system allowing access to real time weather conditions and the effective management of operations during periods of adverse weather. Glencore will maintain the existing Mount Owen Complex continuous (real time) monitoring network consisting of fixed and mobile continuous noise monitoring units and weather stations.

The monitoring network is currently used as a proactive way to manage operational noise performance. The continuous noise monitors allow noise levels and local meteorological data to be analysed and compared against the development consent and EPL conditions providing information on the ongoing performance of the mine. The minimum requirements for the real time noise monitoring network include SMS alarming to key operational personnel if a trigger noise condition has been reached. The SMS alerts are set below the statutory noise criteria, allowing action to be taken before compliance limits are reached.

Following an alarm, a review of operations and current meteorological conditions will be undertaken by key operational personnel in order to identify if the site operations are contributing to the recorded noise levels. If elevated noise levels are deemed to be as a result of site activities, mitigation measures will be undertaken to achieve compliance. This may include modification of operations, such as those outlined in **Section 6.0**.

Data collected by the continuous noise monitoring units will continue to be reviewed on a regular basis to establish any correlation between meteorological conditions and elevated noise levels from Mount Owen Complex. This data can then be used to proactively manage noise impacts and mitigate the potential for noise enhancement as a result of meteorological conditions. Specifically, the data will be reviewed to identify if the recorded noise levels are trending towards a non-compliance with noise criteria.

7.3 Reactive noise management

7.3.1 Real time noise monitoring

Real time monitoring is used as an on-site monitoring tool to assist with the investigation of complaints or noise related issues and to inform sites (via alarms) that noise levels are elevated and are nearing compliance limits. Each real time noise monitoring unit is designed to send alerts advising mining personnel that noise at the monitor is approaching performance criteria. Action can then be taken to modify operations where appropriate.

The real time noise monitors have been setup to record directional, low frequency noise sources. Alarms have been set up to trigger if the noise source from the area of influence (direction of the operation) exceeds the predetermined level for six 5-minute periods (noted as two 15-minute recordings). Noise alarms are generally set for the evening and night-time period, as during the day other sources of noise can set off the alarms. Noise alarms are not triggered in wet weather or when wind speed is greater than 3 m/s (that is, when noise criteria do not apply due to meteorological conditions). The alarms have been set to be at least 2 dB(A) below the compliance criteria at the location of the monitor or the modelled limit at the monitor that would be representative of the nearest sensitive receiver. The alarms will continue to be triggered every 15 minutes if the noise from the area of interest continues above the trigger limit. In the event an alarm is triggered, the site will record actions taken in response to the alarms in accordance with site procedures.

7.3.2 Noise management trigger action response plan (TARP)

A Noise Management Trigger Action Response Plan (TARP) has been developed for the approved operations which will be reviewed and updated should the Project be approved. The TARP details the limits and response required by the mine in the event noise alarms are triggered.

Actions which may be taken include relocating, modifying or ceasing operations as necessary to minimise noise emissions. The mitigation measures currently applicable to the TARP are outlined in **Section 7.0**.

7.3.3 Change management

During the operational phase of the Project, a change management process will be implemented in order to assess the potential noise impacts associated with operational changes at Glendell Mine. The change management process will be implemented at a minimum, in the following instances:

- when significant changes are made to the number of equipment or type of equipment utilised on site providing for evolving technology and equipment changes, to ensure the potential risk of noise criteria being exceeded is minimised; and

- prior to the purchase or rental of equipment which, through either size or capacity of the equipment, has the potential to result in exceedances of noise criteria.

The change management process is to consider and include a review of the existing noise performance of the operation. Where considered necessary, noise modelling of the predicted noise emissions from the operation may be undertaken to confirm that compliance with the relevant statutory approval will be maintained following the proposed change.

7.4 Incident investigation and response

In the event that an exceedance of the noise criteria is identified, Glencore will notify the relevant government agencies, report within the statutory timeframes and liaise with any affected landowners.

7.5 Monitoring

Noise monitoring at Mount Owen Complex takes the form of either compliance monitoring or performance management monitoring, in accordance with the approved NMP. Compliance monitoring is by attended monitoring at defined locations, at regular intervals as set out in the statutory requirements. Performance management monitoring utilises real time noise monitoring systems on a continuous basis and allows operations to be managed to reduce noise where necessary. Should compliance monitoring identify noise levels which are at criteria levels this will trigger further performance management monitoring at additional sites over a wider area to allow Mount Owen Complex to gauge the level of noise and its audibility in the wider environment. Further details on each type of monitoring are provided in the sections below and monitoring locations (including those required under the Mount Owen Consent and EPL) are shown on **Figure 7.1**. The existing noise monitoring network is considered sufficient to monitor noise levels associated with the Project, as mining progresses to the north the monitoring network will be reviewed and updated if required.

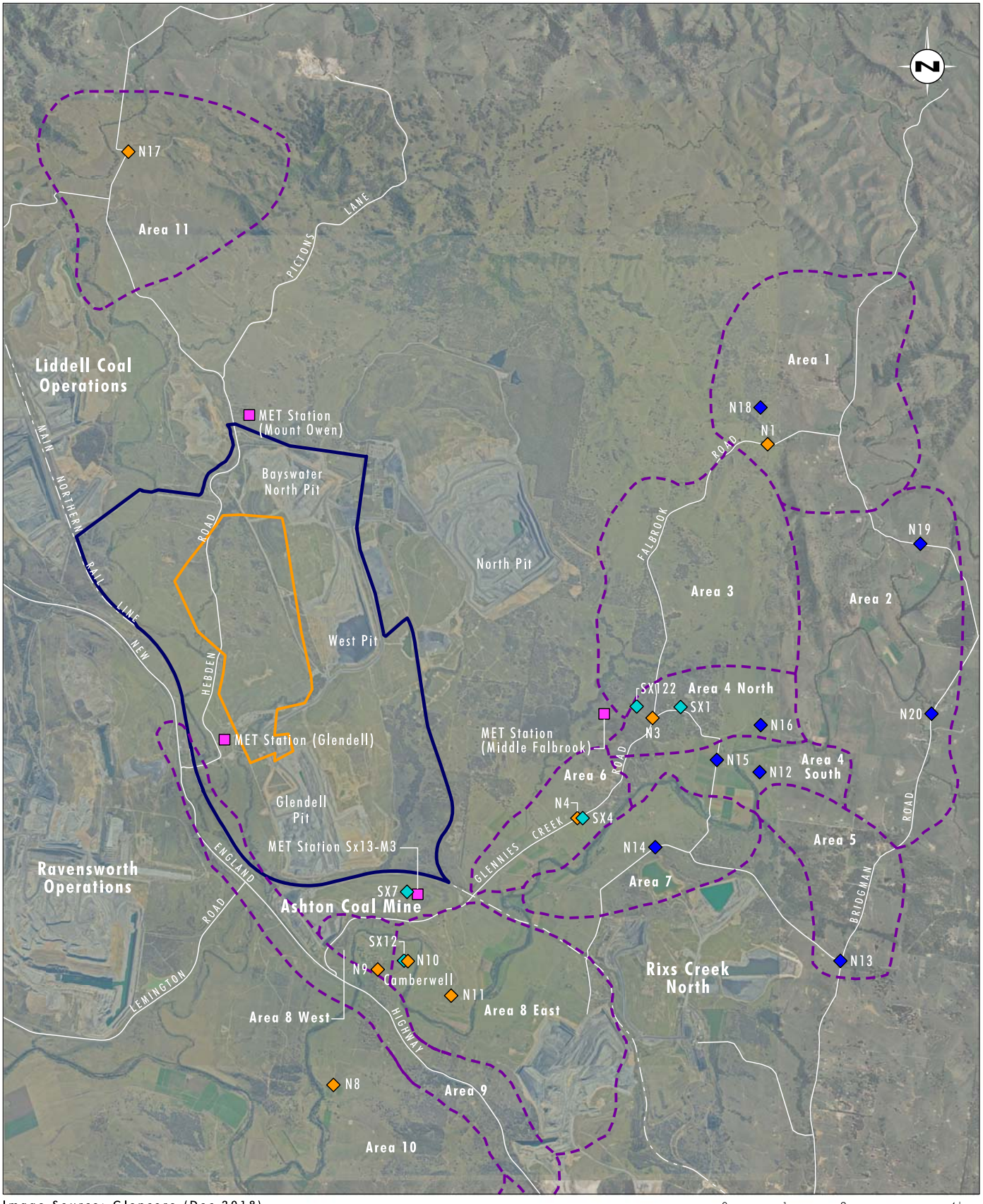


Image Source: Glencore (Dec 2018)
Data Source: Glencore (2019)

Legend

- Project Area
- Glendell Pit Extension
- Defined Receiver Areas
- Attended Noise Monitoring Location
- Real Time Continuous Noise Monitoring Location
- Meteorological Station Location
- Supplementary Performance Management Attended Noise Monitoring Location

FIGURE 7.1

Noise Monitoring Locations

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20191121 16.54

7.5.1 Performance management monitoring

To ensure ongoing compliance with the noise criteria, Glencore will actively manage the operations by controlling the placement and use of mining equipment, particularly during unfavourable meteorological conditions, as detailed in the NMP. Worst-case weather conditions for all areas other than the Hebden area (Area 11) would be associated with winds from the north-west and during winter inversion conditions with drainage flow from the north-west. The worst-case weather conditions for the Hebden area (Area 11) would be associated with winds from the south-east or during winter inversion conditions with supporting winds from the south-east.

To assess the effectiveness of the control measures and when they should be implemented, Glencore will maintain the current performance monitoring program. The performance monitoring program is based around continuous noise monitors and includes:

- measurement and reporting against criteria using the $L_{Aeq,\ 15\ minute}$ descriptor and when appropriate the $L_{Aeq,\ period}$ descriptor
- measurement and reporting against the cumulative industrial noise level criteria using the $L_{Aeq,\ period}$ as the descriptor
- identification and reporting of transient impact noise levels against the $L_{A1,\ 1\ minute}$ sleep disturbance descriptor
- the establishment and regular review of alarm triggers for each of the descriptors.

The response to reports and alarms from the continuous noise monitors is documented in the NMP.

7.5.2 Compliance noise monitoring

Rather than monitoring at all locations detailed in the various consents and EPLs for the Mount Owen Complex, the Secretary has approved the use of representative monitoring locations to assess compliance with noise criteria for both the Glendell Consent and the Mount Owen Consent, as detailed in the NMP. It is proposed to adopt the same approach for the Project, to be revised as required to suit the mining activities proposed in the Glendell Pit Extension.

Attended monitoring for compliance assessment is currently completed at eight locations surrounding the Mount Owen Complex (N1 – Greenlands; N3 – Middle Falbrook, N4, N11 – Glennies Creek, N8, N9, N10 – Camberwell and N17 – Hebden), that are considered to be representative of the most sensitive noise receivers. Of the Mount Owen Complex monitoring locations, those which are relevant to the Glendell Mine are N3, N8, N9, N10, N11 and N17. N4 is however an effective monitoring location for assessing compliance in other locations and is currently used to determine whether specific compliance monitoring is required at N11. The continued use of N4 as a monitoring location will be reviewed as part of the regular Mount Owen Complex NMP review process. The monitoring locations shown in **Figure 7.1** will be reviewed periodically to ensure monitoring is undertaken at appropriate representative locations. Any changes will be reflected in amendments to the NMP.

At each compliance noise monitoring location, the nearest privately-owned residence has been used to determine proposed noise monitoring criteria (refer to **Table 7.1**). The proposed noise monitoring criteria are based on the probabilistic noise modelling results presented in Appendix F Table F.2 and consider noise propagation under standard, noise-enhancing and very noise-enhancing meteorological conditions. If the adopted noise criteria at the compliance noise monitoring location are exceeded, it will be considered that the noise criteria at any of the residences in the defined receiver area may also have been exceeded.

Monitoring location N1 is not relevant to this Project and has been omitted from consideration.

Table 7.1 Adopted Compliance Noise Monitoring Locations and Criteria for the Project

Monitoring location	Closest privately-owned residence	Receiver Area/Residences represented by monitoring location	Proposed Noise Monitoring Criteria for the Project, dB(A)	
			Day/Evening/Night LAeq, 15 min	Night LA1, 1 min
N3	23	Area 4 North all private residences Area 4 South all private residences Area 7 all private residences	40/35/35	45
N8	145	Residences 145, 144a	40/38/37	45
N9	150	Residences 147, 150, 152	40/40/38	45
N10	143	Residences 143, 154, 155, 156	40/40/38	45
N11	127a	Residences 111, 127a, 127b, 127c, 127d	40/40/38	45
N17	134	Area 11 all private residences	40/35/35	45

7.5.3 Reference monitoring locations

In addition to the compliance monitoring locations, eight supplementary performance management attended monitoring locations (N12, N13, N14, N15, N16, N18, N19 and N20) are located in the region surrounding Mount Owen Complex are shown on **Figure 7.1**. Monitoring at these locations is supplementary to the routine compliance monitoring and may be used if potentially high noise levels are recorded at the routine monitoring locations. The additional monitoring locations form part of the performance management program enabling Glencore to gauge mine audibility over a wider area.

7.5.4 Validation monitoring

The Mount Owen Complex noise monitoring program includes a check to validate the results from the real time noise monitoring network with the attended monitoring results. The real time noise monitoring network is an integral component of the performance management system and the validation monitoring enables the real time noise units to be used as an indicator of compliance and as trigger/alarm indicating the need to implement management actions or for further attended monitoring.

As part of the continuous improvement process, the validation program aims to assess the accuracy of the measurements of the real time monitors and provide the mine with an improvement process to calibrate the real time noise monitoring alarms to facilitate the provision of accurate and effective data. This will be achieved by monitoring adjacent to relevant real time noise monitoring units at least once per quarter. The reported noise level from the real time noise monitor will be compared with the attended monitoring results.

8.0 Conclusion

The predictive noise modelling demonstrates that the Project, through the implementation of appropriate controls, can meet the criteria derived under the NPfI and not increase noise impacts at private receivers relative to the approved Glendell operations. Additionally, the proposed mine plan with mining progressing to the north away from the nearest residential receivers in Camberwell and Middle Falbrook will result in the associated noise levels decreasing as mining progresses.

The predictive noise modelling also demonstrates that the Project, through the implementation of appropriate controls, can meet the existing noise criteria under the Mount Owen Consent and not increase impacts on private receivers relative to the approved operations.

Mount Owen Complex will continue to implement all reasonable and feasible noise controls over the life of the Project in accordance with a revised NMP and with the requirements of existing approvals.

9.0 References

Department of Environment and Climate Change, 2009, *Interim Construction Noise Guideline*

Enviro Strata Consulting (ESC) 2019 . Blasting Impact Assessment for the Glendell Continued Operations Project

Jacobs Group (Australia) Pty Limited, 2019. *Glendell Continued Operations Project Air Quality Impact Assessment*.

Puliyapang Joint Venture, 2019. *Technical Report Traffic and Transport Impact Assessment for Glendell Continued Operations*.

NSW Environment Protection Authority, 2017. *Noise Policy for Industry.*

NSW Environment Protection Authority, 2013. *Rail Infrastructure Noise Guideline*

NSW Environment Protection Authority, 2000. *NSW Industrial Noise Policy.*

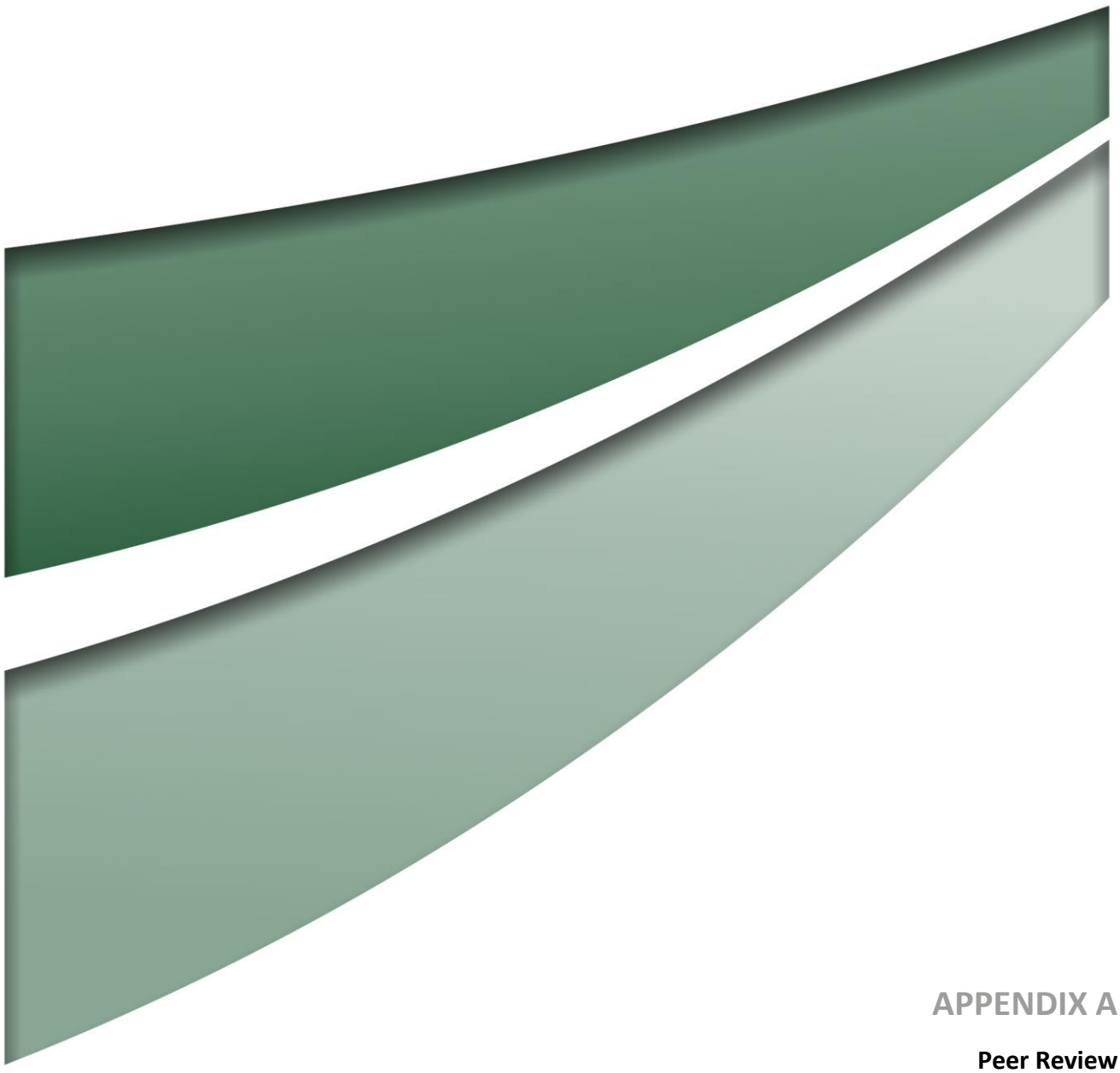
NSW Government, 2007. *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) (NSW).*

NSW Government, 2014. *Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Developments*

Umwelt, 2014. *Noise Impact Assessment. Mount Owen Continued Operations Project*.

Umwelt, 2016. *Mount Owen Continued Operations Project, Response to PAC Review Report*.

Umwelt, 2018. *Noise Impact Assessment, Mount Owen Continued Operations Modification 2*



APPENDIX A

Peer Review

10 October 2019

WM Project Number: 18170
Our Ref: Peer Review Ltr260919_RH
Email: dholmes@umwelt.com.au

Glendell Tenements Pty Ltd
c/- Umwelt (Australia) Pty Limited
75 York Street
TERALBA NSW 2284

Dear David Holmes

Re: Independent Peer Review of Glendell Continued Operations Project Draft Noise Impact Assessment

Introduction

Wilkinson Murray Pty Limited (WM) was engaged by Glendell Tenements Pty Ltd (the Proponent) to undertake an independent peer review of the specific matter of noise impacts with respect to the Glendell Continued Operations Project (the Project) Environmental Impact Statement (EIS). Umwelt (Australia) Pty Limited (Umwelt) was engaged as the Principal (Acoustical) Consultant by the Proponent to prepare the Noise Impact Assessment (NIA) in relation to the Project in accordance with the Secretary's Environmental Assessment Requirements (SEARs) issued by the New South Wales (NSW) Department of Planning and Environment (the Department) on 7 June 2018 and amended on 11 July 2018.

The review has been prepared and guided by the requirements of the Departments Guideline 9 Peer Review (Draft Environmental Impact Assessment Guidance Series) dated June 2017, and in particular Section 2.3 *What are the criteria?*, and this letter presents the findings of WM's peer review.

The report reviewed by WM was Glendell Continued Operation Project, Noise Impact Assessment, dated October 2019.

Requirements (Guideline 9 Section 2.3.1 Suitability of reviewers)

The Project SEARs do not specify that an independent peer review should be undertaken for any specific environmental matter. However, the Proponent considered it prudent to arrange a peer review of noise impact assessment for the Project by an independent company and a suitably qualified 'senior practitioner'. WM, company Director John Wassermann and Senior Engineer Roman Haverkamp have significant experience in the specialist field of large-scale mining and resource infrastructure environmental acoustics.

Scope of Works

It has been agreed that the independent peer review should include:

- review of exiting Project Approvals and Noise Management Plan;

- review of background levels measured for the assessment and resulting noise criteria;
- review of sensitive receivers identified;
- review of the noise modelling methodology (including the noise model used, scenarios modelled, meteorological conditions, sound power levels, etc.);
- review of interpretation of modelling results;
- review of compliance of the NIA with the SEARs; and
- review of compliance with the *Glencore Noise Impact Assessment Guideline*.

Findings

Based on the peer review, WM confirms that the Noise Assessment for the Project has been prepared in generally accordance with the appropriate requirements of the SEARs , including the Noise Policy for Industry (NPfI), and the Interim Construction Noise Guideline (ICNG). Furthermore, road and rail noise impacts have been assessed in accordance with the NSW Road Noise Policy (RNP) and Rail Infrastructure Noise Guideline (RING) respectively.

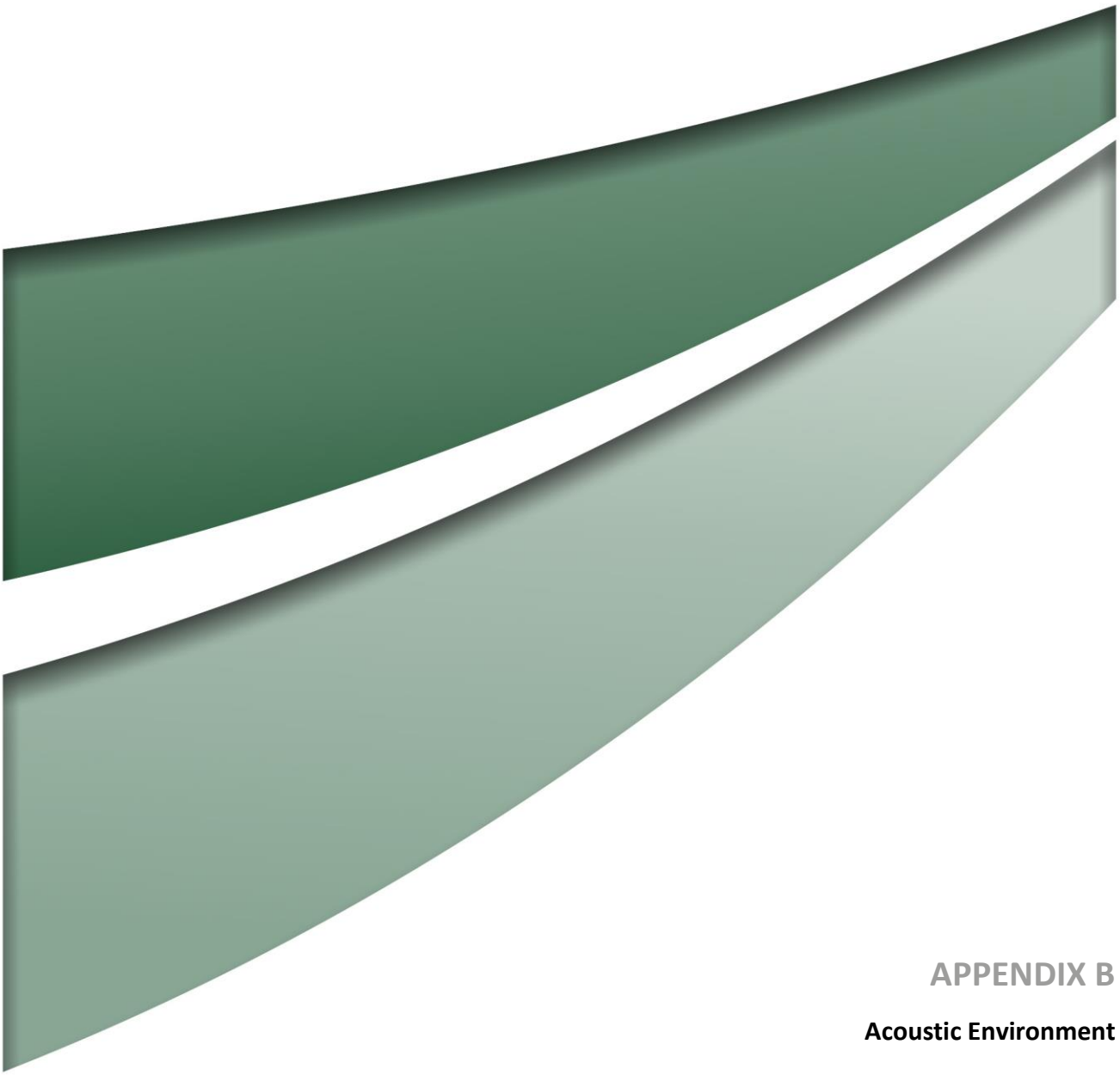
In summary, this peer review confirms that the Noise Assessment for the Project conforms to the relevant guidelines. The report is comprehensive, considers other stakeholders and has been undertaken in a professional manner. The conclusions reached in the report are supported by appropriate assessment methodologies, calculations and assumptions where necessary to do so.

Please contact the undersigned should you require any additional information

I trust this information is sufficient. Please contact us if you have any further queries.

Yours faithfully
WILKINSON MURRAY

John Wassermann
Director



APPENDIX B

Acoustic Environment

Appendix B – Acoustic Environment

The *Noise Policy for Industry* (NPfI) (EPA, 2017) documents the procedures used to assess the noise from industrial noise sources scheduled under the *Protection of the Environment Operations Act 1997*. The project noise trigger levels for a development are the benchmark levels above which noise management measures are required to be considered. Project noise trigger levels are derived from the assessment of the intrusive noise level and the assessment of the recommended amenity noise level for a specific land use. The aim of the project intrusiveness noise level is to protect against significant changes in noise levels, while the aim of the project amenity noise level is to protect against cumulative noise impacts from industry thereby protecting the amenity for particular land uses.

The project intrusiveness noise levels are based on the measurement of the existing background noise levels. The methodologies for determining the assessment criteria and the monitoring programs required to provide the necessary data are outlined in Fact Sheets A and B of the NPfI and **Section 4.1** of this report.

Monitoring Program

The existing noise environment in the area surrounding the Project was assessed using monitoring data from the existing Mount Owen Complex continuous monitoring networks and the Liddell Coal Operations and Ravensworth Operations continuous monitoring networks. An attended noise monitoring program was used to confirm source identification at the noise monitoring locations.

Continuous Noise Monitors

Noise monitoring data was obtained from the Mount Owen Complex continuous noise monitoring units SX 1, 4 and 12, Liddell Coal Operations SX 37 and Ravensworth Operations unit SX 46. The monitoring data from the units includes the 24 hours per day, 7 days per week monitoring of:

- ambient background and statistical noise levels for each 15-minute interval recorded as $L_{A1,15minute}$, $L_{A10,15minute}$, and $L_{A90,15minute}$
- $L_{Aeq,\ 15minute}$ noise levels recorded at 15-minute intervals
- maximum and minimum noise levels recorded at 15-minute intervals
- A-weighted 1/3 octave noise levels at 10-second intervals recorded over every 15-minute measurement period
- results of a low pass filter at 10-second intervals recorded over every 15-minute measurement period
- maximum $L_{A1,1minute}$ noise levels recorded over one of the night time 15-minute measurement periods
- audio levels as MP3 files for every 15-minute measurement period.

The units also record site-specific meteorological data.

The details of the noise monitoring data obtained from the continuous noise monitoring units used in the assessment of the noise environment in the region surrounding the Project are presented in **Table B.1**.

Table B1 Continuous Noise Monitoring Network Data

Unit number	Location	Receiver Area represented
SX1	Middle Falbrook	Area 4 North and South, Area 7
SX12	Camberwell	Area 8 East and West, Area 9
SX37	Hebden Road	Area 11
SX46	Camberwell South	Area 10

Meteorological Data

Data on meteorological conditions at the time of each monitoring period was collected from the Glendell Meteorological Station (SX 13). The meteorological data included:

- ambient temperature at 2 and 10 m
- wind speed, wind direction and stability class (or sigma-theta)
- humidity
- rainfall.

The meteorological data was used to exclude monitoring data for periods of high wind and rainfall.

Attended Noise Monitoring

The results from attended noise monitoring have been used in support of the continuous noise monitors in order to quantify and describe the ambient noise environment in the region surrounding the Project. The results from attended noise monitoring have been used for six locations representative of the private residences to the north-west, south-east and south that could potentially be affected by the Project.

The objective of using the attended noise monitoring was to determine the sources of noise contributing to the ambient noise environment, to assist in the interpretation of the long-term continuous noise monitoring data. This information has been correlated with the monitoring data from the continuous monitoring networks.

The details of the attended noise monitoring locations used to assess the noise environment in the region surrounding the Project are presented in **Table B2**.

The data collected during the attended noise monitoring included:

- recorded A-weighted 1/3 octave noise levels at 1-second intervals over a 15-minute measurement period
- results of a low pass filter at 1-second intervals over the 15-minute measurement period
- assessment of the maximum LA1,1min noise level recorded over the 15-minute measurement period
- ambient LAeq,15minute and background LA90,15minute noise levels for the 15-minute measurement period.

Table B2 Attended Noise Monitoring Locations

Monitoring Location	Location Description	Receiver Area represented
N3 (reference SX1)	Middle Falbrook	Area 4 North
N8 (reference SX46)	Camberwell	Area 10
N9 (reference SX12)	Camberwell	Area 8 West
N10 (reference SX12)	Camberwell	Area 8 East
N11 (reference SX12)	Glennies Creek	Area 8 East
N17 (reference SX37)	Hebden	Area 11

Sufficient monitoring data was collected at all attended monitoring locations to validate the results available from the long-term real-time monitoring locations.

Continuous Noise Monitoring Data

The RBLs for the four continuous noise monitoring locations are shown in **Table B3**.

Table B3 Assessment of Rating Background Levels

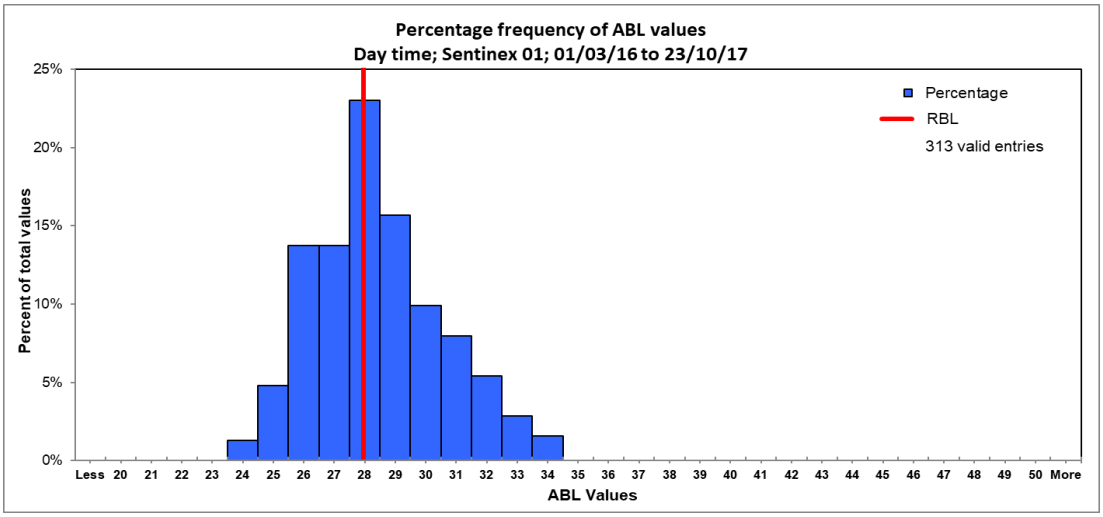
Unit number/Receiver Area represented	Rating Background Level (RBL), dB(A)		
	Day[1]	Evening[1]	Night[1]
SX1/Area 4 North and South, Area 7	35 (28)[2]	30	30
SX12/Area 8 East and West, Area 9	35 (32) [2]	36	35
SX37/Area 11	35 (25) [2]	30 (29) [3]	30 (29) [3]
SX46/Area 10	35 (30) [2]	33	32

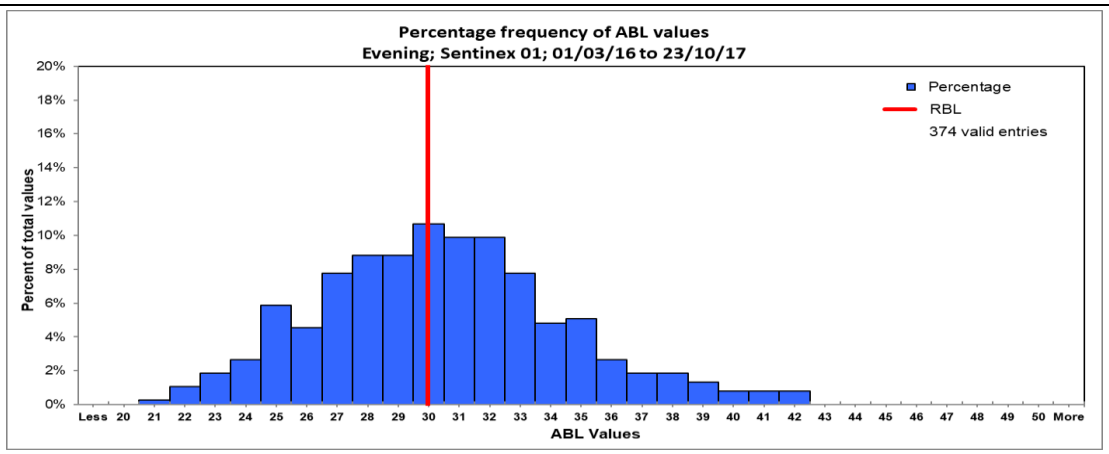
Note: 1. Day period is 7am-6pm Monday-Saturday and 8am-6pm Sunday and Public Holidays, evening period is 6pm-10pm and night period is 10pm to commencement of day period.
2. Where the Day ABL is less than 35 dB(A) then ABL is set at 35 dB(A)
3. Where the Evening or Night ABLs are less than 30 dB(A) then ABL is set at 30 dB(A)

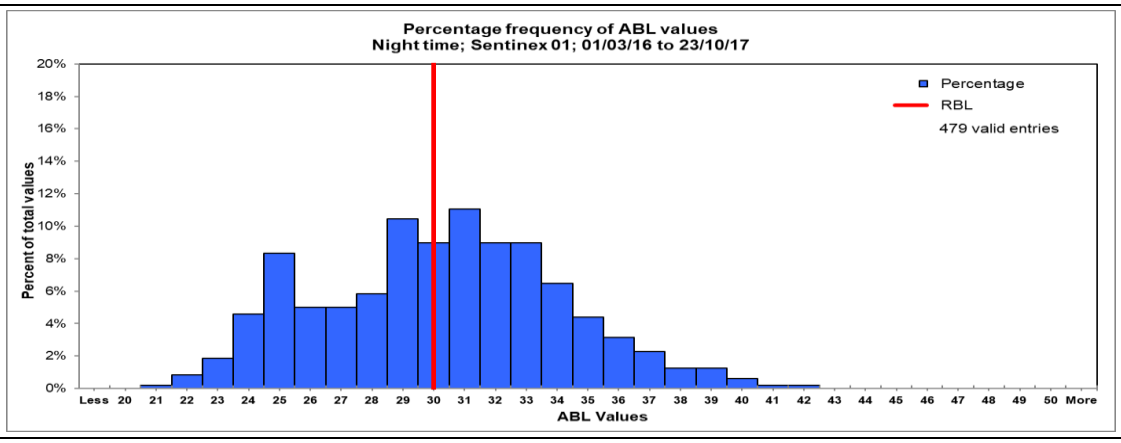
The background noise levels are presented in **Tables B4** to **B7** as histograms showing percentage frequency of ABL values as well as the overall RBL value.

Table B4 Monitoring Location SX 1 RBL dB(A)

NPfI Descriptor	Day	Evening	Night
RBL	35 (28) [1]	30	30
Intrusiveness Criteria	40	35	35



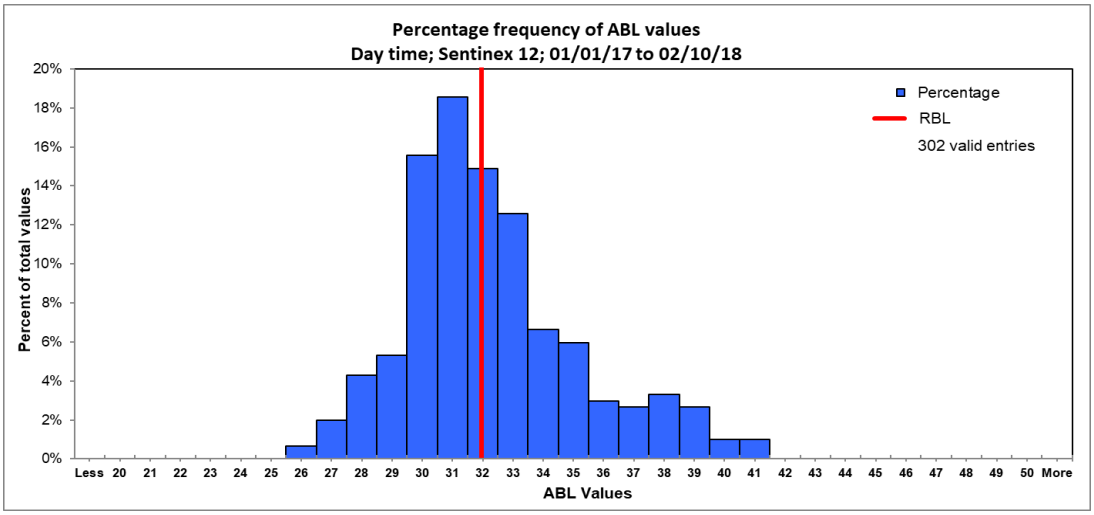


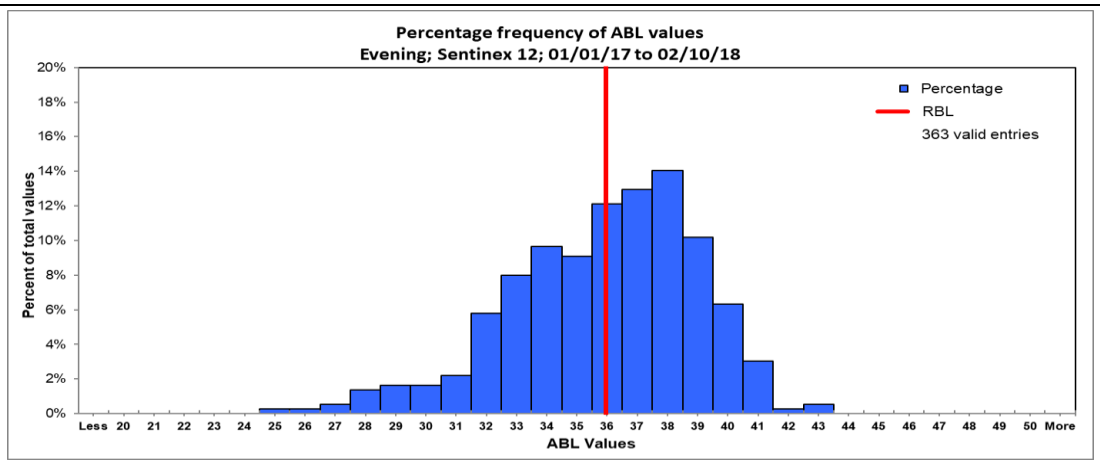


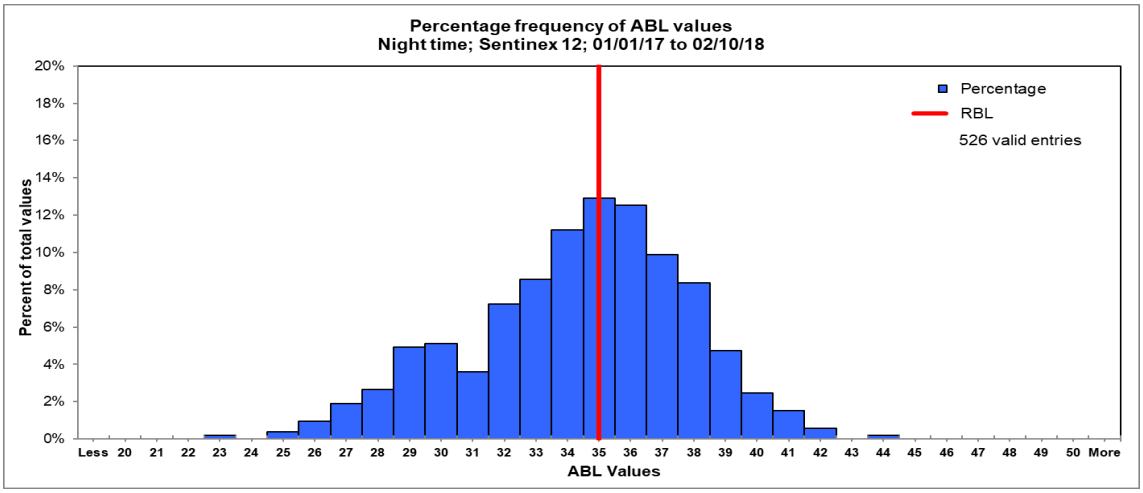
Note: [1] Where the Day ABL is less than 35 dB(A) then the ABL is set at 35 dB(A)

Table B5 Monitoring Location SX 12 RBL dB(A)

NPfI Descriptor	Day	Evening	Night
RBL	35 (32) [1]	36	35
Intrusiveness Criteria	40	40 (41) [2]	40



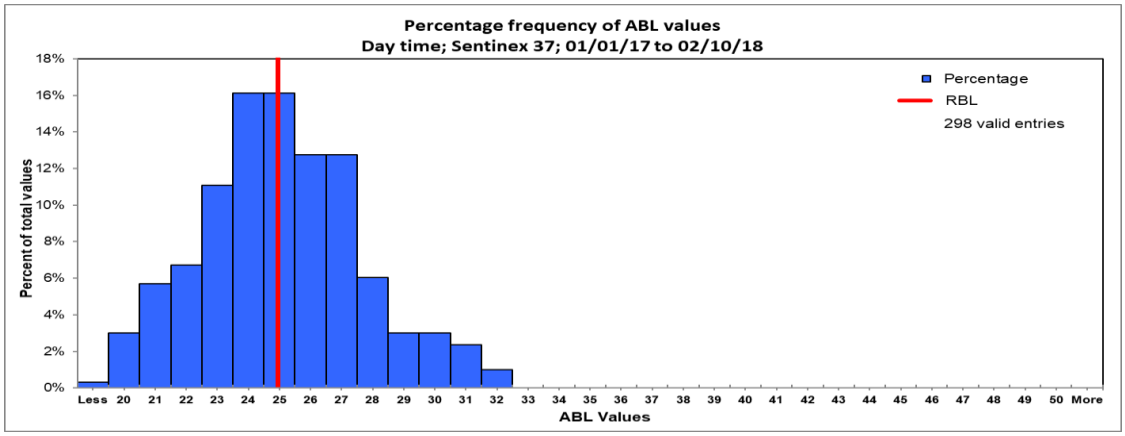


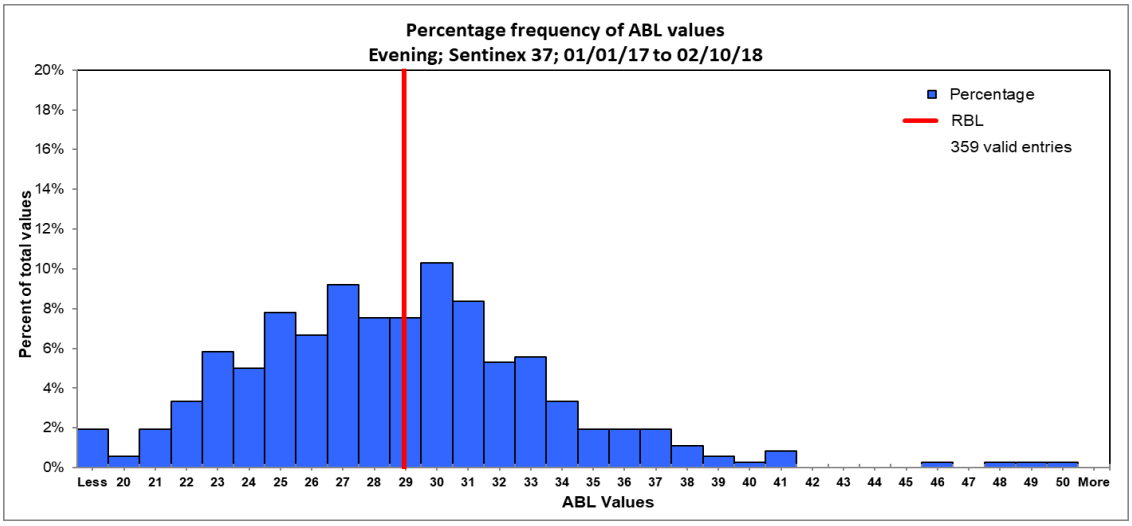


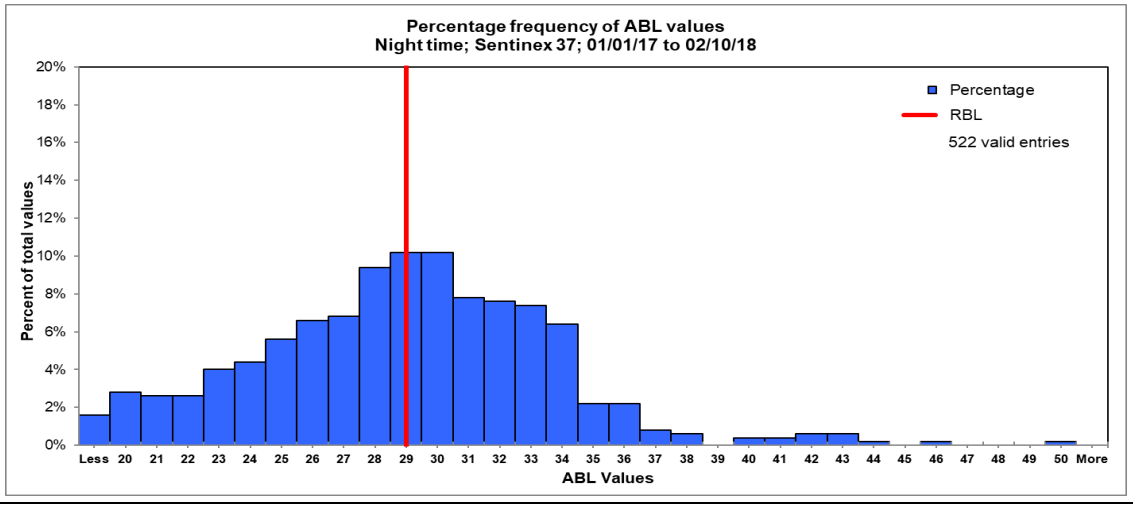
Note: [1] Where the Day ABL is less than 35 dB(A) then the ABL is set at 35 dB(A)
[2] Night Project Intrusiveness Noise Level should be no higher than day, as per Section 2.3 of the NPfI.

Table B6 Monitoring Location SX 37 RBL dB(A)

NPfI Descriptor	Day	Evening	Night
RBL	35 (25) [1]	30 (29) [2]	30 (29) [2]
Intrusiveness Criteria	40	35	35





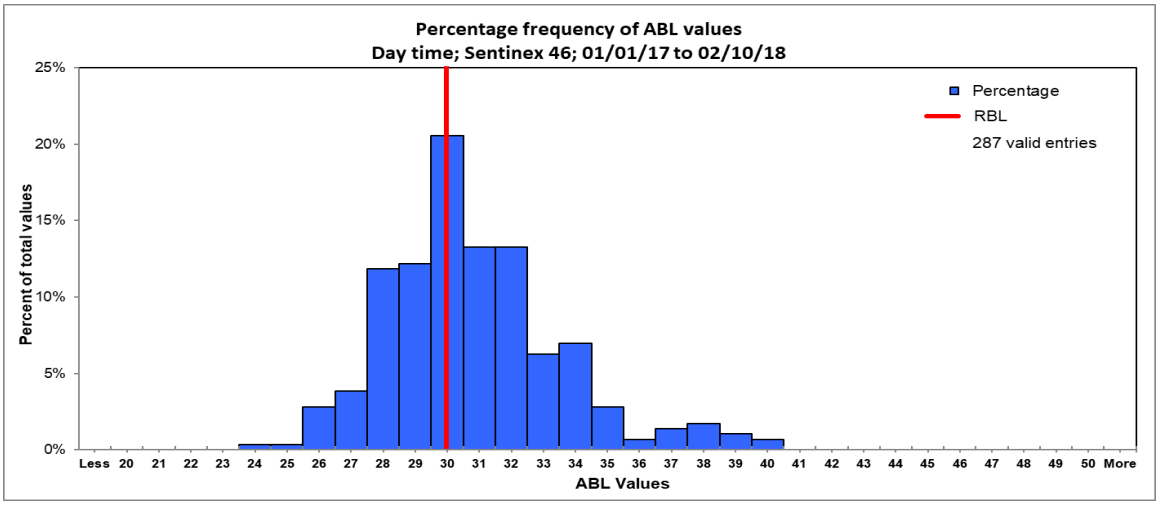


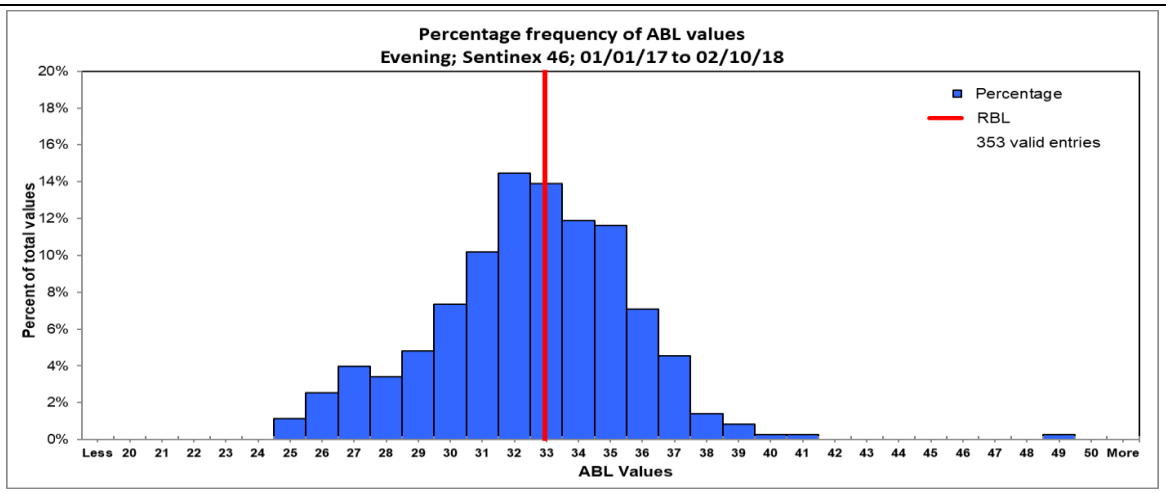
Note: [1] Where the Day ABL is less than 35 dB(A) then the ABL is set at 35 dB(A)

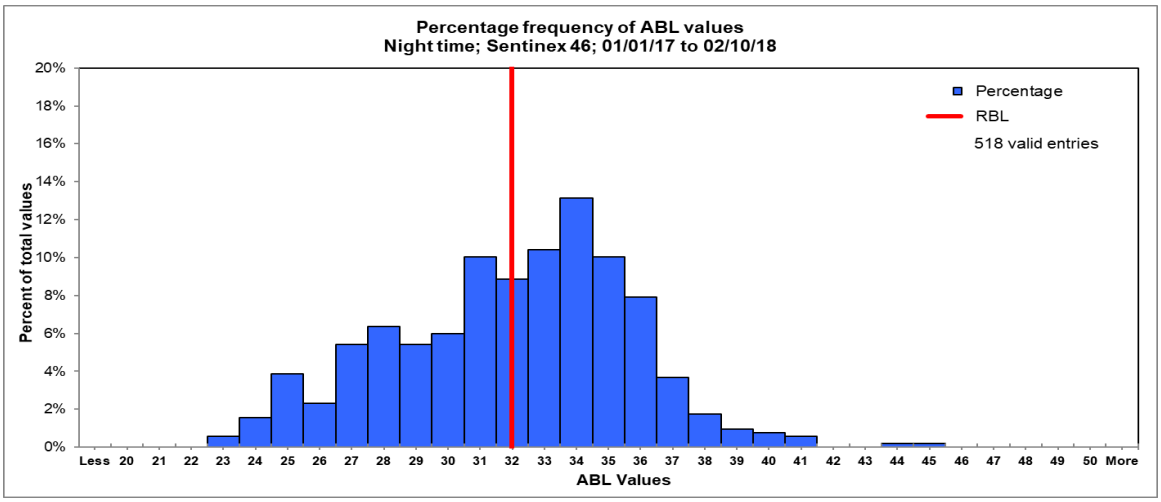
[2] Where the Evening or Night ABLs are less than 30 dB(A) then ABL is set at 30 dB(A)

Table B7 Monitoring Location SX 46 RBL dB(A)

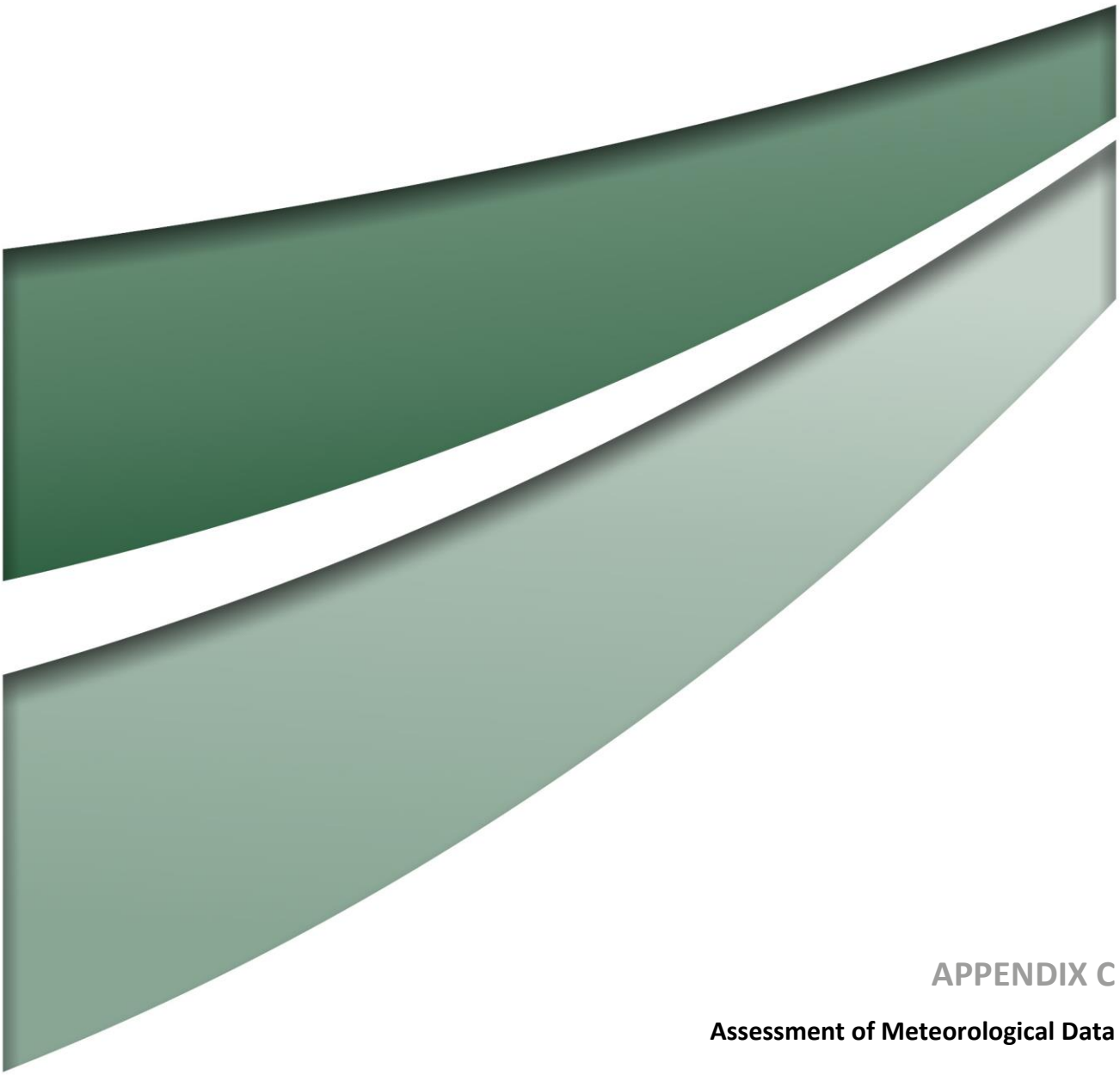
NPfI Descriptor	Day	Evening	Night
RBL	35 (30) [1]	33	32
Intrusiveness Criteria	40	38	37







Note: [1] Where the Day ABL is less than 35 dB(A) then the ABL is set at 35 dB(A)



APPENDIX C

Assessment of Meteorological Data

Appendix C – Assessment of Meteorological Data

Fact Sheet D of the *Noise Policy for Industry* (NPfI) (EPA, 2017) requires that noise impacts be assessed under weather conditions that would be expected to occur at a particular site for a significant period of time.

The NPfI notes that there are two approaches for the assessment of meteorological effects, such as gradient winds and temperature inversions, on propagating noise from the source to the receiver. The simple method is to 'adopt the noise-enhancing meteorological conditions for all assessment periods for noise impact assessment purposes without an assessment of how often these conditions occur'. Alternatively, the local meteorological data can be used to determine weather conditions that would be expected to occur at a particular site for a significant period of time.

A detailed analysis of meteorological data was undertaken for the Air Quality Impact Assessment (AQIA) (Jacobs, 2019). Meteorological data from seven recent years (2012 to 2018) was analysed in order to identify a representative year for the modelling. Hourly records of temperature, wind speed and wind direction were included, among other parameters. The procedure for identifying a representative meteorological year involved selecting a meteorological monitoring station and comparing wind patterns for each calendar year. Data from the Glendell meteorological station (located at SX13) were chosen since this station is closest to the operations associated with the Project.

This assessment concluded that, from a wind perspective, there was little difference between the years 2012 to 2018. The 2014 calendar year was selected as the preferred meteorological year for the AQIA for a range of factors including, a high data capture rate, similar wind patterns to other years and rainfall being slightly below the long-term average (the preference was for a slightly drier than average year). The 2014 calendar year was also used for the Mount Owen Continued Operations Modification 2 Noise Impact Assessment (Umwelt, 2018). Based on the analysis undertaken for the AQIA, 2014 is considered to be a representative year for noise modelling purposes. To align with both the AQIA for the Project and previous noise assessments from the Mount Owen Complex, the 2014 calendar year was selected for this assessment.

Wind

The NPfI requires that wind effects need to be assessed when wind is considered a feature of the area. Wind is considered a feature of the area where source-to-receiver winds of 3 m/s occur for 30% of the time in any assessment period.

Fact Sheet D of the NPfI requires that noise impacts be assessed under weather conditions that would be expected to occur at a particular site for a significant period of time.

The collated meteorological data for the January 2014 to December 2014 (inclusive) period, provided in **Tables C1** to **C4**, was analysed to determine prevailing wind conditions likely to influence the propagation of noise at the project site.

Table C1 Prevailing Wind Analysis, Summer

	< 0.5	0.5 to < 0.9	0.9 to < 1.7	1.7 to < 3.0	3.0 to < 4.5	4.5 to < 6.0	> 6.0
Day							
N	1.8%	-	-	-	-	-	-
NNE		-	-	0.1%	-	-	-
NE		0.1%	0.1%	0.1%	-	-	-
ENE		0.1%	0.3%	0.3%	0.1%	0.1%	-
E		0.1%	1.2%	1.2%	0.2%	-	-
ESE		0.3%	1.8%	4.1%	2.6%	1.1%	0.2%
SE		0.6%	2.4%	5.4%	8.9%	8.0%	8.9%
SSE		0.7%	2.6%	5.0%	4.7%	1.4%	1.5%
S		0.6%	2.5%	2.4%	1.1%	0.4%	0.2%
SSW		0.7%	1.5%	0.8%	0.2%	-	-
SW		0.7%	1.4%	1.0%	0.1%	-	-
WSW		0.5%	0.8%	0.9%	0.2%	0.1%	-
W		0.3%	0.9%	1.2%	0.7%	0.2%	0.1%
WNW		0.1%	0.6%	1.4%	1.7%	0.7%	0.4%
NW		0.3%	0.5%	1.3%	2.9%	2.5%	1.1%
NNW		0.1%	0.4%	0.2%	0.4%	0.2%	0.5%
Evening							
N	0.9%	-	-	-	-	-	-
NNE		-	0.1%	0.1%	0.1%	-	-
NE		-	0.2%	0.1%	0.1%	-	-
ENE		0.1%	0.2%	0.1%	0.1%	-	-
E		0.1%	0.7%	0.4%	0.1%	-	-
ESE		0.1%	0.3%	1.3%	1.9%	0.8%	0.2%
SE		0.1%	1.0%	1.8%	7.0%	16.1%	17.6%
SSE		0.5%	0.7%	3.3%	10.0%	8.5%	3.0%
S		0.4%	1.5%	3.7%	1.0%	0.2%	0.7%
SSW		0.4%	0.6%	1.0%	0.2%	0.1%	-
SW		0.1%	0.4%	0.2%	-	-	-
WSW		0.2%	0.7%	0.1%	0.1%	-	-
W		-	0.8%	0.6%	0.4%	0.1%	0.1%
WNW		-	0.5%	1.3%	0.7%	0.4%	0.1%
NW		-	0.4%	1.2%	1.2%	0.5%	-
NNW		-	0.1%	0.4%	0.7%	0.4%	-
Night							
N	6.4%	-	0.1%	-	-	-	-
NNE		0.1%	-	-	-	-	-
NE		0.7%	0.7%	0.1%	-	-	-
ENE		0.6%	1.1%	0.2%	-	-	-
E		0.6%	0.8%	0.2%	0.1%	0.1%	-
ESE		0.5%	1.0%	0.7%	0.7%	0.1%	-
SE		1.0%	2.5%	4.3%	5.0%	1.6%	0.1%
SSE		1.7%	4.3%	11.3%	10.3%	1.2%	0.1%
S		1.9%	5.6%	6.0%	0.8%	0.1%	-
SSW		1.3%	2.5%	1.0%	-	-	-
SW		0.8%	1.1%	0.2%	-	-	-
WSW		0.4%	0.6%	-	0.1%	-	-
W		0.7%	0.8%	0.4%	-	-	-
WNW		0.6%	1.2%	0.6%	0.3%	0.2%	-
NW		0.9%	2.2%	1.7%	1.1%	0.3%	0.1%
NNW		0.4%	4.0%	2.9%	0.2%	0.2%	-

Table C2 Prevailing Wind Analysis, Autumn

	< 0.5	0.5 to < 0.9	0.9 to < 1.7	1.7 to < 3.0	3.0 to < 4.5	4.5 to < 6.0	> 6.0
Day							
N	3.1%	-	-	-	-	-	-
NNE		-	0.2%	-	-	-	-
NE		0.3%	0.1%	-	-	-	-
ENE		0.3%	0.4%	0.3%	-	-	-
E		0.4%	0.9%	0.5%	0.1%	0.1%	-
ESE		0.8%	2.1%	1.9%	1.6%	0.5%	-
SE		0.6%	3.0%	4.3%	4.7%	1.8%	0.4%
SSE		1.2%	3.1%	5.2%	2.9%	0.4%	-
S		1.3%	4.0%	2.9%	0.9%	-	-
SSW		1.1%	2.3%	0.6%	0.1%	-	-
SW		0.9%	1.5%	0.3%	0.1%	-	-
WSW		0.7%	1.6%	0.5%	0.1%	-	-
W		0.6%	1.6%	1.6%	0.8%	0.1%	-
WNW		0.5%	1.9%	4.1%	1.9%	1.0%	0.7%
NW		0.3%	1.9%	5.1%	6.3%	3.2%	2.7%
NNW		0.2%	1.3%	1.7%	1.1%	1.1%	0.2%
Evening							
N	6.3%	-	-	-	-	-	-
NNE		0.1%	0.2%	-	-	-	-
NE		0.4%	0.1%	0.1%	-	-	-
ENE		0.4%	0.6%	0.3%	-	-	-
E		0.7%	0.9%	0.6%	-	-	-
ESE		0.4%	1.2%	3.4%	0.6%	-	-
SE		0.7%	2.8%	6.1%	5.3%	2.6%	0.4%
SSE		1.2%	4.6%	6.3%	2.5%	0.1%	-
S		0.9%	4.8%	4.2%	0.4%	0.1%	-
SSW		1.3%	2.5%	0.8%	0.1%	-	-
SW		0.7%	0.8%	0.2%	-	0.1%	-
WSW		0.9%	0.6%	0.3%	0.1%	-	-
W		0.6%	0.9%	0.7%	-	-	-
WNW		1.2%	1.1%	1.4%	0.4%	0.1%	0.1%
NW		1.2%	3.2%	3.5%	3.0%	0.5%	1.8%
NNW		0.2%	4.1%	6.1%	1.5%	0.2%	-
Night							
N	9.6%	-	0.1%	-	-	-	-
NNE		0.2%	0.3%	-	-	-	-
NE		0.5%	0.7%	0.1%	-	-	-
ENE		0.8%	0.5%	0.1%	-	-	-
E		0.6%	0.6%	0.1%	-	-	-
ESE		0.7%	0.5%	0.3%	0.1%	-	-
SE		1.2%	2.4%	2.8%	0.4%	-	-
SSE		1.7%	3.5%	4.9%	1.0%	-	-
S		1.9%	4.7%	2.0%	-	-	-
SSW		1.1%	1.9%	0.2%	-	-	-
SW		1.1%	1.2%	0.2%	-	-	-
WSW		0.9%	1.7%	0.1%	-	-	-
W		1.2%	2.0%	0.3%	-	-	-
WNW		1.3%	2.9%	1.9%	0.2%	0.1%	0.1%
NW		2.0%	6.0%	2.7%	1.7%	0.6%	1.3%
NNW		1.0%	16.8%	6.1%	0.6%	0.1%	0.3%

Table C3 Prevailing Wind Analysis, Winter

	< 0.5	0.5 to < 0.9	0.9 to < 1.7	1.7 to < 3.0	3.0 to < 4.5	4.5 to < 6.0	> 6.0
Day							
N	3.0%	-	-	-	-	-	-
NNE		-	0.1%	-	-	-	-
NE		0.3%	0.3%	-	-	-	-
ENE		0.4%	0.8%	0.2%	-	-	-
E		0.7%	1.0%	0.3%	-	-	-
ESE		0.5%	1.9%	1.6%	0.6%	-	-
SE		0.6%	1.5%	4.0%	2.9%	1.2%	0.1%
SSE		0.8%	1.9%	3.5%	2.7%	0.5%	0.1%
S		0.8%	2.1%	2.5%	1.8%	0.2%	-
SSW		0.7%	1.3%	0.9%	0.3%	0.1%	-
SW		0.8%	1.2%	0.5%	0.2%	-	-
WSW		0.4%	1.5%	0.3%	0.2%	-	-
W		0.5%	1.3%	0.5%	0.4%	0.1%	0.1%
WNW		0.3%	1.4%	2.1%	1.1%	1.6%	3.3%
NW		0.4%	1.7%	3.6%	5.4%	6.9%	13.2%
NNW		0.1%	1.0%	1.2%	1.8%	1.7%	2.6%
Evening							
N	5.9%	-	-	0.2%	-	-	-
NNE		0.1%	0.1%	-	-	-	-
NE		0.1%	0.1%	0.2%	-	-	-
ENE		0.2%	0.3%	0.3%	-	-	-
E		0.7%	0.5%	0.7%	-	-	-
ESE		0.5%	1.2%	2.6%	1.0%	-	-
SE		1.0%	2.4%	4.3%	2.2%	0.3%	-
SSE		1.2%	4.1%	4.0%	0.7%	-	-
S		1.0%	3.5%	3.3%	0.3%	0.1%	-
SSW		1.2%	1.2%	0.5%	0.1%	-	-
SW		0.4%	0.5%	0.3%	-	-	-
WSW		0.6%	0.6%	0.3%	0.2%	-	-
W		0.5%	0.8%	0.3%	0.1%	-	-
WNW		0.7%	0.8%	0.7%	0.6%	0.5%	0.3%
NW		1.0%	2.4%	2.6%	9.8%	7.1%	6.0%
NNW		0.3%	5.6%	6.0%	2.6%	1.6%	0.3%
Night							
N	8.5%	-	0.1%	-	-	-	-
NNE		0.2%	0.2%	-	-	-	-
NE		0.5%	0.5%	0.1%	-	-	-
ENE		0.8%	0.8%	0.1%	-	-	-
E		0.2%	0.5%	-	-	-	-
ESE		0.9%	0.5%	0.1%	-	-	-
SE		0.9%	1.8%	1.1%	0.1%	-	-
SSE		1.6%	2.0%	1.4%	1.0%	0.1%	-
S		1.1%	2.4%	1.1%	0.3%	-	-
SSW		0.8%	0.7%	-	-	-	-
SW		0.9%	0.9%	0.2%	-	-	-
WSW		0.9%	1.3%	0.2%	0.1%	-	-
W		0.7%	1.7%	0.8%	0.1%	-	-
WNW		0.8%	1.7%	2.7%	0.5%	-	0.1%
NW		1.8%	4.9%	4.8%	6.1%	6.1%	5.5%
NNW		0.9%	12.1%	6.3%	3.1%	3.4%	0.8%

Table C4 Prevailing Wind Analysis, Spring

	< 0.5	0.5 to < 0.9	0.9 to < 1.7	1.7 to < 3.0	3.0 to < 4.5	4.5 to < 6.0	> 6.0
Day							
N	8.5%	-	-	-	-	-	-
NNE		-	-	-	-	-	-
NE		-	0.1%	0.1%	-	-	0.1%
ENE		0.1%	0.5%	0.2%	-	-	-
E		0.4%	1.5%	0.7%	-	-	-
ESE		0.9%	1.6%	2.5%	1.5%	1.0%	0.6%
SE		1.3%	2.0%	3.4%	4.6%	5.4%	3.1%
SSE		0.9%	1.8%	2.5%	1.0%	0.3%	0.2%
S		0.8%	1.1%	1.3%	1.0%	0.3%	-
SSW		0.6%	1.0%	0.4%	0.5%	-	-
SW		0.8%	1.4%	0.6%	0.4%	0.1%	-
WSW		0.6%	1.1%	0.7%	0.7%	0.2%	-
W		0.5%	1.3%	1.6%	1.3%	0.6%	0.4%
WNW		0.3%	1.2%	2.6%	3.7%	2.3%	2.9%
NW		0.2%	1.0%	2.9%	5.2%	4.8%	2.9%
NNW		0.1%	0.2%	0.6%	0.9%	0.7%	0.5%
Evening							
N	12.7%	-	0.1%	-	-	-	-
NNE		-	0.4%	0.1%	-	-	-
NE		0.3%	0.3%	0.1%	-	0.1%	-
ENE		0.3%	0.3%	0.3%	0.1%	-	0.1%
E		0.1%	0.2%	0.3%	0.5%	-	-
ESE		0.3%	0.5%	1.7%	2.4%	1.8%	1.0%
SE		0.1%	0.7%	4.6%	9.4%	8.8%	5.2%
SSE		0.4%	2.1%	5.6%	3.5%	0.9%	0.1%
S		1.2%	4.5%	3.6%	0.2%	-	-
SSW		0.3%	0.5%	0.2%	-	-	-
SW		0.1%	0.5%	0.2%	-	0.1%	-
WSW		0.3%	0.1%	0.3%	0.1%	-	-
W		0.4%	0.6%	0.6%	0.7%	0.3%	0.1%
WNW		0.3%	0.5%	1.4%	2.0%	1.9%	1.4%
NW		0.3%	1.0%	1.9%	1.2%	1.2%	0.8%
NNW		0.8%	2.3%	1.9%	0.7%	0.1%	-
Night							
N	37.5%	-	-	-	-	-	-
NNE		0.1%	0.1%	-	-	-	-
NE		0.2%	0.3%	0.1%	-	-	-
ENE		0.1%	0.2%	0.1%	-	-	-
E		0.3%	0.4%	-	-	-	-
ESE		0.3%	0.9%	0.6%	0.5%	0.1%	-
SE		0.7%	2.2%	2.8%	2.7%	0.9%	0.1%
SSE		1.0%	2.0%	3.1%	1.0%	0.1%	-
S		1.6%	2.3%	1.1%	-	-	-
SSW		0.5%	0.6%	0.1%	-	-	-
SW		0.5%	0.4%	0.1%	0.1%	-	0.1%
WSW		0.4%	0.6%	0.2%	0.1%	-	-
W		0.5%	0.6%	0.4%	0.4%	0.3%	0.1%
WNW		0.4%	1.2%	1.5%	0.7%	0.4%	0.1%
NW		1.1%	1.8%	2.2%	3.0%	1.2%	0.6%
NNW		4.9%	6.9%	3.9%	0.6%	-	-

Wind speed analysis of the prevailing winds has also been conducted and is summarised in **Figures C.1** to **C.4**.

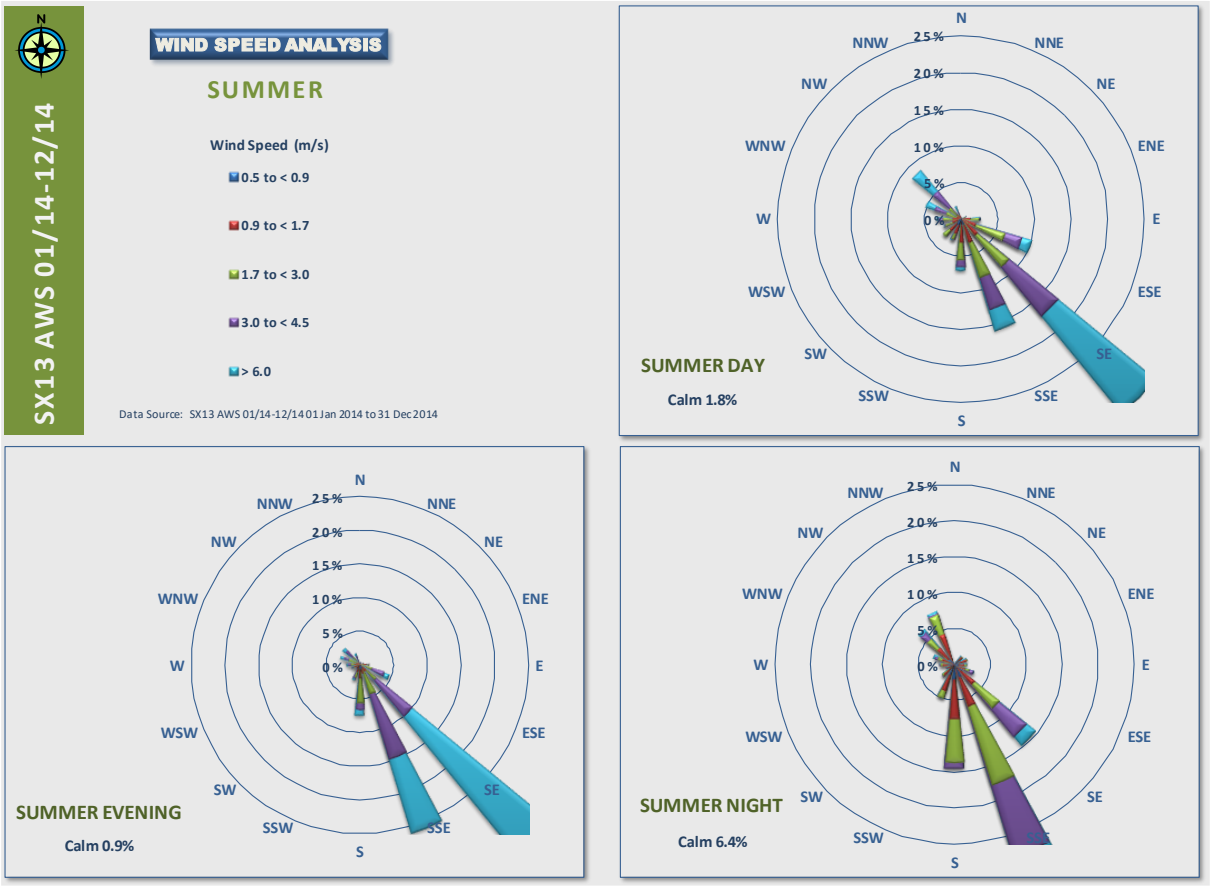


Figure C.1 Wind Speed Analysis, Summer

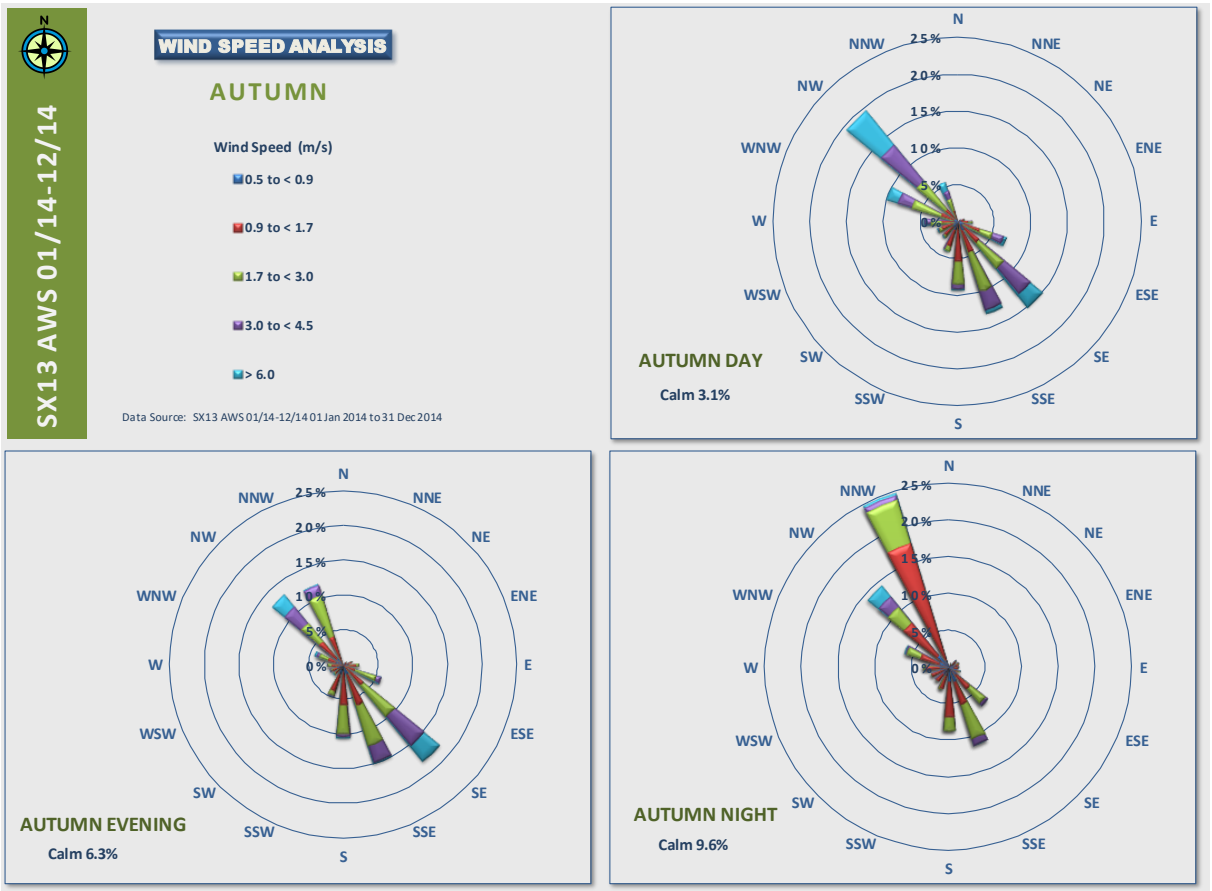


Figure C.2 Wind Speed Analysis, Autumn

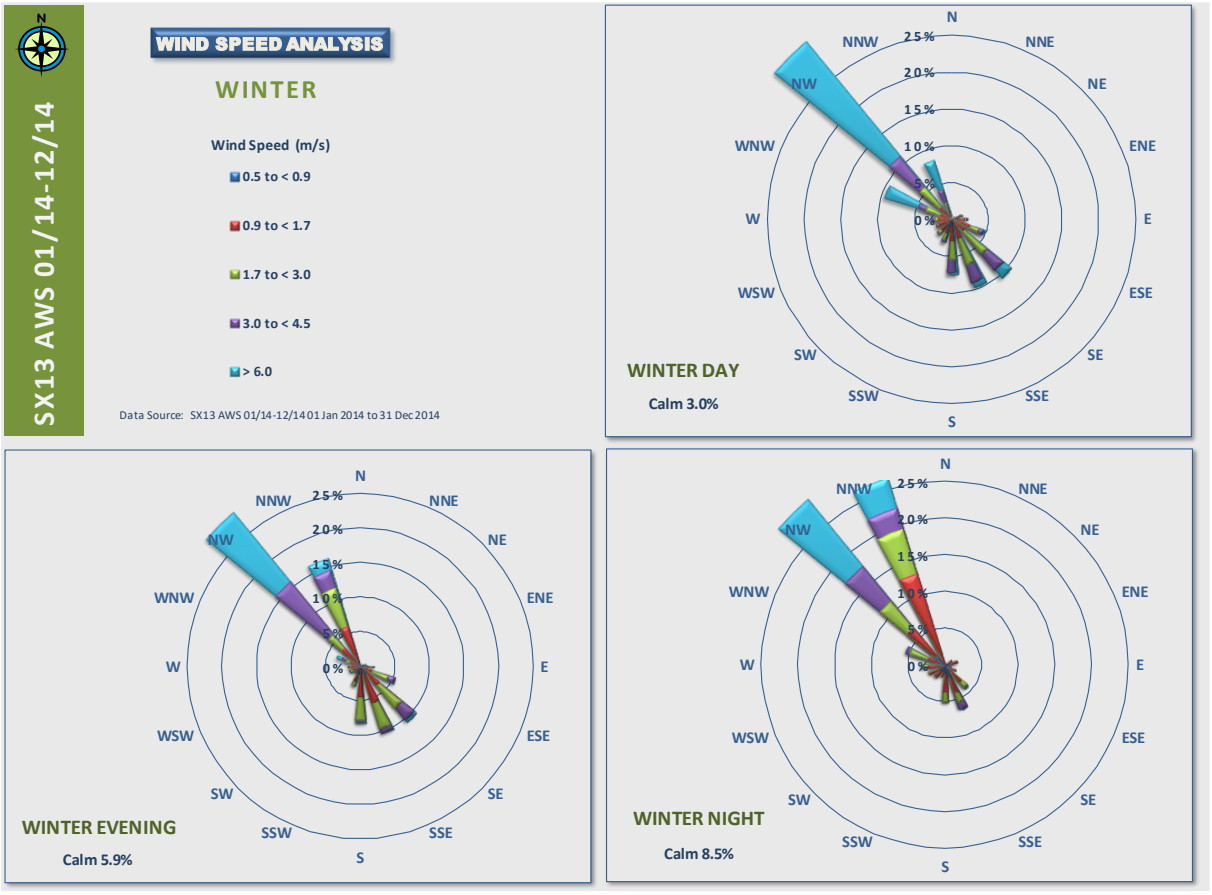


Figure C.3 Wind Speed Analysis, Winter

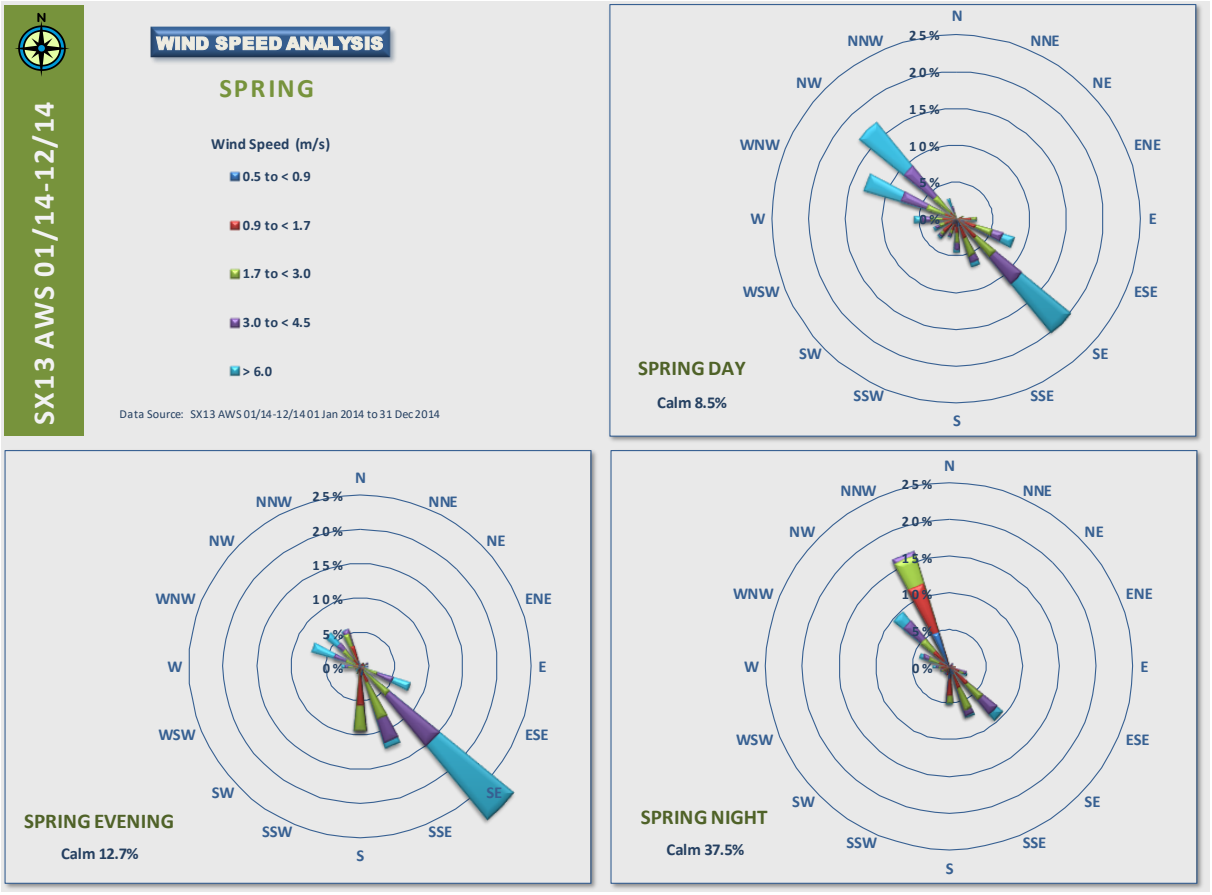


Figure C.4 Wind Speed Analysis, Spring

Temperature Inversions

Temperature inversions, when they occur, have the ability to increase noise levels by focusing sound waves. Temperature inversions occur predominantly at night during the winter months. For temperature inversions (F and G Class stability conditions) to be a significant characteristic of the area they needs to occur for approximately 30% of the total night time (i.e. the evening and night-time periods) during winter, i.e. about two nights per week.

Meteorological data was assessed in accordance with NPfI methodology to determine the likelihood of temperature inversions during the winter evening and night time periods. The results of the analysis of the meteorological data for the January 2014 to December 2014 (inclusive) period are presented in **Table C5**.

Table C5 Stability Class Wind Analysis, Winter Evening and Night (6.00 pm to 7.00 am)

	< 0.5	0.5 to < 0.9	0.9 to < 1.7	1.7 to < 3.0	3.0 to < 4.5	4.5 to < 6.0	> 6.0
Non-Inversion Conditions – 66%							
N	0.5%	-	-	-	-	-	-
NNE		0.1%	0.1%	-	-	-	-
NE		0.2%	0.2%	0.1%	-	-	-
ENE		0.3%	0.4%	0.2%	-	-	-
E		0.1%	0.2%	0.2%	-	-	-
ESE		0.2%	0.3%	0.8%	0.3%	-	-
SE		0.3%	1.6%	2.0%	0.8%	0.1%	-
SSE		0.6%	2.0%	2.0%	0.9%	-	-
S		0.5%	2.0%	1.5%	0.3%	0.1%	-
SSW		0.2%	0.5%	0.1%	-	-	-
SW		0.1%	0.4%	0.1%	-	-	-
WSW		0.2%	0.8%	0.2%	0.1%	-	-
W		0.1%	0.8%	0.4%	0.1%	-	-
WNW		0.3%	1.0%	1.8%	0.5%	0.2%	0.2%
NW		0.9%	2.8%	3.7%	7.2%	6.4%	5.7%
NNW		0.4%	2.7%	2.7%	2.9%	2.8%	0.6%
Inversion Conditions – 34%							
N	7.1%	-	-	-	-	-	-
NNE		-	0.1%	-	-	-	-
NE		0.1%	0.2%	-	-	-	-
ENE		0.4%	0.3%	-	-	-	-
E		0.2%	0.3%	-	-	-	-
ESE		0.6%	0.4%	-	-	-	-
SE		0.7%	0.4%	0.2%	-	-	-
SSE		0.9%	0.7%	0.2%	-	-	-
S		0.6%	0.7%	0.3%	-	-	-
SSW		0.6%	0.4%	-	-	-	-
SW		0.6%	0.4%	0.1%	-	-	-
WSW		0.6%	0.4%	0.1%	-	-	-
W		0.5%	0.6%	0.2%	-	-	-
WNW		0.5%	0.4%	0.3%	-	-	-
NW		0.6%	1.2%	0.5%	-	-	-
NNW		0.3%	7.4%	3.5%	-	-	-

Wind speed analysis of the prevailing winds during inversions has also been conducted and is summarised in **Figure C.5**. The percent occurrence of each stability class during the winter evening and night periods is summarised in **Table C6**.

Table C6 Percent Occurrence of Stability Classes during the Winter Evening and Night Periods

Stability Class	% Occurrence		
	Evening	Night	Evening and Night
D	45.4%	40.7%	42.1%
E	26.8%	22.9%	24.1%
F	27.0%	34.9%	32.4%
G	0.8%	1.5%	1.3%
F or G	27.8%	36.4%	33.8%

NPfI Modelling Parameters

In accordance with NPfI Fact Sheet D, the detailed approach to the analysis of the meteorological data was used to determine if specific wind effects and/or inversion conditions warranted further analysis. The vectored wind analysis and review of the wind roses, undertaken in accordance with the requirements of the NPfI, identified the presence of a range of conditions that could enhance the propagation of noise from the Project towards sensitive noise receivers. In addition to calm neutral conditions, the analysis of the 2014 meteorological dataset identified a range of meteorological conditions that should be considered in the assessment. The meteorological conditions and proposed modelling parameters used in the predictive noise model are presented in **Table C7**.

Table C7 Proposed Modelling Parameters

Season	Period	Conditions	% Occ.	Modelling Parameters
Summer	Day	ESE to S 0.5 to 3.0 m/s	28%	3 m/s SE wind
	Night	SE to S 0.5 to 3.0 m/s	39%	3 m/s SE wind
Autumn	Day	ESE to S 0.5 to 3.0 m/s	30%	3 m/s SE wind
	Evening	ESE to S 0.5 to 3.0 m/s	37%	3 m/s SE wind
	Night	WNW to NNW 0.5 to 3.0 m/s	41%	3 m/s NW wind
Winter	Evening	ESE to S 0.5 to 3.0 m/s	29%	3 m/s SE wind
	Night [1]	WNW to NNW 0.5 to 3.0 m/s	36%	3 m/s NW wind
	Evening/ Night	Calm F Class – Evening/Night	9% 32%	F class as 3°/100m inversion with 2 m/s drainage flow from NNW representing 21% of the Evening/Night period

Note: [1] Percentages includes periods of time that may be represented in more than one condition description

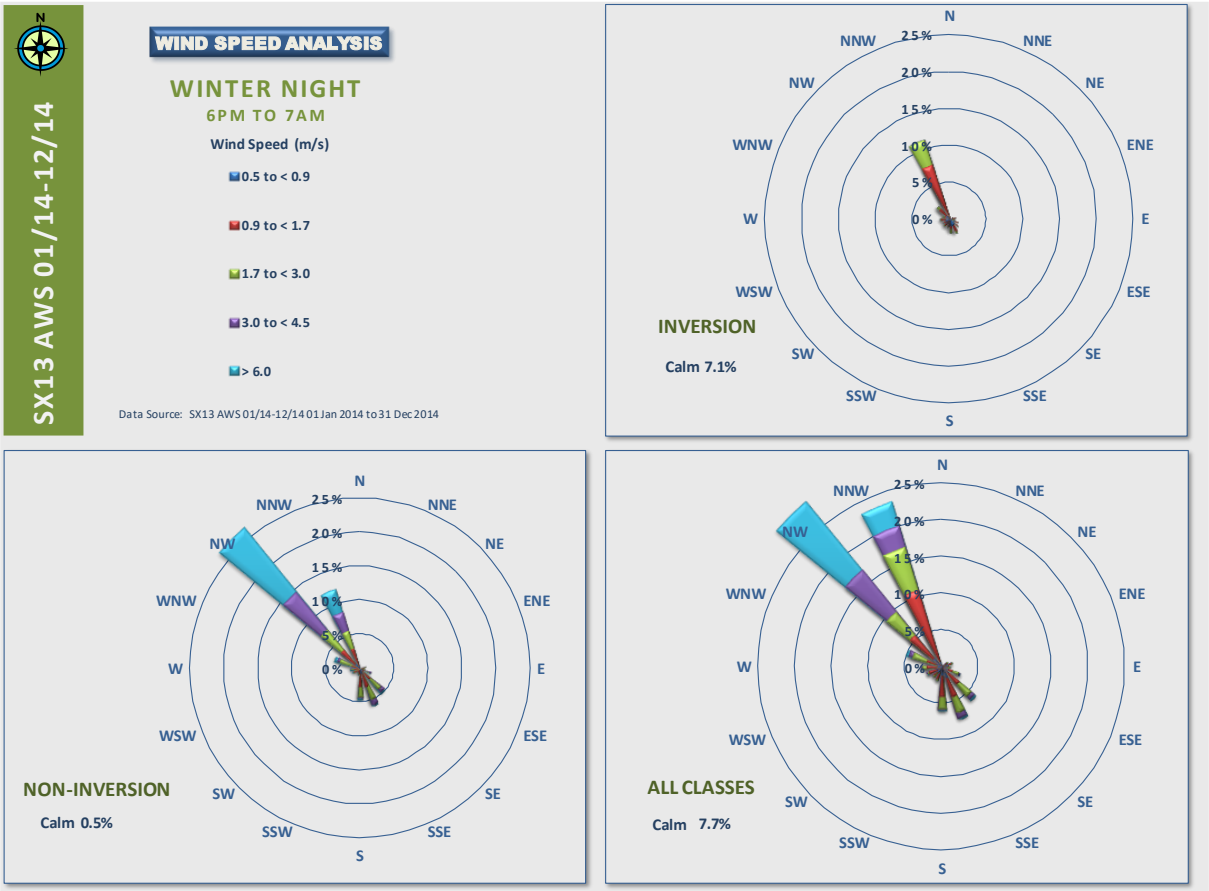


Figure C.5 Wind Speed Analysis, Winter Night (6.00 pm to 7.00 am)

Sleep Disturbance and Modifying Factors

The analysis of sleep disturbance and low frequency noise are based on the detailed approach to the analysis of the meteorological data presented in **Table C7**.

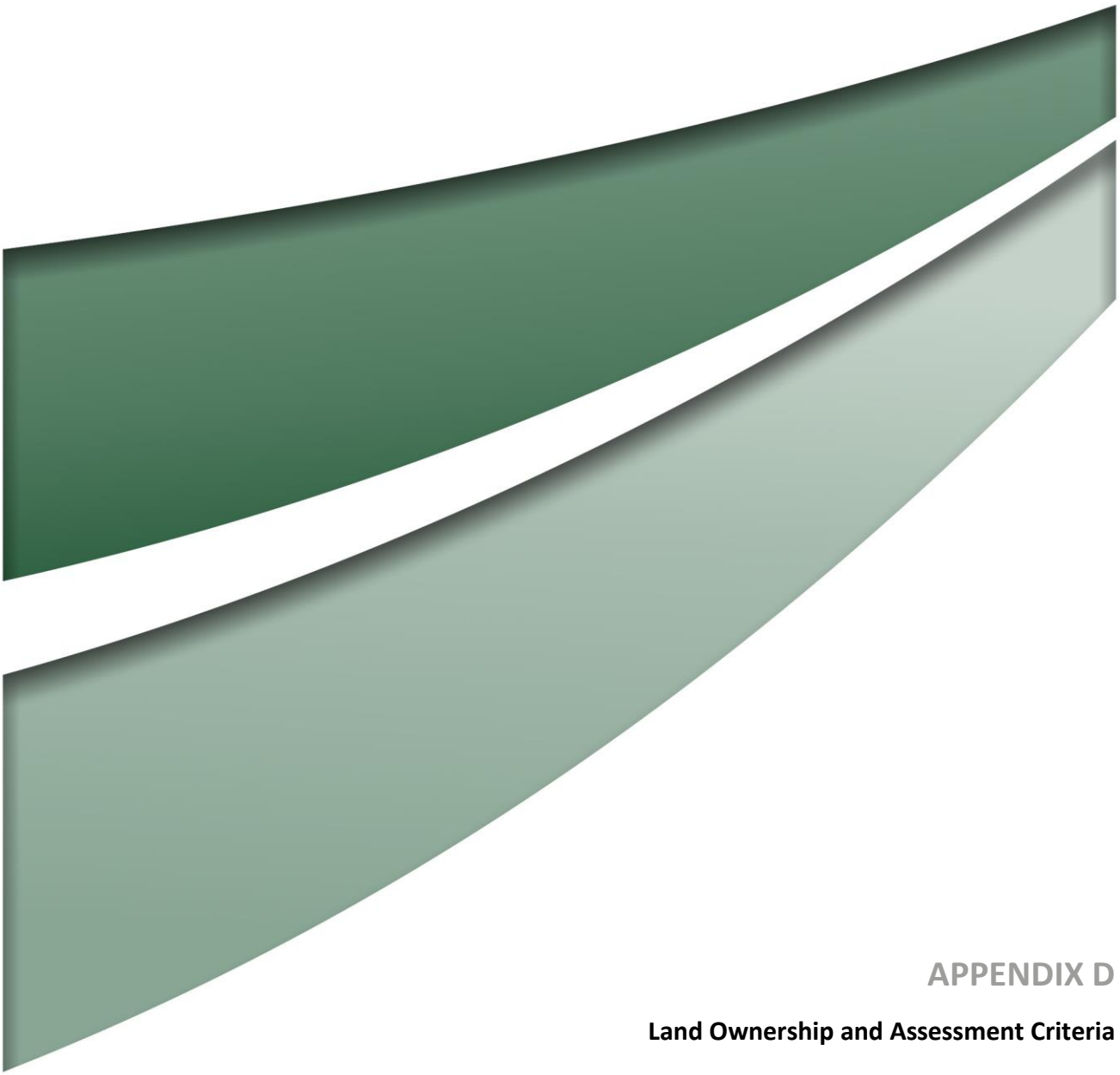
Implementation of Control Measures

To determine the feasibility of reasonable noise control measures, an assessment of the time these control measures would likely be implemented is required. This is supported through probabilistic noise modelling that is used to predict the noise impacts during the range of meteorological conditions, including standard, noise-enhancing and very noise-enhancing, that could occur over the life of the Project. The assessment of the day, evening and night noise levels considers 470 combinations of meteorological conditions and multiple operational scenarios over four representative years of the Project. Each combination of meteorological conditions is modelled, and the predicted noise levels are compared to target noise levels. Operationally, the Project has been designed to meet the noise targets under adverse meteorological conditions. During periods when the meteorological conditions do not enhance the noise propagation, the level of activity at the Project could increase. The objective of the probabilistic modelling is to identify the period of time noise controls will need to be in place and the level of control required to meet the target noise levels.

The modelling parameters are presented in **Table C8**.

Table C8 Parameters for Probabilistic Noise Modelling

Stability Class	Temperature Gradient	Wind Direction	Windspeed m/s	No. of Calm Conditions	Total No. Conditions Modelled
A to D	0°/100m	N NE E SE S SW W NW	0.3 0.7 0.9 1.2 1.4 1.7 1.9 2.3 2.8 3.3 3.8 4.3 4.8	1	105
E	1.5°/100m			1	105
F	2.25°/100m		0.3 0.7 0.9 1.2 1.4 1.7 1.9 2.3 2.8	1	73
	3°/100m			1	73
G	4°/100m		0.3 0.7 0.9 1.2 1.4 1.7 1.9	1	57
	6°/100m			1	57
				Total	**470**



APPENDIX D

Land Ownership and Assessment Criteria

Appendix D – Land Ownership and Assessment Criteria

The privately owned receivers that could potentially be affected by the Project are shown on **Figure 3.1**, relevant receiver areas are shown on **Figure 4.1**. The description of each receiver location used for the Single Point Calculations in ENM and the applicable target Project Noise Trigger Level, Sleep Disturbance Noise Goal and Construction Noise Goal are presented in **Table D.1**. Note receivers identified on **Figure 3.1** where modelling predictions are less than 30 dB(A) are not identified in **Table D1**.

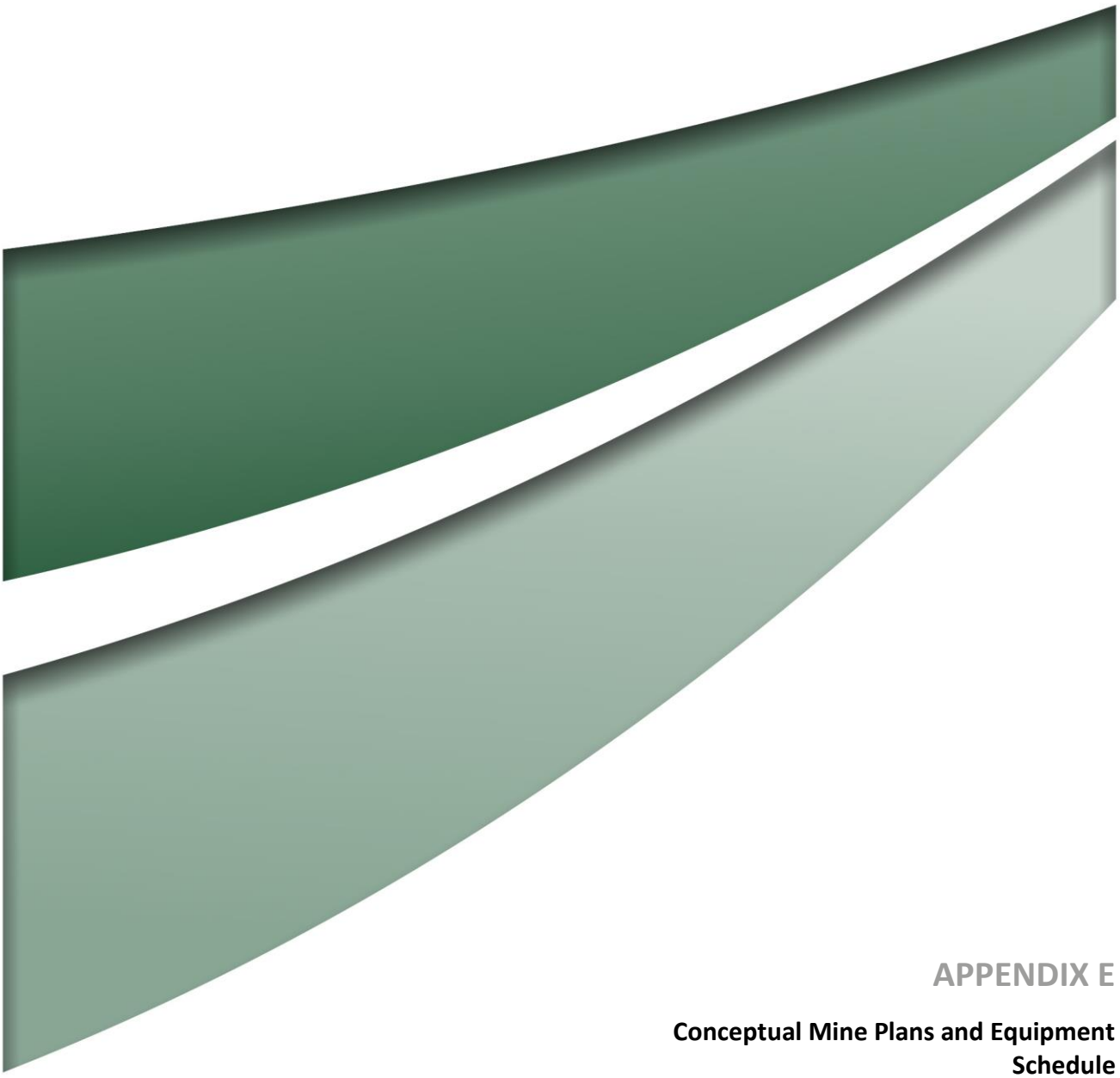
Table D.1 – Private Receivers and Assessment Criteria, dB(A)

No.	Receiver Area	Project Noise Trigger Level LAeq,15minute			Sleep Disturbance Noise Goal		Construction Noise Goal	
		Day	Evening	Night	Maximum of 40 dB(A) LAeq,15min or RBL + 5	Maximum of 52 dB(A) LAFmax of RBL +15	Standard	Non-standard, D/E/N
41	Area 1	40	35	35	40	52	50	45/40/40
42	Area 1	40	35	35	40	52	50	45/40/40
43	Area 1	40	35	35	40	52	50	45/40/40
44a	Area 1	40	35	35	40	52	50	45/40/40
44b	Area 1	40	35	35	40	52	50	45/40/40
45	Area 1	40	35	35	40	52	50	45/40/40
46	Area 1	40	35	35	40	52	50	45/40/40
47	Area 1	40	35	35	40	52	50	45/40/40
48	Area 1	40	35	35	40	52	50	45/40/40
49	Area 1	40	35	35	40	52	50	45/40/40
50	Area 1	40	35	35	40	52	50	45/40/40
51	Area 1	40	35	35	40	52	50	45/40/40
52	Area 1	40	35	35	40	52	50	45/40/40
53	Area 1	40	35	35	40	52	50	45/40/40
54	Area 1	40	35	35	40	52	50	45/40/40
55	Area 1	40	35	35	40	52	50	45/40/40
56a	Area 1	40	35	35	40	52	50	45/40/40
56b	Area 1	40	35	35	40	52	50	45/40/40
057	Area 1	40	35	35	40	52	50	45/40/40
058	Area 1	40	35	35	40	52	50	45/40/40
59	Area 1	40	35	35	40	52	50	45/40/40
60	Area 1	40	35	35	40	52	50	45/40/40
61	Area 1	40	35	35	40	52	50	45/40/40
62	Area 1	40	35	35	40	52	50	45/40/40
178	Area 1	40	35	35	40	52	50	45/40/40
210	Area 1	40	35	35	40	52	50	45/40/40
211	Area 1	40	35	35	40	52	50	45/40/40
212	Area 1	40	35	35	40	52	50	45/40/40
213	Area 1	40	35	35	40	52	50	45/40/40
15a	Area 2	40	35	35	40	52	50	45/40/40
15b	Area 2	40	35	35	40	52	50	45/40/40
17a	Area 2	40	35	35	40	52	50	45/40/40
17b	Area 2	40	35	35	40	52	50	45/40/40
63a	Area 2	40	35	35	40	52	50	45/40/40
73	Area 2	40	35	35	40	52	50	45/40/40

No.	Receiver Area	Project Noise Trigger Level LAeq,15minute			Sleep Disturbance Noise Goal		Construction Noise Goal	
		Day	Evening	Night	Maximum of 40 dB(A) LAeq,15min or RBL + 5	Maximum of 52 dB(A) LAFmax of RBL +15	Standard	Non-standard, D/E/N
74	Area 2	40	35	35	40	52	50	45/40/40
83	Area 2	40	35	35	40	52	50	45/40/40
85	Area 2	40	35	35	40	52	50	45/40/40
86	Area 2	40	35	35	40	52	50	45/40/40
87	Area 2	40	35	35	40	52	50	45/40/40
88	Area 2	40	35	35	40	52	50	45/40/40
162b	Area 2	40	35	35	40	52	50	45/40/40
259	Area 2	40	35	35	40	52	50	45/40/40
260	Area 2	40	35	35	40	52	50	45/40/40
350	Area 2	40	40	40	40	52	50	55/55/55
13	Area 4 - North	40	35	35	40	52	50	45/40/40
14	Area 4 - North	40	35	35	40	52	50	45/40/40
19	Area 4 - North	40	35	35	40	52	50	45/40/40
21*	Area 4 - North	40	35	35	40	52	50	45/40/40
23*	Area 4 - North	40	35	35	40	52	50	45/40/40
10	Area 4 - South	40	35	35	40	52	50	45/40/40
11	Area 4 - South	40	35	35	40	52	50	45/40/40
12	Area 4 - South	40	35	35	40	52	50	45/40/40
93	Area 4 - South	40	35	35	40	52	50	45/40/40
94	Area 4 - South	40	35	35	40	52	50	45/40/40
95	Area 4 - South	40	35	35	40	52	50	45/40/40
112*	Area 4 - South	40	35	35	40	52	50	45/40/40
114*	Area 4 - South	40	35	35	40	52	50	45/40/40
89	Area 5	40	35	35	40	52	50	45/40/40
91	Area 5	40	35	35	40	52	50	45/40/40
92	Area 5	40	35	35	40	52	50	45/40/40
98	Area 5	40	35	35	40	52	50	45/40/40
99	Area 5	40	35	35	40	52	50	45/40/40
100	Area 5	40	35	35	40	52	50	45/40/40
2	Area 7	50	50	50	-	-	50	55/55/55
4*	Area 7	40	35	35	40	52	50	45/40/40
5*	Area 7	40	35	35	40	52	50	45/40/40
6	Area 7	50	50	50	-	-	50	55/55/55

No.	Receiver Area	Project Noise Trigger Level LAeq,15minute			Sleep Disturbance Noise Goal		Construction Noise Goal	
		Day	Evening	Night	Maximum of 40 dB(A) LAeq,15min or RBL + 5	Maximum of 52 dB(A) LAFmax of RBL +15	Standard	Non-standard, D/E/N
7a	Area 7	40	35	35	40	52	50	45/40/40
7b	Area 7	40	35	35	40	52	50	45/40/40
7c	Area 7	40	35	35	40	52	50	45/40/40
105*	Area 7	40	35	35	40	52	50	45/40/40
152*	Area 8 - West	40	40	38	40	52	50	45/45/45
154*	Area 8 - West	40	40	38	40	52	50	45/45/45
155*	Area 8 - West	40	40	38	40	52	50	45/45/45
156*	Area 8 - West	40	40	38	40	52	50	45/45/45
111*	Area 8 - East	40	40	38	40	52	50	45/45/45
127a*	Area 8 - East	40	40	38	40	52	50	45/45/45
127b*	Area 8 - East	40	40	38	40	52	50	45/45/45
127c*	Area 8 - East	40	40	38	40	52	50	45/45/45
127d*	Area 8 - East	40	40	38	40	52	50	45/45/45
143*	Area 8 - East	40	40	38	40	52	50	45/45/45
147*	Area 9	40	40	38	40	52	50	45/45/45
149	Area 9	45	45	45	-	-	50	45/45/45
150*	Area 9	40	40	38	40	52	50	45/45/45
342	Area 9	70	70	70	-	-	75	75/75/75
144a*	Area 10	40	38	37	40	52	50	45/43/42
145*	Area 10	40	38	37	40	52	50	45/43/42
134	Area 11	40	35	35	40	52	50	45/40/40
135	Area 11	40	35	35	40	52	50	45/40/40
136	Area 11	40	35	35	40	52	50	45/40/40
137d	Area 11	40	35	35	40	52	50	45/40/40
138	Area 11	40	35	35	40	52	50	45/40/40
412	Area 11	50	50	50	-	-	50	55/55/55
415	Area 11	65	65	65	-	-	75	75/75/75
All other private residences-		40	35	35	40	52	50	45/40/40

* receiver subject to acquisition



APPENDIX E

Conceptual Mine Plans and Equipment Schedule

Appendix E – Conceptual Mine Plans and Equipment Schedule

Introduction

The sound power levels of the equipment (including acoustic utilisation factors) proposed over the life of the mine are presented in **Tables E1** to **E4** for Years 1, 6, 13 and 18 respectively. It is important to note that these sound power levels are considered indicative rather than mandatory. The actual performance of the mining operation will be determined by monitoring the environmental noise levels over the life of the Project. That is, while the representative sound power levels provide a guide to equipment selection, the actual performance of the mine as a whole will dictate equipment selection criteria for mine operations.

Many of the machines and items of equipment presented in **Tables E1 to E4** are represented as multiple point sources in order to simulate:

- the possible alternate locations of the machine e.g. the use of three alternate excavator locations
- the same machine doing two different activities e.g. a dozer pushing and reversing
- a fleet of trucks as a continuous circuit.

The representative locations of the equipment within each stage of the mining operation are shown in **Figures E1.1**, **E1.2**, **E1.3** and **E1.4.**

Table E.1 – Year 1

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
1063	Glendell ROM FEL	Working on Raw Coal	100%	113	121	320082	6413265	127	X	X	X	X
1069	Dozer 03 Ancillary - Dozer Glendell ROM	Forward	75%	111	122	320043	6413379	127	X	X	X	X
1070	Dozer 03 Ancillary - Dozer Glendell ROM	Reversing	25%	116	120	320048	6413384	127	X	X	X	X
1076	Service Truck 01 Ancillary	Service Truck	100%	112	112	318646	6408967	-2	X	X	X	X
1077	Service Truck 02 Ancillary	Service Truck	100%	112	112	318808	6409378	50	X	X	X	X
1078	Service Truck 03 Ancillary	Service Truck	100%	112	112	319067	6408443	4	X	X	X	X
1079	Service Truck 04 Ancillary	Service Truck	100%	112	112	319119	6408222	62	X	X	X	X
1082	Water Truck 02 Ancillary	Road Maintenance - Water	100%	115	126	318816	6409531	100	X	X	X	
1083	Water Truck 03 Ancillary	Road Maintenance - Water	100%	115	126	318855	6408904	-11				X
1090	Grader 24M 02 Ancillary	Road Maintenance - Grading	100%	112	119	319456	6408916	105	X	X	X	X
1100	EX101 2021_W_EX101_RL-15_D_RL30	Excavator 996	100%	117	123	319042	6409052	-13	X	X	X	X
1101	D11 1 CAT D11 Dozer EX101 support	Dozer Forward	75%	111	122	319042	6409072	-12	X	X	X	X
1103	CAT793F (Std) 1 CAT793F (Std)/ 1 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 1 of 4 - Queue at Loader 45%	45%	99	107	319042	6408992	-15	X	X	X	X
1104	CAT793F (Std) 1 CAT793F (Std)/ 1 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 1 of 4 - Spot Time at loader 14%	14%	105	114	319042	6409012	-14	X	X	X	X
1105	CAT793F (Std) 2 CAT793F (Std)/ 2 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 2 of 4 - Loading 68%	68%	101	108	319042	6409032	-14	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
1106	CAT793F (Std) 2 CAT793F (Std)/ 2 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 2 of 4 - Haul Segment 2 22%	22%	110	118	319003	6408969	-15	X	X	X	X
1107	CAT793F (Std) 2 CAT793F (Std)/ 2 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 2 of 4 - Haul Segment 4 22%	22%	110	118	318738	6408822	-10	X	X	X	X
1108	CAT793F (Std) 2 CAT793F (Std)/ 2 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 2 of 4 - Haul Segment 6 22%	22%	110	118	318605	6408658	3	X	X	X	X
1109	CAT793F (Std) 3 CAT793F (Std)/ 3 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 3 of 4 - Haul Segment 8 22%	22%	110	118	318812	6408305	4	X	X	X	X
1110	CAT793F (Std) 3 CAT793F (Std)/ 3 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 3 of 4 - Haul Segment 8 22%	22%	110	118	318954	6408346	14	X	X	X	X
1111	CAT793F (Std) 3 CAT793F (Std)/ 3 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 3 of 4 - Haul Segment 8 22%	22%	110	118	319097	6408386	26	X	X	X	X
1112	CAT793F (Std) 3 CAT793F (Std)/ 3 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 3 of 4 - Haul Segment 10 22%	22%	110	118	319245	6408479	30	X	X	X	X
1113	CAT793F (Std) 3 CAT793F (Std)/ 3 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 3 of 4 - Spot at Dump 10%	10%	103	113	319314	6408530	33	X	X	X	X
1114	CAT793F (Std) 3 CAT793F (Std)/ 3 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 3 of 4 - Dumping 7%	7%	101	111	319314	6408530	33	X	X	X	X
1115	CAT793F (Std) 4 CAT793F (Std)/ 4 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 4 of 4 - Haul Segment 10 (rev.) 25%	25%	108	118	319204	6408448	30	X	X	X	X
1116	CAT793F (Std) 4 CAT793F (Std)/ 4 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 4 of 4 - Haul Segment 8 (rev.) 25%	25%	108	118	318811	6408305	4	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
1117	CAT793F (Std) 4 CAT793F (Std)/ 4 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 4 of 4 - Haul Segment 5 (rev.) 25%	25%	108	118	318601	6408773	-5	X	X	X	X
1118	CAT793F (Std) 4 CAT793F (Std)/ 4 [PRJ] 2021_W_EX101_RL-15_D_RL30	Waste in Coal Mine Truck 4 of 4 - Haul Segment 2 (rev.) 25%	25%	108	118	318978	6408960	-15	X	X	X	X
1119	D11 1 CAT D11 Dozer EX101 support	Dozer Forward	75%	111	122	319330	6408542	33	X	X	X	X
1121	D11 2 CAT D11 Dozer EX101 support	Dozer Reverse 1st gear option	25%	113	117	319314	6408530	33	X	X	X	X
2200	EX102 2021_W_EX102_RL60_D_RL90	Excavator 996	100%	117	123	318519	6409204	58	X	X	X	X
2201	D11 1 CAT D11 Dozer EX102 support	Dozer Forward	75%	111	122	318519	6409224	59	X	X	X	X
2203	CAT793F (Std) 1 CAT793F (Std)/ 1 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 1 of 5 - Queue at Loader 28%	28%	97	105	318546	6409195	58	X	X	X	X
2204	CAT793F (Std) 1 CAT793F (Std)/ 1 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 1 of 5 - Spot Time at loader 14%	14%	105	114	318546	6409215	58	X	X	X	X
2205	CAT793F (Std) 2 CAT793F (Std)/ 2 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 2 of 5 - Loading 69%	69%	101	108	318546	6409235	59	X	X	X	X
2206	CAT793F (Std) 2 CAT793F (Std)/ 2 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 2 of 5 - Haul Segment 2 24%	24%	110	119	318553	6409224	58	X	X	X	X
2208	CAT793F (Std) 2 CAT793F (Std)/ 2 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 2 of 5 - Haul Segment 7 24%	24%	110	119	318465	6409314	79	X	X	X	X
2209	CAT793F (Std) 3 CAT793F (Std)/ 3 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 3 of 5 - Haul Segment 8 24%	24%	110	119	318640	6409445	93	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
2211	CAT793F (Std) 3 CAT793F (Std)/ 3 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 3 of 5 - Haul Segment 11 24%	24%	110	119	319293	6409254	105	X	X	X	X
2212	CAT793F (Std) 3 CAT793F (Std)/ 3 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 3 of 5 - Haul Segment 13 24%	24%	110	119	319513	6408722	105	X	X	X	X
2213	CAT793F (Std) 4 CAT793F (Std)/ 4 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 4 of 5 - Haul Segment 15 24%	24%	110	119	319566	6408368	94	X	X	X	X
2214	CAT793F (Std) 4 CAT793F (Std)/ 4 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 4 of 5 - Haul Segment 19 24%	24%	110	119	319330	6408174	92	X	X	X	X
2215	CAT793F (Std) 4 CAT793F (Std)/ 4 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 4 of 5 - Spot at Dump 10%	10%	103	113	319220	6408119	93	X	X	X	X
2216	CAT793F (Std) 4 CAT793F (Std)/ 4 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 4 of 5 - Dumping 7%	7%	102	111	319220	6408119	93	X	X	X	X
2217	CAT793F (Std) 4 CAT793F (Std)/ 4 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 4 of 5 - Haul Segment 19 (rev.) 26%	26%	108	118	319374	6408196	92	X	X	X	X
2219	CAT793F (Std) 5 CAT793F (Std)/ 5 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 5 of 5 - Haul Segment 11 (rev.) 26%	26%	108	118	319320	6409210	105	X	X	X	X
2220	CAT793F (Std) 5 CAT793F (Std)/ 5 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 5 of 5 - Haul Segment 9 (rev.) 26%	26%	108	118	318887	6409546	100	X	X	X	X
2222	CAT793F (Std) 6 CAT793F (Std)/ 6 [PRJ] 2021_W_EX102_RL60_D_RL90	Waste in Coal Mine Truck 6 of 5 - Haul Segment 2 (rev.) 26%	26%	108	118	318557	6409244	59	X	X	X	X
2223	D11 1 CAT D11 Dozer EX102 support	Dozer Forward	75%	111	122	319202	6408110	93	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
2225	D11 2 CAT D11 Dozer EX102 support	Dozer Reverse 1st gear option	25%	113	117	319220	6408119	93	X	X	X	
8500	EX151 2021_C_EX151_RL0_ROM	Excavator 2500	100%	115	125	318767	6408952	-3	X	X	X	X
8501	D11 1 CAT D11 Dozer EX151 support	Dozer Forward	75%	111	122	318767	6408972	-2	X	X	X	X
8503	CAT789C 1 CAT789C/ 1 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 1 of 5 - Queue at Loader 13%	13%	94	101	318767	6408892	-4	X	X	X	X
8504	CAT789C 1 CAT789C/ 1 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 1 of 5 - Spot Time at loader 7%	7%	105	110	318767	6408912	-4	X	X	X	X
8505	CAT789C 1 CAT789C/ 1 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 1 of 5 - Loading 67%	67%	101	108	318767	6408932	-3	X	X	X	X
8506	CAT789C 2 CAT789C/ 2 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 2 of 5 - Haul Segment 2 24%	24%	110	116	318553	6408805	2	X	X	X	X
8507	CAT789C 2 CAT789C/ 2 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 2 of 5 - Haul Segment 5 24%	24%	110	116	318809	6409090	23	X	X	X	X
8508	CAT789C 2 CAT789C/ 2 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 2 of 5 - Haul Segment 8 24%	24%	110	116	318672	6409123	46	X	X	X	X
8509	CAT789C 2 CAT789C/ 2 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 2 of 5 - Haul Segment 13 24%	24%	110	116	318560	6409298	57	X	X	X	X
8510	CAT789C 3 CAT789C/ 3 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 3 of 5 - Haul Segment 18 24%	24%	110	116	318520	6409438	80	X	X	X	X
8511	CAT789C 3 CAT789C/ 3 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 3 of 5 - Haul Segment 21 24%	24%	110	116	319126	6409975	90	X	X	X	X
8512	CAT789C 3 CAT789C/ 3 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 3 of 5 - Haul Segment 26 24%	24%	110	116	320024	6410648	100	X	X	X	X
8513	CAT789C 3 CAT789C/ 3 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 3 of 5 - Haul Segment 32 24%	24%	110	116	320529	6411210	113	X	X	X	X
8514	CAT789C 4 CAT789C/ 4 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 4 of 5 - Haul Segment 35 24%	24%	110	116	320236	6412327	120	X	X	X	X
8515	CAT789C 4 CAT789C/ 4 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 4 of 5 - Haul Segment 40 24%	24%	110	116	320027	6413215	127	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
8516	CAT789C 4 CAT789C/ 4 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 4 of 5 - Spot at Dump 5%	5%	103	109	320020	6413446	125	X	X	X	X
8517	CAT789C 4 CAT789C/ 4 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 4 of 5 - Dumping 3%	3%	102	107	320020	6413446	125	X	X	X	X
8518	CAT789C 4 CAT789C/ 4 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 4 of 5 - Haul Segment 38 (rev.) 28%	28%	114	119	320036	6413017	126	X	X	X	X
8519	CAT789C 4 CAT789C/ 4 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 4 of 5 - Haul Segment 33 (rev.) 28%	28%	114	119	320445	6411568	114	X	X	X	
8520	CAT789C 5 CAT789C/ 5 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 5 of 5 - Haul Segment 24 (rev.) 28%	28%	114	119	319761	6410588	95	X	X	X	X
8522	CAT789C 5 CAT789C/ 5 [PRJ] 2021_C_EX151_RL0_ROM	Coal Truck 5 of 5 - Haul Segment 9 (rev.) 28%	28%	114	119	318471	6409079	56	X	X	X	X

Table E.2 – Year 6

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
1063	GlendellROM FEL	Working on Raw Coal	100%	113	121	320082	6413265	130	X	X	X	X
1069	Dozer 03 Ancillary - Dozer Glendell ROM	Forward	75%	111	122	320043	6413379	127	X	X	X	X
1071	Drill 01 Reedrill SK50	Ancillary - Drilling	100%	114	119	318326	6410764	90	X	X	X	X
1072	Drill 02 Reedrill SK50	Ancillary - Drilling	100%	114	119	319064	6410704	31	X	X	X	X
1073	Drill 03 Reedrill SK50	Ancillary - Drilling	100%	114	119	319042	6410561	-31	X	X	X	X
1076	Service Truck 01 Ancillary	Service Truck	100%	112	112	318306	6410764	90	X	X	X	X
1077	Service Truck 02 Ancillary	Service Truck	100%	112	112	318965	6410372	-45	X	X	X	X
1078	Service Truck 03 Ancillary	Service Truck	100%	112	112	318466	6409616	-63	X	X	X	X
1079	Service Truck 04 Ancillary	Service Truck	100%	112	112	319044	6410704	32	X	X	X	X
1081	Water Truck 01 Ancillary	Road Maintenance - Water	100%	115	126	318296	6410764	90	X	X	X	X
1083	Water Truck 03 Ancillary	Road Maintenance - Water	100%	115	126	319483	6410392	102	X	X	X	X
1086	Grader 16M 01 Ancillary	Road Maintenance - Grading	100%	108	115	319537	6410264	113	X	X	X	X
1089	Grader 24M 01 Ancillary	Road Maintenance - Grading	100%	112	119	318406	6410869	92	X	X	X	X
1090	Grader 24M 02 Ancillary	Road Maintenance - Grading	100%	112	119	318080	6409842	3	X	X	X	X
1100	EX101 2026W_S31_B3-5RL-35_DRL-30	Excavator 996	100%	117	123	318774	6410311	-32	X	X	X	X
1101	D11 1 CAT D11 Dozer EX101 support	Dozer Forward	75%	111	122	318775	6410331	-32	X	X	X	X
1102	D11 1 CAT D11 Dozer EX101 support	Dozer Reverse	25%	116	120	318774	6410351	-31	X	X	X	X
1103	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 6 - Queue at Loader 38%	38%	99	106	318778	6410251	-33	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
1104	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 6 - Spot Time at loader 17%	17%	105	115	318777	6410273	-33	X	X	X	X
1105	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Loading 84%	84%	102	109	318775	6410291	-32	X	X	X	X
1106	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Haul Segment 1 24%	24%	110	119	318780	6410226	-34	X	X	X	X
1107	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Haul Segment 5 24%	24%	110	119	318595	6410113	-31	X	X	X	X
1108	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 7 24%	24%	110	119	318526	6410359	-26	X	X	X	X
1109	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 8 24%	24%	110	119	318252	6410288	-16	X	X	X	X
1110	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 9 24%	24%	110	119	318068	6410232	0	X	X	X	X
1111	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 10 24%	24%	110	119	318027	6409962	2	X	X	X	X
1112	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 10 24%	24%	110	119	318235	6409507	2	X	X	X	X
1113	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 11 24%	24%	110	119	318485	6409152	-2	X	X	X	X
1114	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 13 24%	24%	110	119	318459	6409215	-12	X	X	X	X
1115	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 16 24%	24%	110	119	318599	6409326	-28	X	X	X	X
1116	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Spot at Dump 12%	12%	104	114	318620	6409372	-27	X	X	X	X
1117	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Dumping 8%	8%	102	112	318620	6409374	-27	X	X	X	X
1118	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 15 (rev.) 25%	25%	108	118	318594	6409318	-28	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
1119	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 13 (rev.) 25%	25%	108	118	318494	6409217	-9	X	X	X	X
1120	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 10 (rev.) 25%	25%	108	118	318386	6409178	2	X	X	X	X
1121	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 10 (rev.) 25%	25%	108	118	318159	6409673	2	X	X	X	X
1122	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 10 (rev.) 25%	25%	108	118	317933	6410168	2	X	X	X	X
1123	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 8 (rev.) 25%	25%	108	118	318278	6410296	-19	X	X	X	X
1124	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 6 (rev.) 25%	25%	108	118	318616	6410308	-29	X	X	X	X
1125	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 6 - Haul Segment 2 (rev.) 25%	25%	108	118	318779	6410222	-35	X	X	X	X
1126	D11 1 CAT D11 Dozer EX101 support	Dozer Forward	75%	111	122	318629	6409392	-25	X	X	X	X
1127	D11 1 CAT D11 Dozer EX101 support	Dozer Reverse	25%	116	120	318614	6409391	-26	X	X	X	X
2100	EX102 2026W_S32_B6-7RL-15_DRL60	Excavator 996	100%	117	123	318115	6410134	-13	X	X	X	X
2101	D11 1 CAT D11 Dozer EX102 support	Dozer Forward	75%	111	122	318130	6410188	-11	X	X	X	X
2102	D11 1 CAT D11 Dozer EX102 support	Dozer Reverse	25%	116	120	318115	6410174	-12	X	X	X	X
2103	EH5000 1 EH5000/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 6 - Queue at Loader 21%	21%	96	103	318159	6410175	-12	X	X	X	X
2104	EH5000 1 EH5000/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 6 - Spot Time at loader 14%	14%	103	109	318144	6410164	-12	X	X	X	X
2105	EH5000 2 EH5000/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Loading 108%	108%	103	110	318130	6410148	-13	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
2106	EH5000 2 EH5000/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Haul Segment 1 25%	25%	109	119	318208	6410220	-14	X	X	X	X
2107	EH5000 2 EH5000/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Haul Segment 3 25%	25%	109	119	318130	6410252	-6	X	X	X	X
2108	EH5000 3 EH5000/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 5 25%	25%	109	119	317959	6410111	2	X	X	X	X
2109	EH5000 3 EH5000/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 5 25%	25%	109	119	318193	6409600	2	X	X	X	X
2110	EH5000 3 EH5000/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 5 25%	25%	109	119	318426	6409089	3	X	X	X	X
2111	EH5000 3 EH5000/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 8 25%	25%	109	119	318699	6409137	18	X	X	X	X
2112	EH5000 4 EH5000/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 10 25%	25%	109	119	318807	6409259	31	X	X	X	X
2113	EH5000 4 EH5000/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 12 25%	25%	109	119	318900	6409313	37	X	X	X	X
2114	EH5000 4 EH5000/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 12 25%	25%	109	119	318901	6409172	47	X	X	X	X
2115	EH5000 4 EH5000/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 13 25%	25%	109	119	318839	6409061	57	X	X	X	X
2116	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 15 25%	25%	105	112	318694	6408942	61	X	X	X	X
2117	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Spot at Dump 11%	11%	102	108	318618	6408917	61	X	X	X	X
2118	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Dumping 7%	7%	102	115	318618	6408919	61	X	X	X	X
2119	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 14 (rev.) 27%	27%	108	120	318727	6408955	61	X	X	X	X
2120	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 12 (rev.) 27%	27%	108	120	318900	6409341	34	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
2121	EH5000 6 EH5000/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 7 (rev.) 27%	27%	108	120	318615	6409099	12	X	X	X	X
2122	EH5000 6 EH5000/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 5 (rev.) 27%	27%	108	120	318266	6409439	2	X	X	X	X
2123	EH5000 6 EH5000/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 5 (rev.) 27%	27%	108	120	317980	6410065	2	X	X	X	X
2124	EH5000 7 EH5000/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 6 - Haul Segment 1 (rev.) 27%	27%	108	120	318229	6410240	-15	X	X	X	X
2125	D11 1 CAT D11 Dozer EX102 support	Dozer Forward	75%	111	122	318599	6408913	62	X	X	X	X
2126	D11 1 CAT D11 Dozer EX102 support	Dozer Reverse	25%	116	120	318580	6408907	62	X	X	X	X
5100	EX113 2026W_S34_B3-7RL90_DRL185	Excavator 996	100%	117	123	318545	6410834	90	X	X	X	X
5101	D11 1 CAT D11 Dozer EX113 support	Dozer Forward	75%	111	122	318545	6410893	90	X	X	X	X
5102	D11 1 CAT D11 Dozer EX113 support	Dozer Reverse	25%	116	120	318545	6410874	90	X	X	X	X
5103	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 7 - Queue at Loader 31%	31%	98	105	318546	6410893	90	X	X	X	X
5104	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 7 - Spot Time at loader 16%	16%	105	115	318545	6410871	90	X	X	X	X
5105	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 7 - Loading 81%	81%	102	109	318545	6410853	90	X	X	X	X
5106	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 7 - Haul Segment 1 25%	25%	110	119	318546	6410901	90	X	X	X	X
5107	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 7 - Haul Segment 2 25%	25%	110	119	318752	6411038	88	X	X	X	X
5108	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 7 - Haul Segment 3 25%	25%	110	119	319166	6411050	88	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
5109	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 7 - Haul Segment 4 25%	25%	110	119	319336	6410526	92	X	X	X	X
5110	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 7 - Haul Segment 6 25%	25%	110	119	319380	6410140	96	X	X	X	X
5111	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 7 - Haul Segment 9 25%	25%	110	119	319063	6409800	103	X	X	X	X
5112	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 7 - Haul Segment 13 25%	25%	110	119	319194	6409501	121	X	X	X	X
5113	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 7 - Haul Segment 14 25%	25%	110	119	319208	6409347	131	X	X	X	X
5114	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 7 - Haul Segment 14 25%	25%	110	119	319222	6409206	145	X	X	X	X
5115	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 7 - Haul Segment 17 25%	25%	110	119	319248	6409056	157	X	X	X	X
5116	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Haul Segment 19 25%	25%	110	119	319204	6408912	164	X	X	X	X
5117	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Haul Segment 19 25%	25%	110	119	319146	6408802	177	X	X	X	X
5118	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Haul Segment 20 25%	25%	110	119	319075	6408701	185	X	X	X	X
5119	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Spot at Dump 12%	12%	104	114	319022	6408665	185	X	X	X	X
5120	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Dumping 8%	8%	102	112	319022	6408663	185	X	X	X	X
5121	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Haul Segment 20 (rev.) 25%	25%	108	118	319090	6408712	185	X	X	X	X
5122	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 7 - Haul Segment 17 (rev.) 25%	25%	108	118	319246	6409028	157	X	X	X	X
5123	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 7 - Haul Segment 14 (rev.) 25%	25%	108	118	319203	6409395	127	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
5124	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 7 - Haul Segment 10 (rev.) 25%	25%	108	118	319065	6409732	106	X	X	X	X
5125	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 7 - Haul Segment 7 (rev.) 25%	25%	108	118	319320	6410065	97	X	X	X	X
5126	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 7 - Haul Segment 4 (rev.) 25%	25%	108	118	319356	6410494	95	X	X	X	X
5127	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 7 - Haul Segment 3 (rev.) 25%	25%	108	118	319191	6410967	88	X	X	X	X
5128	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 7 - Haul Segment 2 (rev.) 25%	25%	108	118	318812	6411061	88	X	X	X	X
5129	CAT793F (Std) 8 CAT793F (Std)/ 8 Haulage System-1	Waste in Coal Mine Truck 8 of 7 - Haul Segment 1 (rev.) 25%	25%	108	118	318546	6410905	90	X	X	X	X
5130	D11 1 CAT D11 Dozer EX113 support	Dozer Forward	75%	111	122	319005	6408651	185	X	X	X	X
5131	D11 1 CAT D11 Dozer EX113 support	Dozer Reverse	25%	116	120	318989	6408639	185	X	X	X	X
6500	EX134 2026C_S31_B3-5RL-45	Excavator 9400	100%	116	121	319086	6410387	-43	X	X	X	X
6501	D11 1 CAT D11 Dozer EX134 support	Dozer Forward	75%	111	122	319078	6410408	-43	X	X	X	X
6502	D11 1 CAT D11 Dozer EX134 support	Dozer Reverse	25%	116	120	319086	6410427	-43	X	X	X	X
6503	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 6 - Queue at Loader 3%	3%	88	95	319061	6410332	-44	X	X	X	X
6504	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 6 - Spot Time at loader 7%	7%	105	110	319069	6410352	-44	X	X	X	X
6505	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 6 - Loading 67%	67%	101	108	319078	6410368	-44	X	X	X	X
6506	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 6 - Haul Segment 2 23%	23%	110	115	318953	6410244	-40	X	X	X	X
6507	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 6 - Haul Segment 7 23%	23%	110	115	318646	6410389	-28	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
6508	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 6 - Haul Segment 9 23%	23%	110	115	318101	6410255	-2	X	X	X	X
6509	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 6 - Haul Segment 12 23%	23%	110	115	318221	6410363	18	X	X	X	X
6510	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 6 - Haul Segment 15 23%	23%	110	115	318564	6410567	34	X	X	X	X
6511	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 6 - Haul Segment 15 23%	23%	110	115	318230	6410458	62	X	X	X	X
6512	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 6 - Haul Segment 16 23%	23%	110	115	317908	6410440	86	X	X	X	X
6513	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 6 - Haul Segment 18 23%	23%	110	115	318617	6410992	92	X	X	X	X
6514	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 6 - Haul Segment 19 23%	23%	110	115	319299	6410624	88	X	X	X	X
6515	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 6 - Haul Segment 24 23%	23%	110	115	319966	6410647	102	X	X	X	X
6516	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 6 - Haul Segment 31 23%	23%	110	115	320528	6411236	115	X	X	X	X
6517	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 6 - Haul Segment 34 23%	23%	110	115	320245	6412294	121	X	X	X	X
6518	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 6 - Haul Segment 37 23%	23%	110	115	320042	6413136	130	X	X	X	X
6519	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 6 - Spot at Dump 5%	5%	103	109	320012	6413341	129	X	X	X	X
6520	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 6 - Dumping 3%	3%	102	107	320012	6413343	129	X	X	X	X
6521	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Haul Segment 36 (rev.) 24%	24%	113	119	320048	6412982	125	X	X	X	X
6522	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Haul Segment 33 (rev.) 24%	24%	113	119	320385	6411844	115	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
6523	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Haul Segment 27 (rev.) 24%	24%	113	119	320340	6410751	101	X	X	X	X
6524	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Haul Segment 20 (rev.) 24%	24%	113	119	319395	6410453	95	X	X	X	X
6525	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 6 - Haul Segment 18 (rev.) 24%	24%	113	119	318840	6411080	88	X	X	X	X
6526	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 6 - Haul Segment 16 (rev.) 24%	24%	113	119	317903	6410450	86	X	X	X	X
6527	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 6 - Haul Segment 13 (rev.) 24%	24%	113	119	318594	6410538	31	X	X	X	X
6528	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 6 - Haul Segment 9 (rev.) 24%	24%	113	119	318206	6410285	-12	X	X	X	X
6529	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 6 - Haul Segment 3 (rev.) 24%	24%	113	119	318851	6410233	-35	X	X	X	X
8500	EX151 2026C_S30_B6-7RL-75	Excavator 2500	100%	115	125	318389	6409987	-74	X	X	X	X
8501	D11 1 CAT D11 Dozer EX151 support	Dozer Forward	75%	111	122	318397	6410009	-70	X	X	X	X
8502	D11 1 CAT D11 Dozer EX151 support	Dozer Reverse	25%	116	120	318389	6410027	-70	X	X	X	X
8503	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 7 - Queue at Loader 4%	4%	88	96	318414	6409933	-75	X	X	X	X
8504	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 7 - Spot Time at loader 7%	7%	105	110	318406	6409953	-75	X	X	X	X
8505	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 7 - Loading 73%	73%	101	109	318397	6409969	-75	X	X	X	X
8506	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 7 - Haul Segment 2 25%	25%	110	116	318416	6409770	-87	X	X	X	X
8507	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 7 - Haul Segment 6 25%	25%	110	116	318387	6409625	-69	X	X	X	X
8508	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 7 - Haul Segment 10 25%	25%	110	116	318395	6409381	-46	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
8509	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 7 - Haul Segment 13 25%	25%	110	116	318526	6409299	-24	X	X	X	X
8510	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 7 - Haul Segment 15 25%	25%	110	116	318626	6409220	0	X	X	X	X
8511	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 7 - Haul Segment 20 25%	25%	110	116	318691	6409137	17	X	X	X	X
8512	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 7 - Haul Segment 23 25%	25%	110	116	318904	6409302	38	X	X	X	X
8513	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 7 - Haul Segment 25 25%	25%	110	116	318759	6408964	62	X	X	X	X
8514	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 7 - Haul Segment 28 25%	25%	110	116	318980	6409011	83	X	X	X	X
8515	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 7 - Haul Segment 30 25%	25%	110	116	319099	6409340	107	X	X	X	X
8516	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 7 - Haul Segment 35 25%	25%	110	116	319202	6409995	98	X	X	X	X
8517	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 7 - Haul Segment 40 25%	25%	110	116	320009	6410655	101	X	X	X	X
8518	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Haul Segment 46 25%	25%	110	116	320515	6411262	115	X	X	X	X
8519	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Haul Segment 48 25%	25%	110	116	320238	6412309	121	X	X	X	X
8520	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Haul Segment 52 25%	25%	110	116	320036	6413159	130	X	X	X	X
8521	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Spot at Dump 6%	6%	104	109	320017	6413366	129	X	X	X	X
8522	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Dumping 4%	4%	102	107	320017	6413364	129	X	X	X	X
8523	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Haul Segment 51 (rev.) 26%	26%	113	119	320037	6413001	125	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
8524	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 7 - Haul Segment 47 (rev.) 26%	26%	113	119	320386	6411873	115	X	X	X	X
8525	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 7 - Haul Segment 42 (rev.) 26%	26%	113	119	320375	6410770	106	X	X	X	X
8526	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 7 - Haul Segment 36 (rev.) 26%	26%	113	119	319450	6410174	98	X	X	X	X
8527	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 7 - Haul Segment 29 (rev.) 26%	26%	113	119	319099	6409266	105	X	X	X	X
8528	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 7 - Haul Segment 24 (rev.) 26%	26%	113	119	318850	6409068	56	X	X	X	X
8529	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 7 - Haul Segment 19 (rev.) 26%	26%	113	119	318536	6409084	6	X	X	X	X
8530	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 7 - Haul Segment 12 (rev.) 26%	26%	113	119	318593	6409378	-29	X	X	X	X
8531	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 7 - Haul Segment 3 (rev.) 26%	26%	113	119	318368	6409706	-88	X	X	X	X

Table E.3 – Year 13

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
1063	GlendellROM FEL	Working on Raw Coal	100%	113	121	320082	6413265	130	X	X	X	X
1067	Dozer 02 Ancillary - Dozer Prestrip	Forward	75%	111	122	317610	6412205	92	X	X	X	X
1068	Dozer 02 Ancillary - Dozer Prestrip	Reversing	25%	116	120	317630	6412225	91	X	X	X	
1069	Dozer 03 Ancillary - Dozer Glendell ROM	Forward	75%	111	122	320043	6413379	127	X	X	X	X
1070	Dozer 03 Ancillary - Dozer Glendell ROM	Reversing	25%	116	120	320063	6413399	126	X	X	X	
1071	Drill 01 Reedrill SK50	Ancillary - Drilling	100%	114	119	318304	6412399	97	X	X	X	X
1072	Drill 02 Reedrill SK50	Ancillary - Drilling	100%	114	119	318630	6412311	85	X	X	X	X
1073	Drill 03 Reedrill SK50	Ancillary - Drilling	100%	114	119	318345	6411849	-4	X	X	X	X
1074	Drill 04 Reedrill SK50	Ancillary - Drilling	100%	114	119	318520	6411668	-33	X	X	X	X
1075	Drill 05 Reedrill SK50	Ancillary - Drilling	100%	114	119	318069	6411512	-32	X	X	X	X
1076	Service Truck 01 Ancillary	Service Truck	100%	112	112	318407	6411414	-74	X	X	X	X
1077	Service Truck 02 Ancillary	Service Truck	100%	112	112	317887	6411516	-28	X	X	X	X
1078	Service Truck 03 Ancillary	Service Truck	100%	112	112	317913	6411681	-4	X	X	X	X
1079	Service Truck 04 Ancillary	Service Truck	100%	112	112	318160	6412422	97	X	X	X	X
1080	Service Truck 05 Ancillary	Service Truck	100%	112	112	318448	6412277	88	X	X	X	X
1081	Water Truck 01 Ancillary	Road Maintenance - Water	100%	115	126	318830	6413406	144	X	X	X	
1082	Water Truck 02 Ancillary	Road Maintenance - Water	100%	115	126	318732	6412345	84	X	X	X	X
1083	Water Truck 03 Ancillary	Road Maintenance - Water	100%	115	126	318112	6411772	-3	X	X	X	X
1084	Water Truck 04 Ancillary	Road Maintenance - Water	100%	115	126	318699	6411547	-87	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
1085	Water Truck 05 Ancillary	Road Maintenance - Water	100%	115	126	318516	6410848	3	X	X	X	X
1086	Water Truck 06 Ancillary	Road Maintenance - Water	100%	115	126	317789	6410937	91	X	X	X	
1087	Grader 16M 01 Ancillary	Road Maintenance - Grading	100%	108	115	318471	6411593	-34	X	X	X	X
1088	Grader 16M 02 Ancillary	Road Maintenance - Grading	100%	108	115	317492	6411838	75	X	X	X	X
1089	Grader 16M 03 Ancillary	Road Maintenance - Grading	100%	108	115	318968	6410990	-27	X	X	X	X
1090	Grader 24M 01 Ancillary	Road Maintenance - Grading	100%	112	119	318415	6412913	123	X	X	X	X
1091	Grader 24M 02 Ancillary	Road Maintenance - Grading	100%	112	119	317766	6410906	91	X	X	X	X
1092	Grader 24M 03 Ancillary	Road Maintenance - Grading	100%	112	119	317793	6411663	0	X	X	X	X
1100	EX101 2033_EX101_RL-60_DRL0	Excavator 996	100%	117	123	317838	6411303	-58	X	X	X	X
1101	D11 1 CAT D11 Dozer EX101 support	Dozer Forward	75%	111	122	317852	6411357	-56	X	X	X	X
1102	D11 1 CAT D11 Dozer EX101 support	Dozer Reverse	25%	116	120	317838	6411343	-56	X	X	X	X
1103	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 6 - Queue at Loader 38%	38%	99	106	317881	6411346	-57	X	X	X	X
1104	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 6 - Spot Time at loader 17%	17%	105	115	317867	6411331	-58	X	X	X	X
1105	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Loading 84%	84%	102	109	317852	6411317	-58	X	X	X	X
1106	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Haul Segment 2 26%	26%	110	119	317878	6411334	-58	X	X	X	X
1107	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Haul Segment 3 26%	26%	110	119	318078	6411429	-49	X	X	X	X
1108	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 3 26%	26%	110	119	318248	6411498	-34	X	X	X	X
1109	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 4 26%	26%	110	119	318224	6411669	-27	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
1110	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 5 26%	26%	110	119	318664	6411853	-30	X	X	X	X
1111	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 7 26%	26%	110	119	318880	6411545	-32	X	X	X	X
1112	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 10 26%	26%	110	119	319004	6411004	-28	X	X	X	X
1113	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 11 26%	26%	110	119	318858	6410868	-11	X	X	X	X
1114	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 11 26%	26%	110	119	318750	6410813	0	X	X	X	X
1115	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 14 26%	26%	110	119	318529	6410860	2	X	X	X	X
1116	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Spot at Dump 12%	12%	104	114	318458	6410879	2	X	X	X	X
1117	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Dumping 8%	8%	102	112	318458	6410879	2	X	X	X	X
1118	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 14 (rev.) 26%	26%	108	118	318539	6410857	2	X	X	X	X
1119	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 11 (rev.) 26%	26%	108	118	318890	6410884	-13	X	X	X	X
1120	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 8 (rev.) 26%	26%	108	118	318944	6411278	-32	X	X	X	X
1121	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 7 (rev.) 26%	26%	108	118	318856	6411837	-30	X	X	X	X
1122	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 5 (rev.) 26%	26%	108	118	318368	6411740	-27	X	X	X	X
1123	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 3 (rev.) 26%	26%	108	118	318209	6411482	-38	X	X	X	X
1124	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 6 - Haul Segment 2 (rev.) 26%	26%	108	118	317883	6411337	-58	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
1125	D11 1 CAT D11 Dozer EX101 support	Dozer Forward	75%	111	122	318438	6410884	0	X	X	X	X
1126	D11 1 CAT D11 Dozer EX101 support	Dozer Reverse	25%	116	120	318419	6410889	-3	X	X	X	
1127	D11 2 CAT D11 Dozer EX101 support	Dozer Reverse 1st gear option	25%	113	117	318458	6410879	2				X
2100	EX102 2033_EX102_RL10_DRL90	Excavator 996	100%	117	123	317460	6411654	11	X	X	X	X
2101	D11 1 CAT D11 Dozer EX102 support	Dozer Forward	75%	111	122	317457	6411671	12	X	X	X	X
2102	D11 1 CAT D11 Dozer EX102 support	Dozer Reverse	25%	116	120	317440	6411667	13	X	X	X	X
2103	EH5000 1 EH5000/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 6 - Queue at Loader 18%	18%	95	102	317503	6411697	14	X	X	X	X
2104	EH5000 1 EH5000/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 6 - Spot Time at loader 12%	12%	102	108	317488	6411683	13	X	X	X	X
2105	EH5000 2 EH5000/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Loading 90%	90%	102	110	317474	6411669	12	X	X	X	X
2106	EH5000 2 EH5000/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Haul Segment 2 24%	24%	109	119	317545	6411703	13	X	X	X	X
2107	EH5000 2 EH5000/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Haul Segment 4 24%	24%	109	119	317859	6411835	19	X	X	X	X
2108	EH5000 2 EH5000/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Haul Segment 5 24%	24%	109	119	318131	6411943	31	X	X	X	X
2109	EH5000 3 EH5000/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 5 24%	24%	109	119	318636	6412137	32	X	X	X	X
2110	EH5000 3 EH5000/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 7 24%	24%	109	119	318926	6411841	28	X	X	X	X
2111	EH5000 3 EH5000/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 8 24%	24%	109	119	319065	6411131	28	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
2112	EH5000 3 EH5000/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 10 24%	24%	109	119	319019	6410711	47	X	X	X	X
2113	EH5000 4 EH5000/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 12 24%	24%	109	119	318888	6410619	60	X	X	X	X
2114	EH5000 4 EH5000/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 13 24%	24%	109	119	319038	6410594	72	X	X	X	X
2115	EH5000 4 EH5000/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 14 24%	24%	109	119	319170	6410675	87	X	X	X	X
2116	EH5000 4 EH5000/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 16 24%	24%	105	111	319108	6410531	92	X	X	X	X
2117	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 18 24%	24%	105	111	318770	6410502	92	X	X	X	X
2118	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Spot at Dump 9%	9%	103	116	318657	6410547	91	X	X	X	X
2119	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Dumping 6%	6%	101	114	318657	6410547	91	X	X	X	X
2120	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 18 (rev.) 26%	26%	108	120	318822	6410481	91	X	X	X	X
2121	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 14 (rev.) 26%	26%	108	120	319116	6410632	80	X	X	X	X
2122	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 10 (rev.) 26%	26%	108	120	319063	6410763	39	X	X	X	X
2123	EH5000 6 EH5000/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 8 (rev.) 26%	26%	108	120	318974	6411434	28	X	X	X	X
2124	EH5000 6 EH5000/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 6 (rev.) 26%	26%	108	120	318861	6412224	33	X	X	X	X
2125	EH5000 6 EH5000/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 5 (rev.) 26%	26%	108	120	318134	6411944	31	X	X	X	X
2126	EH5000 7 EH5000/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 6 - Haul Segment 2 (rev.) 26%	26%	108	120	317575	6411716	13	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
2127	D11 1 CAT D11 Dozer EX102 support	Dozer Forward	75%	111	122	318638	6410555	91	X	X	X	
2128	D11 1 CAT D11 Dozer EX102 support	Dozer Reverse	25%	116	120	318620	6410562	91	X	X	X	
3100	EX103 2033_EX103_RL-30_DRL30	Excavator 996	100%	117	123	317825	6411462	-29	X	X	X	X
3101	D11 1 CAT D11 Dozer EX103 support	Dozer Forward	75%	111	122	317839	6411516	-27	X	X	X	X
3102	D11 1 CAT D11 Dozer EX103 support	Dozer Reverse	25%	116	120	317825	6411502	-27	X	X	X	X
3103	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 6 - Queue at Loader 44%	44%	99	106	317868	6411505	-27	X	X	X	X
3104	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 6 - Spot Time at loader 17%	17%	106	115	317853	6411491	-28	X	X	X	X
3105	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Loading 86%	86%	102	109	317839	6411476	-28	X	X	X	X
3106	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Haul Segment 2 25%	25%	110	119	317864	6411490	-28	X	X	X	X
3107	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 6 - Haul Segment 3 25%	25%	110	119	318136	6411637	-27	X	X	X	X
3108	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 4 25%	25%	110	119	317947	6411628	-17	X	X	X	X
3109	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 4 25%	25%	110	119	317766	6411573	-2	X	X	X	X
3110	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 6 25%	25%	110	119	317480	6411461	1	X	X	X	X
3111	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 6 - Haul Segment 7 25%	25%	110	119	317824	6411098	3	X	X	X	X
3112	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 8 25%	25%	110	119	317965	6410647	3	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
3113	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 11 25%	25%	110	119	318168	6410603	16	X	X	X	X
3114	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 11 25%	25%	110	119	318275	6410653	27	X	X	X	X
3115	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 6 - Haul Segment 12 25%	25%	110	119	318390	6410724	32	X	X	X	X
3116	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Spot at Dump 13%	13%	104	114	318446	6410765	32	X	X	X	X
3117	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Dumping 9%	9%	103	112	318446	6410765	32	X	X	X	X
3118	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 12 (rev.) 26%	26%	108	118	318358	6410702	32	X	X	X	X
3119	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 10 (rev.) 26%	26%	108	118	318076	6410581	7	X	X	X	X
3120	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 6 - Haul Segment 7 (rev.) 26%	26%	108	118	317994	6410953	2	X	X	X	X
3121	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 7 (rev.) 26%	26%	108	118	317576	6411311	3	X	X	X	X
3122	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 4 (rev.) 26%	26%	108	118	317767	6411573	-2	X	X	X	X
3123	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 6 - Haul Segment 4 (rev.) 26%	26%	108	118	318101	6411674	-26	X	X	X	X
3124	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 6 - Haul Segment 2 (rev.) 26%	26%	108	118	317854	6411486	-28	X	X	X	X
3125	D11 1 CAT D11 Dozer EX103 support	Dozer Forward	75%	111	122	318462	6410777	31	X	X	X	X
3126	D11 1 CAT D11 Dozer EX103 support	Dozer Reverse	25%	116	120	318460	6410749	33	X	X	X	
3127	D11 2 CAT D11 Dozer EX103 support	Dozer Reverse 1st gear option	25%	113	117	318446	6410765	32				X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
4100	EX104 2033_EX104_RL105_DRL185	Excavator 996	100%	117	123	318734	6412633	105	X	X	X	X
4101	D11 1 CAT D11 Dozer EX104 support	Dozer Forward	75%	111	122	318748	6412687	107	X	X	X	X
4102	D11 1 CAT D11 Dozer EX104 support	Dozer Reverse	25%	116	120	318734	6412673	107	X	X	X	X
4103	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 7 - Queue at Loader 27%	27%	97	104	318776	6412676	105	X	X	X	X
4104	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 7 - Spot Time at loader 15%	15%	105	115	318762	6412661	105	X	X	X	X
4105	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 7 - Loading 76%	76%	102	109	318748	6412647	105	X	X	X	X
4106	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 7 - Haul Segment 2 24%	24%	110	119	318731	6412637	105	X	X	X	X
4107	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 7 - Haul Segment 4 24%	24%	110	119	318776	6412540	93	X	X	X	X
4108	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 7 - Haul Segment 8 24%	24%	110	119	318956	6412187	88	X	X	X	X
4109	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 7 - Haul Segment 9 24%	24%	110	119	319019	6411623	88	X	X	X	X
4110	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 7 - Haul Segment 10 24%	24%	110	119	319165	6411063	88	X	X	X	X
4111	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 7 - Haul Segment 13 24%	24%	110	119	319234	6410562	95	X	X	X	X
4112	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 7 - Haul Segment 15 24%	24%	110	119	319083	6410395	111	X	X	X	X
4113	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 7 - Haul Segment 17 24%	24%	110	119	318901	6410343	123	X	X	X	X
4114	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 7 - Haul Segment 18 24%	24%	110	119	318738	6410345	139	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
4115	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 7 - Haul Segment 19 24%	24%	110	119	318608	6410339	151	X	X	X	X
4116	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 7 - Haul Segment 20 24%	24%	110	119	318708	6410253	162	X	X	X	X
4117	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Haul Segment 21 24%	24%	110	119	318836	6410208	175	X	X	X	X
4118	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Haul Segment 22 24%	24%	110	119	318949	6410157	184	X	X	X	X
4119	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Haul Segment 24 24%	24%	110	119	318717	6410138	186	X	X	X	X
4120	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Spot at Dump 11%	11%	104	114	318653	6410174	185	X	X	X	X
4121	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Dumping 8%	8%	102	112	318653	6410174	185	X	X	X	X
4122	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 7 - Haul Segment 24 (rev.) 25%	25%	108	118	318738	6410126	186	X	X	X	X
4123	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 7 - Haul Segment 21 (rev.) 25%	25%	108	118	318815	6410210	172	X	X	X	X
4124	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 7 - Haul Segment 18 (rev.) 25%	25%	108	118	318692	6410356	143	X	X	X	X
4125	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 7 - Haul Segment 15 (rev.) 25%	25%	108	118	319067	6410391	112	X	X	X	X
4126	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 7 - Haul Segment 11 (rev.) 25%	25%	108	118	319271	6410699	93	X	X	X	X
4127	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 7 - Haul Segment 10 (rev.) 25%	25%	108	118	319105	6411263	88	X	X	X	X
4128	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 7 - Haul Segment 9 (rev.) 25%	25%	108	118	319003	6411850	88	X	X	X	X
4129	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 7 - Haul Segment 7 (rev.) 25%	25%	108	118	318881	6412433	87	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
4130	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 7 - Haul Segment 2 (rev.) 25%	25%	108	118	318721	6412630	105	X	X	X	X
4131	D11 1 CAT D11 Dozer EX104 support	Dozer Forward	75%	111	122	318636	6410184	185	X	X	X	X
4132	D11 1 CAT D11 Dozer EX104 support	Dozer Reverse	25%	116	120	318618	6410194	185	X	X	X	
4133	D11 2 CAT D11 Dozer EX104 support	Dozer Reverse 1st gear option	25%	113	117	318653	6410174	185				X
5200	EX113_Option2 2033_EX113_RL75_DRL195	Excavator 996	100%	117	123	317433	6411819	76	X	X	X	X
5201	D11 1 CAT D11 Dozer EX113 support	Dozer Forward	75%	111	122	317447	6411873	78	X	X	X	X
5202	D11 1 CAT D11 Dozer EX113 support	Dozer Reverse	25%	116	120	317433	6411859	78	X	X	X	
5203	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 7 - Queue at Loader 14%	14%	94	102	317476	6411862	77	X	X	X	X
5204	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 7 - Spot Time at loader 10%	10%	103	113	317462	6411847	76	X	X	X	X
5205	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 7 - Loading 51%	51%	100	107	317447	6411833	76	X	X	X	X
5206	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 7 - Haul Segment 2 24%	24%	110	119	317528	6411902	78	X	X	X	X
5207	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 7 - Haul Segment 6 24%	24%	110	119	317423	6411977	90	X	X	X	X
5208	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 7 - Haul Segment 10 24%	24%	110	119	317351	6412038	106	X	X	X	
5209	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 7 - Haul Segment 12 24%	24%	110	119	317079	6412048	101	X	X	X	X
5210	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 7 - Haul Segment 16 24%	24%	110	119	316979	6411781	85	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
5211	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 7 - Haul Segment 19 24%	24%	110	119	317553	6411127	81	X	X	X	X
5212	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 7 - Haul Segment 27 24%	24%	110	119	317828	6410403	89	X	X	X	
5213	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 7 - Haul Segment 30 24%	24%	110	119	318622	6410536	93	X	X	X	X
5214	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 7 - Haul Segment 36 24%	24%	110	119	319243	6410573	95	X	X	X	X
5215	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 7 - Haul Segment 38 24%	24%	110	119	319005	6410375	117	X	X	X	
5216	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 7 - Haul Segment 41 24%	24%	110	119	318745	6410343	138	X	X	X	X
5217	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 7 - Haul Segment 43 24%	24%	110	119	318648	6410287	156	X	X	X	X
5218	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 7 - Haul Segment 44 24%	24%	110	119	318858	6410206	177	X	X	X	
5219	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Haul Segment 47 24%	24%	110	119	318721	6410049	188	X	X	X	X
5220	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Haul Segment 51 24%	24%	110	119	318612	6409816	190	X	X	X	X
5221	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Spot at Dump 8%	8%	102	112	318728	6409878	190	X	X	X	X
5222	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Dumping 5%	5%	100	110	318728	6409878	190	X	X	X	
5223	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Haul Segment 51 (rev.) 25%	25%	108	118	318550	6409782	190	X	X	X	X
5224	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 7 - Haul Segment 44 (rev.) 25%	25%	108	118	318950	6410196	182	X	X	X	X
5225	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 7 - Haul Segment 41 (rev.) 25%	25%	108	118	318754	6410341	137	X	X	X	

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
5226	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 7 - Haul Segment 36 (rev.) 25%	25%	108	118	319242	6410573	95	X	X	X	X
5227	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 7 - Haul Segment 30 (rev.) 25%	25%	108	118	318605	6410538	93	X	X	X	X
5228	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 7 - Haul Segment 26 (rev.) 25%	25%	108	118	317795	6410469	85	X	X	X	X
5229	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 7 - Haul Segment 19 (rev.) 25%	25%	108	118	317451	6411215	82	X	X	X	X
5230	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 7 - Haul Segment 15 (rev.) 25%	25%	108	118	316859	6411927	87	X	X	X	X
5231	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 7 - Haul Segment 9 (rev.) 25%	25%	108	118	317480	6412070	97	X	X	X	X
5232	CAT793F (Std) 8 CAT793F (Std)/ 8 Haulage System-1	Waste in Coal Mine Truck 8 of 7 - Haul Segment 3 (rev.) 25%	25%	108	118	317529	6411918	78	X	X	X	X
5233	D11 1 CAT D11 Dozer EX113 support	Dozer Forward	75%	111	122	318745	6409888	190	X	X	X	X
5234	D11 1 CAT D11 Dozer EX113 support	Dozer Reverse	25%	116	120	318763	6409897	190	X	X	X	
5235	D11 2 CAT D11 Dozer EX113 support	Dozer Reverse 1st gear option	25%	113	117	318728	6409878	190				X
6500	EX134 2033_EX134_RL-35	Excavator 9400	100%	116	121	318709	6411727	-34	X	X	X	X
6501	D11 1 CAT D11 Dozer EX134 support	Dozer Forward	75%	111	122	318724	6411781	-32	X	X	X	X
6502	D11 1 CAT D11 Dozer EX134 support	Dozer Reverse	25%	116	120	318709	6411767	-33	X	X	X	X
6503	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 7 - Queue at Loader 4%	4%	89	96	318752	6411770	-33	X	X	X	X
6504	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 7 - Spot Time at loader 9%	9%	102	112	318738	6411756	-33	X	X	X	X
6505	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 7 - Loading 85%	85%	102	109	318724	6411741	-34	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
6506	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 7 - Haul Segment 2 23%	23%	110	115	318605	6411728	-33	X	X	X	X
6507	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 7 - Haul Segment 7 23%	23%	110	115	318079	6411666	-26	X	X	X	X
6508	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 7 - Haul Segment 7 23%	23%	110	115	317782	6411568	-3	X	X	X	X
6509	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 7 - Haul Segment 12 23%	23%	110	115	317739	6411709	5	X	X	X	X
6510	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 7 - Haul Segment 14 23%	23%	110	115	317934	6411866	27	X	X	X	X
6511	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 7 - Haul Segment 17 23%	23%	110	115	318320	6412083	38	X	X	X	X
6512	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 7 - Haul Segment 17 23%	23%	110	115	318542	6412181	59	X	X	X	X
6513	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 7 - Haul Segment 17 23%	23%	110	115	318764	6412279	80	X	X	X	X
6514	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 7 - Haul Segment 22 23%	23%	110	115	318800	6412557	94	X	X	X	X
6515	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 7 - Haul Segment 25 23%	23%	110	115	318483	6412649	108	X	X	X	X
6516	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 7 - Haul Segment 27 23%	23%	110	115	318347	6413073	121	X	X	X	X
6517	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 7 - Haul Segment 29 23%	23%	110	115	318593	6413253	139	X	X	X	X
6518	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 7 - Haul Segment 32 23%	23%	110	115	318980	6413224	160	X	X	X	X
6519	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Haul Segment 34 23%	23%	110	115	319419	6413179	144	X	X	X	X
6520	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Haul Segment 35 23%	23%	110	115	319658	6413100	125	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
6521	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Haul Segment 39 23%	23%	110	115	320044	6413151	130	X	X	X	X
6522	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Spot at Dump 6%	6%	104	110	320020	6413330	129	X	X	X	X
6523	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Dumping 4%	4%	103	108	320020	6413330	129	X	X	X	X
6524	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 7 - Haul Segment 38 (rev.) 25%	25%	113	119	320045	6413088	129	X	X	X	X
6525	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 7 - Haul Segment 33 (rev.) 25%	25%	113	119	319385	6413182	149	X	X	X	X
6526	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 7 - Haul Segment 29 (rev.) 25%	25%	113	119	318561	6413241	136	X	X	X	X
6527	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 7 - Haul Segment 25 (rev.) 25%	25%	113	119	318463	6412714	113	X	X	X	X
6528	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 7 - Haul Segment 19 (rev.) 25%	25%	113	119	318746	6412430	83	X	X	X	X
6529	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 7 - Haul Segment 17 (rev.) 25%	25%	113	119	318325	6412085	38	X	X	X	X
6530	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 7 - Haul Segment 13 (rev.) 25%	25%	113	119	317680	6411743	9	X	X	X	X
6531	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 7 - Haul Segment 7 (rev.) 25%	25%	113	119	317796	6411573	-3	X	X	X	X
6532	CAT789C 8 CAT789C/ 8 Haulage System-1	Coal Truck 8 of 7 - Haul Segment 3 (rev.) 25%	25%	113	119	318520	6411717	-32	X	X	X	X
7500	EX135 2033_EX135_RL-75	Excavator 9400	100%	116	121	317957	6411227	-72	X	X	X	X
7501	D11 1 CAT D11 Dozer EX135 support	Dozer Forward	75%	111	122	317971	6411281	-70	X	X	X	X
7502	D11 1 CAT D11 Dozer EX135 support	Dozer Reverse	25%	116	120	317957	6411267	-71	X	X	X	X
7503	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 8 - Queue at Loader 4%	4%	89	97	318000	6411270	-72	X	X	X	X

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									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
7504	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 8 - Spot Time at loader 9%	9%	106	111	317985	6411255	-72	X	X	X	X
7505	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 8 - Loading 88%	88%	102	109	317971	6411241	-72	X	X	X	X
7506	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 8 - Haul Segment 2 24%	24%	110	116	318086	6411291	-72	X	X	X	X
7507	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 8 - Haul Segment 5 24%	24%	110	116	318043	6411347	-66	X	X	X	X
7508	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 8 - Haul Segment 7 24%	24%	110	116	318142	6411458	-43	X	X	X	X
7509	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 8 - Haul Segment 9 24%	24%	110	116	318145	6411644	-27	X	X	X	X
7510	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 8 - Haul Segment 10 24%	24%	110	116	317844	6411589	-8	X	X	X	X
7511	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 8 - Haul Segment 15 24%	24%	110	116	317826	6411735	0	X	X	X	X
7512	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 8 - Haul Segment 17 24%	24%	110	116	317866	6411839	21	X	X	X	X
7513	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 8 - Haul Segment 20 24%	24%	110	116	318280	6412065	34	X	X	X	X
7514	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 8 - Haul Segment 20 24%	24%	110	116	318506	6412165	56	X	X	X	X
7515	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 8 - Haul Segment 20 24%	24%	110	116	318733	6412265	77	X	X	X	X
7516	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 8 - Haul Segment 24 24%	24%	110	116	318839	6412534	92	X	X	X	X
7517	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 8 - Haul Segment 27 24%	24%	110	116	318499	6412604	105	X	X	X	X
7518	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 8 - Haul Segment 30 24%	24%	110	116	318372	6413019	121	X	X	X	X

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									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
7519	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 8 - Haul Segment 32 24%	24%	110	116	318576	6413247	137	X	X	X	X
7520	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 8 - Haul Segment 34 24%	24%	110	116	318964	6413236	160	X	X	X	X
7521	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 8 - Haul Segment 37 24%	24%	110	116	319415	6413181	145	X	X	X	X
7522	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 8 - Haul Segment 38 24%	24%	110	116	319655	6413101	126	X	X	X	X
7523	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 8 - Haul Segment 42 24%	24%	110	116	320043	6413155	130	X	X	X	X
7524	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 8 - Spot at Dump 7%	7%	105	110	320020	6413330	129	X	X	X	X
7525	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 8 - Dumping 4%	4%	103	108	320020	6413330	129	X	X	X	X
7526	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 8 - Haul Segment 41 (rev.) 25%	25%	113	119	320040	6413079	129	X	X	X	X
7527	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 8 - Haul Segment 36 (rev.) 25%	25%	113	119	319393	6413184	148	X	X	X	X
7528	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 8 - Haul Segment 32 (rev.) 25%	25%	113	119	318577	6413247	138	X	X	X	X
7529	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 8 - Haul Segment 28 (rev.) 25%	25%	113	119	318455	6412742	114	X	X	X	X
7530	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 8 - Haul Segment 22 (rev.) 25%	25%	113	119	318784	6412445	87	X	X	X	X
7531	CAT789C 8 CAT789C/ 8 Haulage System-1	Coal Truck 8 of 8 - Haul Segment 20 (rev.) 25%	25%	113	119	318374	6412107	43	X	X	X	X
7532	CAT789C 8 CAT789C/ 8 Haulage System-1	Coal Truck 8 of 8 - Haul Segment 17 (rev.) 25%	25%	113	119	317725	6411781	9	X	X	X	X
7533	CAT789C 8 CAT789C/ 8 Haulage System-1	Coal Truck 8 of 8 - Haul Segment 11 (rev.) 25%	25%	113	119	317740	6411584	0	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
7534	CAT789C 8 CAT789C/ 8 Haulage System-1	Coal Truck 8 of 8 - Haul Segment 7 (rev.) 25%	25%	113	119	318242	6411501	-35	X	X	X	X
7535	CAT789C 8 CAT789C/ 8 Haulage System-1	Coal Truck 8 of 8 - Haul Segment 2 (rev.) 25%	25%	113	119	318146	6411316	-70	X	X	X	X
8500	EX151 2033_EX151_RL0 EX151 2033_EX151_RL0	Excavator 2500	100%	115	125	318611	6411965	-3	X	X	X	X
8501	D11 1 CAT D11 Dozer EX151 support	Dozer Forward	75%	111	122	318625	6412020	-1	X	X	X	X
8502	D11 1 CAT D11 Dozer EX151 support	Dozer Reverse	25%	116	120	318611	6412005	-2	X	X	X	X
8503	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 5 - Queue at Loader 3%	3%	88	95	318654	6412008	-2	X	X	X	X
8504	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 5 - Spot Time at loader 7%	7%	105	110	318639	6411994	-3	X	X	X	X
8505	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 5 - Loading 68%	68%	101	108	318625	6411980	-3	X	X	X	X
8506	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 5 - Haul Segment 2 23%	23%	110	115	318350	6411890	-2	X	X	X	X
8507	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 5 - Haul Segment 6 23%	23%	110	115	317751	6411792	11	X	X	X	X
8508	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 5 - Haul Segment 8 23%	23%	110	115	318245	6412050	33	X	X	X	X
8509	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 5 - Haul Segment 9 23%	23%	110	115	318529	6412175	58	X	X	X	X
8510	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 5 - Haul Segment 10 23%	23%	110	115	318797	6412311	82	X	X	X	X
8511	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 5 - Haul Segment 14 23%	23%	110	115	318648	6412504	102	X	X	X	X
8512	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 5 - Haul Segment 19 23%	23%	110	115	318416	6412923	123	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
8513	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 5 - Haul Segment 21 23%	23%	110	115	318603	6413257	140	X	X	X	X
8514	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 5 - Haul Segment 24 23%	23%	110	115	319035	6413163	160	X	X	X	X
8515	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 5 - Haul Segment 26 23%	23%	110	115	319499	6413143	137	X	X	X	X
8516	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 5 - Haul Segment 31 23%	23%	110	115	320050	6413102	129	X	X	X	X
8517	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 5 - Spot at Dump 5%	5%	103	109	320020	6413330	129	X	X	X	X
8518	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 5 - Dumping 3%	3%	102	107	320020	6413330	129	X	X	X	X
8519	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 5 - Haul Segment 29 (rev.) 26%	26%	113	119	319905	6413043	120	X	X	X	X
8520	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 5 - Haul Segment 24 (rev.) 26%	26%	113	119	318992	6413211	160	X	X	X	X
8521	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 5 - Haul Segment 18 (rev.) 26%	26%	113	119	318434	6412845	119	X	X	X	X
8522	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 5 - Haul Segment 10 (rev.) 26%	26%	113	119	318783	6412333	82	X	X	X	X
8523	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 5 - Haul Segment 6 (rev.) 26%	26%	113	119	317975	6411883	28	X	X	X	X
8524	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 5 - Haul Segment 2 (rev.) 26%	26%	113	119	318273	6411864	-2	X	X	X	X
9500	EX152 2033_EX152_RL-75	Excavator 2500	100%	115	125	318522	6411487	-73	X	X	X	X
9501	D11 1 CAT D11 Dozer EX152 support	Dozer Forward	75%	111	122	318537	6411541	-71	X	X	X	X
9502	D11 1 CAT D11 Dozer EX152 support	Dozer Reverse	25%	116	120	318522	6411527	-72	X	X	X	X
9503	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 6 - Queue at Loader 3%	3%	88	95	318565	6411530	-73	X	X	X	X

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									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
9504	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 6 - Spot Time at loader 7%	7%	105	110	318551	6411515	-73	X	X	X	X
9505	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 6 - Loading 67%	67%	101	108	318537	6411501	-74	X	X	X	X
9506	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 6 - Haul Segment 2 23%	23%	110	115	318317	6411439	-71	X	X	X	X
9507	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 6 - Haul Segment 5 23%	23%	110	115	318080	6411432	-48	X	X	X	X
9508	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 6 - Haul Segment 7 23%	23%	110	115	318131	6411653	-27	X	X	X	X
9509	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 6 - Haul Segment 8 23%	23%	110	115	317764	6411563	-3	X	X	X	X
9510	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 6 - Haul Segment 15 23%	23%	110	115	317710	6411775	8	X	X	X	X
9511	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 6 - Haul Segment 17 23%	23%	110	115	318216	6412032	33	X	X	X	X
9512	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 6 - Haul Segment 18 23%	23%	110	115	318521	6412171	58	X	X	X	X
9513	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 6 - Haul Segment 19 23%	23%	110	115	318804	6412298	81	X	X	X	X
9514	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 6 - Haul Segment 23 23%	23%	110	115	318655	6412506	102	X	X	X	X
9515	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 6 - Haul Segment 28 23%	23%	110	115	318419	6412916	123	X	X	X	X
9516	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 6 - Haul Segment 30 23%	23%	110	115	318602	6413257	139	X	X	X	X
9517	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 6 - Haul Segment 33 23%	23%	110	115	319036	6413161	160	X	X	X	X
9518	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 6 - Haul Segment 35 23%	23%	110	115	319502	6413142	137	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
9519	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Haul Segment 40 23%	23%	110	115	320049	6413111	129	X	X	X	X
9520	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Spot at Dump 5%	5%	103	109	320020	6413330	129	X	X	X	X
9521	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Dumping 3%	3%	102	107	320020	6413330	129	X	X	X	X
9522	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Haul Segment 38 (rev.) 24%	24%	113	118	319930	6413046	122	X	X	X	X
9523	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Haul Segment 33 (rev.) 24%	24%	113	118	319033	6413164	160	X	X	X	X
9524	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Haul Segment 28 (rev.) 24%	24%	113	118	318361	6413043	121	X	X	X	X
9525	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 6 - Haul Segment 21 (rev.) 24%	24%	113	118	318862	6412490	92	X	X	X	X
9526	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 6 - Haul Segment 18 (rev.) 24%	24%	113	118	318297	6412073	36	X	X	X	X
9527	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 6 - Haul Segment 13 (rev.) 24%	24%	113	118	317791	6411725	0	X	X	X	X
9528	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 6 - Haul Segment 7 (rev.) 24%	24%	113	118	318115	6411663	-26	X	X	X	X

Table E.4 – Year 18

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
1063	GlendellROM FEL	Working on Raw Coal	100%	113	121	320082	6413265	130	X	X	X	X
1065	Dozer 01 Ancillary - Dozer Rehab	Forward	75%	111	122	317878	6410843	117	X	X	X	X
1066	Dozer 01 Ancillary - Dozer Rehab	Reversing	25%	116	120	317873	6410838	116	X	X	X	X
1067	Dozer 02 Ancillary - Dozer Prestrip	Forward	75%	111	122	317949	6412928	102	X	X	X	X
1068	Dozer 02 Ancillary - Dozer Prestrip	Reversing	25%	116	120	317944	6412923	101	X	X	X	X
1069	Dozer 03 Ancillary - Dozer Glendell ROM	Forward	75%	111	122	320043	6413379	127	X	X	X	X
1070	Dozer 03 Ancillary - Dozer Glendell ROM	Reversing	25%	116	120	320038	6413374	128	X	X	X	X
1071	Drill 01 Reedrill SK50	Ancillary - Drilling	100%	114	119	317790	6412797	91	X	X	X	X
1072	Drill 02 Reedrill SK50	Ancillary - Drilling	100%	114	119	318566	6412816	32	X	X	X	X
1073	Drill 03 Reedrill SK50	Ancillary - Drilling	100%	114	119	318144	6412257	-76	X	X	X	X
1076	Service Truck 01 Ancillary	Service Truck	100%	112	112	317604	6412521	46	X	X	X	X
1077	Service Truck 02 Ancillary	Service Truck	100%	112	112	317620	6412003	-73	X	X	X	X
1078	Service Truck 03 Ancillary	Service Truck	100%	112	112	318017	6411239	152	X	X	X	X
1079	Service Truck 04 Ancillary	Service Truck	100%	112	112	317765	6412804	91	X	X	X	X
1081	Water Truck 01 Ancillary	Road Maintenance - Water	100%	115	126	318867	6413293	157	X	X	X	X
1082	Water Truck 02 Ancillary	Road Maintenance - Water	100%	115	126	319094	6411182	92	X	X	X	X
1083	Water Truck 03 Ancillary	Road Maintenance - Water	100%	115	126	317962	6412215	-78	X	X	X	X
1087	Grader 16M 01 Ancillary	Road Maintenance - Grading	100%	108	115	318044	6412608	33	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
1090	Grader 24M 01 Ancillary	Road Maintenance - Grading	100%	112	119	318382	6413208	124	X	X	X	X
1091	Grader 24M 02 Ancillary	Road Maintenance - Grading	100%	112	119	317550	6411525	-3	X	X	X	X
1100	EX101 EX101_RL-60_DRL30	Excavator 996	100%	117	123	317306	6412061	-57	X	X	X	X
1101	D11 1 CAT D11 Dozer EX101 support	Dozer Forward	75%	111	122	317323	6412111	-57	X	X	X	X
1102	D11 1 CAT D11 Dozer EX101 support	Dozer Reverse	25%	116	120	317306	6412101	-56	X	X	X	X
1103	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 5 - Queue at Loader 29%	29%	97	105	317358	6412092	-59	X	X	X	X
1104	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 5 - Spot Time at loader 13%	13%	104	114	317340	6412082	-58	X	X	X	X
1105	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 5 - Loading 66%	66%	101	108	317323	6412071	-57	X	X	X	X
1106	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 5 - Haul Segment 1 23%	23%	110	118	317428	6412134	-57	X	X	X	X
1107	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 5 - Haul Segment 2 23%	23%	110	118	317623	6412225	-47	X	X	X	X
1108	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 5 - Haul Segment 2 23%	23%	110	118	317811	6412304	-33	X	X	X	X
1109	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 5 - Haul Segment 5 23%	23%	110	118	317600	6412292	-22	X	X	X	X
1110	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 5 - Haul Segment 5 23%	23%	110	118	317404	6412231	-4	X	X	X	X
1111	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 5 - Haul Segment 8 23%	23%	110	118	317209	6412031	2	X	X	X	X
1112	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 5 - Haul Segment 8 23%	23%	110	118	317459	6411495	2	X	X	X	X
1113	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 5 - Haul Segment 10 23%	23%	110	118	317666	6411471	15	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
1114	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 5 - Haul Segment 11 23%	23%	110	118	317848	6411524	32	X	X	X	X
1115	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 5 - Haul Segment 11 23%	23%	110	118	318082	6411628	32	X	X	X	X
1116	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 5 - Spot at Dump 10%	10%	103	113	318200	6411681	32	X	X	X	X
1117	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 5 - Dumping 7%	7%	101	111	318200	6411681	32	X	X	X	X
1118	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 5 - Haul Segment 11 (rev.) 24%	24%	108	118	318026	6411604	32	X	X	X	X
1119	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 5 - Haul Segment 10 (rev.) 24%	24%	108	118	317647	6411466	13	X	X	X	X
1120	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 5 - Haul Segment 8 (rev.) 24%	24%	108	118	317313	6411808	2	X	X	X	X
1121	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 5 - Haul Segment 5 (rev.) 24%	24%	108	118	317412	6412233	-5	X	X	X	X
1122	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 5 - Haul Segment 3 (rev.) 24%	24%	108	118	317812	6412312	-32	X	X	X	X
1123	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 5 - Haul Segment 1 (rev.) 24%	24%	108	118	317448	6412146	-57	X	X	X	X
1124	D11 1 CAT D11 Dozer EX101 support	Dozer Forward	75%	111	122	318218	6411689	31	X	X	X	X
1125	D11 1 CAT D11 Dozer EX101 support	Dozer Reverse	25%	116	120	318237	6411697	31	X	X	X	X
2100	EX102 EX102_RL-90_DRL-60	Excavator 996	100%	117	123	318468	6412415	-76	X	X	X	X
2101	D11 1 CAT D11 Dozer EX102 support	Dozer Forward	75%	111	122	318449	6412449	-74	X	X	X	X
2102	D11 1 CAT D11 Dozer EX102 support	Dozer Reverse	25%	116	120	318468	6412455	-73	X	X	X	X
2103	EH5000 1 EH5000/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 5 - Queue at Loader 17%	17%	95	102	318411	6412396	-75	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
2104	EH5000 1 EH5000/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 5 - Spot Time at loader 13%	13%	104	114	318430	6412403	-76	X	X	X	X
2105	EH5000 2 EH5000/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 5 - Loading 98%	98%	103	110	318449	6412409	-76	X	X	X	X
2106	EH5000 2 EH5000/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 5 - Haul Segment 1 23%	23%	110	119	318354	6412378	-76	X	X	X	X
2107	EH5000 2 EH5000/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 5 - Haul Segment 3 23%	23%	110	119	317948	6412267	-75	X	X	X	X
2108	EH5000 2 EH5000/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 5 - Haul Segment 6 23%	23%	110	119	317687	6412012	-74	X	X	X	X
2109	EH5000 3 EH5000/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 5 - Haul Segment 7 23%	23%	110	119	318086	6412156	-88	X	X	X	X
2110	EH5000 3 EH5000/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 5 - Haul Segment 8 23%	23%	110	119	318606	6412352	-89	X	X	X	X
2111	EH5000 3 EH5000/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 5 - Haul Segment 10 23%	23%	110	119	318776	6411793	-93	X	X	X	X
2112	EH5000 3 EH5000/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 5 - Haul Segment 12 23%	23%	110	119	318615	6411631	-75	X	X	X	X
2113	EH5000 4 EH5000/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 5 - Haul Segment 13 23%	23%	110	119	318497	6411668	-63	X	X	X	X
2114	EH5000 4 EH5000/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 5 - Haul Segment 14 23%	23%	110	119	318404	6411843	-62	X	X	X	X
2115	EH5000 4 EH5000/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 5 - Spot at Dump 10%	10%	103	113	318357	6411941	-63	X	X	X	X
2116	EH5000 4 EH5000/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 5 - Dumping 6%	6%	101	111	318357	6411941	-63	X	X	X	X
2117	EH5000 4 EH5000/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 5 - Haul Segment 14 (rev.) 25%	25%	108	118	318432	6411785	-62	X	X	X	X
2118	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 5 - Haul Segment 12 (rev.) 25%	25%	108	118	318752	6411670	-88	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
2119	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 5 - Haul Segment 9 (rev.) 25%	25%	108	118	318672	6412306	-93	X	X	X	X
2120	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 5 - Haul Segment 7 (rev.) 25%	25%	108	118	318043	6412141	-90	X	X	X	X
2121	EH5000 5 EH5000/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 5 - Haul Segment 4 (rev.) 25%	25%	108	118	317718	6412184	-68	X	X	X	X
2122	EH5000 6 EH5000/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 5 - Haul Segment 1 (rev.) 25%	25%	108	118	318343	6412374	-76	X	X	X	X
2123	D11 1 CAT D11 Dozer EX102 support	Dozer Forward	75%	111	122	318348	6411959	-64	X	X	X	X
2124	D11 1 CAT D11 Dozer EX102 support	Dozer Reverse	25%	116	120	318362	6411906	-62	X	X	X	X
3200	EX103_Option2 EX103_RL60_DRL185	Excavator 996	100%	117	123	317619	6412541	47	X	X	X	X
3201	D11 1 CAT D11 Dozer EX103 support	Dozer Forward	75%	111	122	317638	6412587	48	X	X	X	X
3202	D11 1 CAT D11 Dozer EX103 support	Dozer Reverse	25%	116	120	317619	6412581	48	X	X	X	X
3203	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 8 - Queue at Loader 21%	21%	96	103	317676	6412558	46	X	X	X	X
3204	CAT793F (Std) 1 CAT793F (Std)/ 1 Haulage System-1	Waste in Coal Mine Truck 1 of 8 - Spot Time at loader 14%	14%	105	114	317657	6412552	46	X	X	X	X
3205	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 8 - Loading 69%	69%	101	108	317638	6412547	47	X	X	X	X
3206	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 8 - Haul Segment 1 25%	25%	110	119	317746	6412579	47	X	X	X	X
3207	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 8 - Haul Segment 3 25%	25%	110	119	317990	6412578	33	X	X	X	X
3208	CAT793F (Std) 2 CAT793F (Std)/ 2 Haulage System-1	Waste in Coal Mine Truck 2 of 8 - Haul Segment 7 25%	25%	110	119	318138	6412804	35	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
3209	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 8 - Haul Segment 7 25%	25%	110	119	318317	6412889	49	X	X	X	X
3210	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 8 - Haul Segment 7 25%	25%	110	119	318496	6412974	68	X	X	X	X
3211	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 8 - Haul Segment 7 25%	25%	110	119	318675	6413059	85	X	X	X	X
3212	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 8 - Haul Segment 9 25%	25%	110	119	318816	6412801	87	X	X	X	X
3213	CAT793F (Std) 3 CAT793F (Std)/ 3 Haulage System-1	Waste in Coal Mine Truck 3 of 8 - Haul Segment 10 25%	25%	110	119	318927	6412252	87	X	X	X	X
3214	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 8 - Haul Segment 11 25%	25%	110	119	319023	6411607	88	X	X	X	X
3215	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 8 - Haul Segment 14 25%	25%	110	119	319054	6411123	96	X	X	X	X
3216	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 8 - Haul Segment 14 25%	25%	110	119	318834	6411045	118	X	X	X	X
3217	CAT793F (Std) 4 CAT793F (Std)/ 4 Haulage System-1	Waste in Coal Mine Truck 4 of 8 - Haul Segment 17 25%	25%	110	119	318660	6410982	133	X	X	X	X
3218	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 8 - Haul Segment 18 25%	25%	110	119	318501	6411023	149	X	X	X	X
3219	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 8 - Haul Segment 20 25%	25%	110	119	318552	6410897	162	X	X	X	X
3220	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 8 - Haul Segment 21 25%	25%	110	119	318700	6410858	177	X	X	X	X
3221	CAT793F (Std) 5 CAT793F (Std)/ 5 Haulage System-1	Waste in Coal Mine Truck 5 of 8 - Haul Segment 24 25%	25%	110	119	318660	6410779	182	X	X	X	X
3222	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 8 - Haul Segment 25 25%	25%	110	119	318382	6410919	181	X	X	X	X
3223	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 8 - Spot at Dump 10%	10%	103	113	318288	6411020	180	X	X	X	X

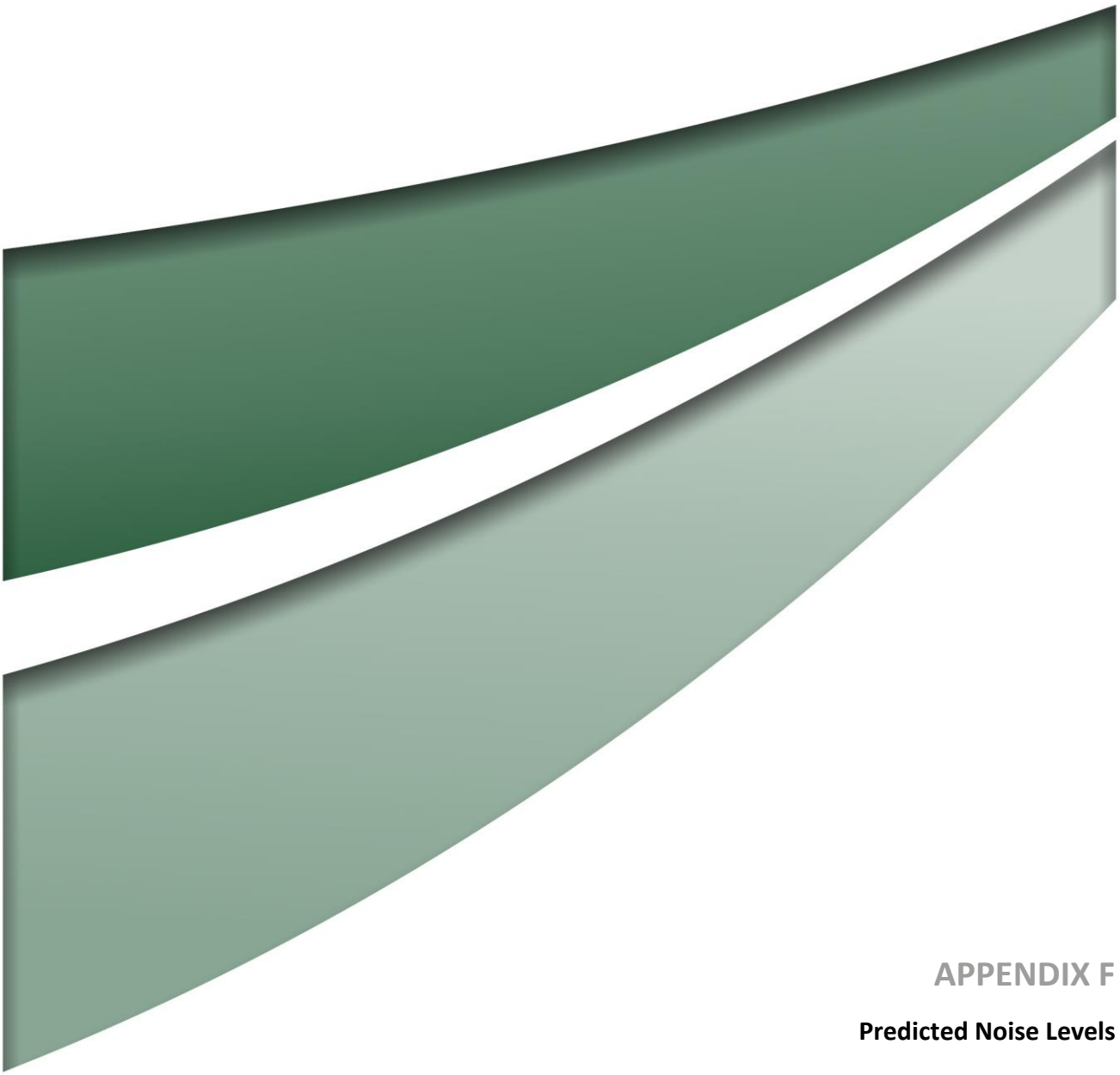
Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
3224	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 8 - Dumping 7%	7%	102	111	318288	6411020	180	X	X	X	X
3225	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 8 - Haul Segment 25 (rev.) 26%	26%	108	118	318402	6410893	181	X	X	X	X
3226	CAT793F (Std) 6 CAT793F (Std)/ 6 Haulage System-1	Waste in Coal Mine Truck 6 of 8 - Haul Segment 22 (rev.) 26%	26%	108	118	318737	6410843	181	X	X	X	X
3227	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 8 - Haul Segment 18 (rev.) 26%	26%	108	118	318548	6411000	144	X	X	X	X
3228	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 8 - Haul Segment 14 (rev.) 26%	26%	108	118	318965	6411092	105	X	X	X	X
3229	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 8 - Haul Segment 11 (rev.) 26%	26%	108	118	319029	6411544	88	X	X	X	X
3230	CAT793F (Std) 7 CAT793F (Std)/ 7 Haulage System-1	Waste in Coal Mine Truck 7 of 8 - Haul Segment 10 (rev.) 26%	26%	108	118	318931	6412238	87	X	X	X	X
3231	CAT793F (Std) 8 CAT793F (Std)/ 8 Haulage System-1	Waste in Coal Mine Truck 8 of 8 - Haul Segment 9 (rev.) 26%	26%	108	118	318796	6412911	86	X	X	X	X
3232	CAT793F (Std) 8 CAT793F (Std)/ 8 Haulage System-1	Waste in Coal Mine Truck 8 of 8 - Haul Segment 7 (rev.) 26%	26%	108	118	318462	6412958	63	X	X	X	X
3233	CAT793F (Std) 8 CAT793F (Std)/ 8 Haulage System-1	Waste in Coal Mine Truck 8 of 8 - Haul Segment 6 (rev.) 26%	26%	108	118	318160	6412733	35	X	X	X	X
3234	CAT793F (Std) 8 CAT793F (Std)/ 8 Haulage System-1	Waste in Coal Mine Truck 8 of 8 - Haul Segment 1 (rev.) 26%	26%	108	118	317761	6412584	46	X	X	X	X
3235	D11 1 CAT D11 Dozer EX103 support	Dozer Forward	75%	111	122	318276	6411036	180	X	X	X	X
3236	D11 1 CAT D11 Dozer EX103 support	Dozer Reverse	25%	116	120	318264	6411052	180	X	X	X	X
7500	EX135 EX135_RL-60_COAL	Excavator 9400	100%	116	121	317549	6412029	-69	X	X	X	X
7501	D11 1 CAT D11 Dozer EX135 support	Dozer Forward	75%	111	122	317567	6412078	-67	X	X	X	X
7502	D11 1 CAT D11 Dozer EX135 support	Dozer Reverse	25%	116	120	317549	6412069	-67	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
7503	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 7 - Queue at Loader 4%	4%	89	96	317603	6412055	-69	X	X	X	X
7504	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 7 - Spot Time at loader 9%	9%	106	111	317585	6412046	-69	X	X	X	X
7505	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 7 - Loading 86%	86%	102	109	317567	6412038	-69	X	X	X	X
7506	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 7 - Haul Segment 3 24%	24%	110	116	317581	6412138	-66	X	X	X	X
7507	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 7 - Haul Segment 6 24%	24%	110	116	317591	6412210	-48	X	X	X	X
7508	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 7 - Haul Segment 7 24%	24%	110	116	317803	6412341	-30	X	X	X	X
7509	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 7 - Haul Segment 9 24%	24%	110	116	317483	6412260	-11	X	X	X	X
7510	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 7 - Haul Segment 11 24%	24%	110	116	317409	6412294	7	X	X	X	X
7511	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 7 - Haul Segment 12 24%	24%	110	116	317657	6412400	27	X	X	X	X
7512	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 7 - Haul Segment 14 24%	24%	110	116	318182	6412691	33	X	X	X	X
7513	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 7 - Haul Segment 15 24%	24%	110	116	318330	6412887	51	X	X	X	X
7514	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 7 - Haul Segment 15 24%	24%	110	116	318570	6412992	71	X	X	X	X
7515	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 7 - Haul Segment 18 24%	24%	110	116	318617	6413120	92	X	X	X	X
7516	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 7 - Haul Segment 18 24%	24%	110	116	318336	6413031	113	X	X	X	X
7517	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 7 - Haul Segment 23 24%	24%	110	116	318465	6413220	130	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
7518	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Haul Segment 24 24%	24%	110	116	318686	6413288	145	X	X	X	X
7519	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Haul Segment 28 24%	24%	110	116	319130	6413145	160	X	X	X	X
7520	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Haul Segment 29 24%	24%	110	116	319637	6413110	127	X	X	X	X
7521	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Haul Segment 33 24%	24%	110	116	320044	6413150	129	X	X	X	X
7522	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Spot at Dump 6%	6%	104	110	320020	6413330	129	X	X	X	X
7523	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 7 - Dumping 4%	4%	103	108	320020	6413330	129	X	X	X	X
7524	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 7 - Haul Segment 31 (rev.) 25%	25%	113	119	320020	6413056	128	X	X	X	X
7525	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 7 - Haul Segment 28 (rev.) 25%	25%	113	119	319278	6413167	159	X	X	X	X
7526	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 7 - Haul Segment 23 (rev.) 25%	25%	113	119	318475	6413223	131	X	X	X	X
7527	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 7 - Haul Segment 17 (rev.) 25%	25%	113	119	318684	6413110	90	X	X	X	X
7528	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 7 - Haul Segment 15 (rev.) 25%	25%	113	119	318167	6412816	35	X	X	X	X
7529	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 7 - Haul Segment 12 (rev.) 25%	25%	113	119	317620	6412384	26	X	X	X	X
7530	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 7 - Haul Segment 9 (rev.) 25%	25%	113	119	317645	6412312	-25	X	X	X	X
7531	CAT789C 7 CAT789C/ 7 Haulage System-1	Coal Truck 7 of 7 - Haul Segment 3 (rev.) 25%	25%	113	119	317532	6412123	-63	X	X	X	X
8500	EX151 EX151_RL-120_COAL EX151 EX151_RL-120_COAL	Excavator 2500	100%	115	125	318604	6412296	-117	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
8501	D11 1 CAT D11 Dozer EX151 support	Dozer Forward	75%	111	122	318565	6412287	-116	X	X	X	X
8502	D11 1 CAT D11 Dozer EX151 support	Dozer Reverse	25%	116	120	318583	6412294	-117	X	X	X	X
8503	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 6 - Queue at Loader 3%	3%	88	95	318548	6412273	-117	X	X	X	X
8504	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 6 - Spot Time at loader 6%	6%	104	110	318567	6412281	-117	X	X	X	X
8505	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 6 - Loading 64%	64%	101	108	318585	6412288	-117	X	X	X	X
8506	CAT789C 1 CAT789C/ 1 Haulage System-1	Coal Truck 1 of 6 - Haul Segment 2 24%	24%	110	116	318428	6412231	-112	X	X	X	X
8507	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 6 - Haul Segment 4 24%	24%	110	116	318095	6412161	-88	X	X	X	X
8508	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 6 - Haul Segment 6 24%	24%	110	116	317608	6412141	-67	X	X	X	X
8509	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 6 - Haul Segment 10 24%	24%	110	116	317679	6412246	-43	X	X	X	X
8510	CAT789C 2 CAT789C/ 2 Haulage System-1	Coal Truck 2 of 6 - Haul Segment 13 24%	24%	110	116	317567	6412287	-17	X	X	X	X
8511	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 6 - Haul Segment 15 24%	24%	110	116	317423	6412300	8	X	X	X	X
8512	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 6 - Haul Segment 17 24%	24%	110	116	317881	6412487	28	X	X	X	X
8513	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 6 - Haul Segment 19 24%	24%	110	116	318267	6412860	43	X	X	X	X
8514	CAT789C 3 CAT789C/ 3 Haulage System-1	Coal Truck 3 of 6 - Haul Segment 19 24%	24%	110	116	318592	6413002	76	X	X	X	X
8515	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 6 - Haul Segment 22 24%	24%	110	116	318497	6413082	101	X	X	X	X

Source ID	Equipment Name	Activity	Acoustic Utilisation Factor	SWL, dB(A)	SWL, dB(Z)	Easting, MGA	Northing, MGA	Ground Elevation m AHD	Applicable Meteorological Conditions			
									Calm All Periods	3 m/s SE Day/ Evening	3 m/s NW Day	2 m/s NW Class F Winter Evening/Night
8516	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 6 - Haul Segment 25 24%	24%	110	116	318400	6413211	125	X	X	X	X
8517	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 6 - Haul Segment 28 24%	24%	110	116	318738	6413290	149	X	X	X	X
8518	CAT789C 4 CAT789C/ 4 Haulage System-1	Coal Truck 4 of 6 - Haul Segment 32 24%	24%	110	116	319174	6413190	158	X	X	X	X
8519	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Haul Segment 35 24%	24%	110	116	320042	6413083	129	X	X	X	X
8520	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Spot at Dump 5%	5%	103	109	320020	6413330	129	X	X	X	X
8521	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Dumping 3%	3%	101	107	320020	6413330	129	X	X	X	X
8522	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Haul Segment 34 (rev.) 25%	25%	113	119	319751	6413027	123	X	X	X	X
8523	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Haul Segment 28 (rev.) 25%	25%	113	119	318836	6413294	155	X	X	X	X
8524	CAT789C 5 CAT789C/ 5 Haulage System-1	Coal Truck 5 of 6 - Haul Segment 22 (rev.) 25%	25%	113	119	318554	6413100	96	X	X	X	X
8525	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 6 - Haul Segment 18 (rev.) 25%	25%	113	119	318154	6412740	35	X	X	X	X
8526	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 6 - Haul Segment 14 (rev.) 25%	25%	113	119	317301	6412239	1	X	X	X	X
8527	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 6 - Haul Segment 10 (rev.) 25%	25%	113	119	317481	6412165	-58	X	X	X	X
8528	CAT789C 6 CAT789C/ 6 Haulage System-1	Coal Truck 6 of 6 - Haul Segment 2 (rev.) 25%	25%	113	119	318246	6412170	-97	X	X	X	X



APPENDIX F

Predicted Noise Levels

Appendix F – Predicted Noise Levels

Operational Noise Levels

Standard and Noise-enhancing Meteorological Conditions

ENM's Single Point Calculation feature was used to determine noise levels from the Project at the nearest receivers during calm neutral conditions and the three (3) significant noise-enhancing conditions identified in accordance with NPfI Fact Sheet D.

The predicted noise levels at the receiver locations during Years 1, 6, 13 and 18 of the Project are presented in **Table F.1** for:

- calm neutral conditions
- 3 m/s wind from the south-east (a vectored wind condition that can occur greater than 30% of the time during the evening and night time)
- 3 m/s wind from the north-west (a vectored wind condition that can occur up to 30% of the time during the day time)
- F Class stability, modelled as a 3°C/100 m inversion with 2 m/s drainage flow from the north-west (the vectored wind condition can occur greater than 30% of the time during inversion conditions during winter night times (6pm to 7am)).

Probabilistic Modelling

The probabilistic modelling approach was used to help design the operating parameters of the Project during the full range of potential standard, noise-enhancing and very noise-enhancing meteorological conditions. This includes conditions that are not identified by NPfI Fact Sheet D Table D1 but could occur over the life of the Project. Importantly, the probabilistic modelling approach includes meteorological conditions that would be excluded by the NPfI modelling approach but are recognised by the NPfI as very noise-enhancing. While such conditions are not included in the NPfI modelling approach, there is an expectation that the noise controls that would be implemented under the worst-case conditions would also be in place during very noise-enhancing conditions.

Results of the probabilistic noise modelling for the four representative Project years (Year 1, 6, 13 and 18) are presented in **Table F.2** and graphically in **Tables F.3a**, **F.3b**, **F.3c** and **F.3d**. The results in **Table F.2** are for representative sensitive receiver locations within each of the receiver areas. The results in **Table F.3a** to **F.3d** illustrate the predicted noise levels without additional noise controls in place and then provide examples of the types of noise control measures and the percentage of time these are likely to be required to meet project noise trigger levels at representative receiver locations.

Sleep Disturbance Noise Levels

The assessment of sleep disturbance noise levels was based on the noise-enhancing meteorological conditions identified in accordance with NPfI Fact Sheet D Table D1. ENM's Single Point Calculation feature was used to determine the maximum sleep disturbance noise levels at receiver locations for each of the conditions identified above.

The predicted received $L_{A1,1minute}$ noise levels associated with these activities that could result in sleep disturbance are presented in **Table F.4**.

Table F.1 Predicted Noise Level at Private Receiver Locations for Standard and Noise-enhancing Meteorological Conditions (refer to Section 6.1), LAeq,15minute dB(A)

Receiver ID and Receiver Area	Period	Project Noise Trigger Level	Year 1				Year 6				Year 13				Year 18			
			Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night
41 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	30	< 30	-	-	< 30
42 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
43 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
44a - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
44b - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
45 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
46 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
47 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30

Receiver ID and Receiver Area	Period	Project Noise Trigger Level	Year 1				Year 6				Year 13				Year 18			
			Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night
48 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	30	< 30	-	-	< 30
49 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
50 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
51 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
52 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
53 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
54 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
55 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
56a - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30

Receiver ID and Receiver Area	Period	Project Noise Trigger Level	Year 1				Year 6				Year 13				Year 18			
			Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night
56b - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
57 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
58 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
59 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
60 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
61 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
62 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
178 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
210 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30

Receiver ID and Receiver Area	Period	Project Noise Trigger Level	Year 1				Year 6				Year 13				Year 18			
			Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night
211 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
212 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
213 - Area 1	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
15a - Area 2	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
15b - Area 2	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
17a - Area 2	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
17b - Area 2	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
63a - Area 2	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
73 - Area 2	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30

Receiver ID and Receiver Area	Period	Project Noise Trigger Level	Year 1				Year 6				Year 13				Year 18			
			Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night
74 - Area 2	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
83 - Area 2	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
85 - Area 2	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
86 - Area 2	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
87 - Area 2	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
88 - Area 2	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
162b - Area 2	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
259 - Area 2	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
350 - Area 2 (Mount Pleasant School)	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	40	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	40	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30

Receiver ID and Receiver Area	Period	Project Noise Trigger Level	Year 1				Year 6				Year 13				Year 18			
			Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night
13 - Area 4 North	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	31	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	30	< 30	-	-	31	< 30	-	-	< 30
14 - Area 4 North	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	30	< 30	-	-	31	< 30	-	-	< 30
19 - Area 4 North	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	31	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	32	< 30	-	-	30
21* - Area 4 North	Day	40	< 30	< 30	< 30	-	< 30	< 30	31	-	< 30	< 30	33	-	< 30	< 30	30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	32	< 30	-	-	33	< 30	-	-	31
23* - Area 4 North	Day	40	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	32	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	32	< 30	-	-	33	< 30	-	-	30
10 - Area 4 South	Day	40	< 30	< 30	< 30	-	< 30	< 30	31	-	< 30	< 30	31	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	32	< 30	-	-	31	< 30	-	-	< 30
11 - Area 4 South	Day	40	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	32	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	32	< 30	-	-	32	< 30	-	-	< 30
12 - Area 4 South	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	30	< 30	-	-	< 30
93 - Area 4 South	Day	40	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	31	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	31	< 30	-	-	31	< 30	-	-	< 30

Receiver ID and Receiver Area	Period	Project Noise Trigger Level	Year 1				Year 6				Year 13				Year 18			
			Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night
94 - Area 4 South	Day	40	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	31	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	31	< 30	-	-	31	< 30	-	-	< 30
95 - Area 4 South	Day	40	< 30	< 30	< 30	-	< 30	< 30	31	-	< 30	< 30	32	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	31	< 30	-	-	32	< 30	-	-	< 30
112* - Area 4 South	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
114* - Area 4 South	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	30	< 30	-	-	< 30
89 - Area 5	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	30	< 30	-	-	30	< 30	-	-	< 30
91 - Area 5	Day	40	< 30	< 30	< 30	-	< 30	< 30	31	-	< 30	< 30	32	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	31	< 30	-	-	32	< 30	-	-	< 30
92 - Area 5	Day	40	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	31	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	31	< 30	-	-	31	< 30	-	-	< 30
98 - Area 5	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	31	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	30	< 30	-	-	31	< 30	-	-	< 30
99 - Area 5	Day	40	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	32	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	30	< 30	-	-	32	< 30	-	-	< 30

Receiver ID and Receiver Area	Period	Project Noise Trigger Level	Year 1				Year 6				Year 13				Year 18			
			Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night
100 - Area 5	Day	40	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	32	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	30	< 30	-	-	32	< 30	-	-	< 30
2 - Area 7 (Glennies Creek Hall)	Day	55	< 30	< 30	31	-	< 30	< 30	34	-	< 30	< 30	34	-	< 30	< 30	< 30	-
	Evening	55	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	55	< 30	-	-	31	< 30	-	-	34	< 30	-	-	34	< 30	-	-	< 30
4* - Area 7	Day	40	< 30	< 30	< 30	-	< 30	< 30	31	-	< 30	< 30	33	-	< 30	< 30	30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	32	< 30	-	-	33	< 30	-	-	31
5* - Area 7	Day	40	< 30	< 30	< 30	-	< 30	< 30	32	-	< 30	< 30	32	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	33	< 30	-	-	32	< 30	-	-	< 30
6 - Area 7 (Rural Fire Service Depot)	Day	55	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	32	-	< 30	< 30	< 30	-
	Evening	55	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	55	< 30	-	-	< 30	< 30	-	-	31	< 30	-	-	32	< 30	-	-	< 30
7a - Area 7	Day	40	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	32	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	31	< 30	-	-	32	< 30	-	-	30
7b - Area 7	Day	40	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	32	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	31	< 30	-	-	32	< 30	-	-	< 30
7c - Area 7	Day	40	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	32	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	31	< 30	-	-	32	< 30	-	-	< 30
105* - Area 7	Day	40	< 30	< 30	< 30	-	< 30	< 30	30	-	< 30	< 30	32	-	< 30	< 30	30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	32	< 30	-	-	33	< 30	-	-	31

Receiver ID and Receiver Area	Period	Project Noise Trigger Level	Year 1				Year 6				Year 13				Year 18			
			Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night
152* - Area 8 West	Day	40	< 30	< 30	38	-	< 30	< 30	37	-	< 30	< 30	37	-	< 30	< 30	31	-
	Evening	40	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	38	< 30	-	-	38	< 30	-	-	38	< 30	-	-	37	< 30	-	-	32
154* - Area 8 West	Day	40	< 30	< 30	37	-	< 30	< 30	37	-	< 30	< 30	36	-	< 30	< 30	30	-
	Evening	40	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	38	< 30	-	-	37	< 30	-	-	38	< 30	-	-	37	< 30	-	-	31
155* - Area 8 West	Day	40	< 30	< 30	37	-	< 30	< 30	36	-	< 30	< 30	35	-	< 30	< 30	< 30	-
	Evening	40	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	38	< 30	-	-	37	< 30	-	-	38	< 30	-	-	36	< 30	-	-	31
156* - Area 8 West	Day	40	< 30	< 30	30	-	< 30	< 30	30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	40	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	38	< 30	-	-	30	< 30	-	-	32	< 30	-	-	31	< 30	-	-	< 30
111* - Area 8 East	Day	40	< 30	< 30	34	-	< 30	< 30	35	-	< 30	< 30	37	-	< 30	< 30	31	-
	Evening	40	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	38	< 30	-	-	34	< 30	-	-	36	< 30	-	-	37	< 30	-	-	31
127a* - Area 8 East	Day	40	< 30	< 30	36	-	< 30	< 30	36	-	< 30	< 30	36	-	< 30	< 30	31	-
	Evening	40	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	38	< 30	-	-	36	< 30	-	-	36	< 30	-	-	36	< 30	-	-	32
127b* - Area 8 East	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	40	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	438	< 30	-	-	< 30	< 30	-	-	30	< 30	-	-	< 30	< 30	-	-	< 30
127c* - Area 8 East	Day	40	< 30	< 30	33	-	< 30	< 30	34	-	< 30	< 30	32	-	< 30	< 30	< 30	-
	Evening	40	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	438	< 30	-	-	35	< 30	-	-	35	< 30	-	-	33	< 30	-	-	30
127d* - Area 8 East	Day	40	< 30	< 30	33	-	< 30	< 30	34	-	< 30	< 30	34	-	< 30	< 30	31	-
	Evening	40	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	38	< 30	-	-	35	< 30	-	-	36	< 30	-	-	35	< 30	-	-	31

Receiver ID and Receiver Area	Period	Project Noise Trigger Level	Year 1				Year 6				Year 13				Year 18			
			Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night
143* - Area 8 East	Day	40	< 30	< 30	36	-	< 30	< 30	37	-	< 30	< 30	35	-	< 30	< 30	30	-
	Evening	40	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	38	< 30	-	-	36	< 30	-	-	38	< 30	-	-	36	< 30	-	-	32
147* - Area 9	Day	40	< 30	< 30	35	-	< 30	< 30	36	-	< 30	< 30	36	-	< 30	< 30	30	-
	Evening	40	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	38	< 30	-	-	35	< 30	-	-	37	< 30	-	-	36	< 30	-	-	31
149 - Area 9 (St Clement Church)	Day	45	< 30	< 30	35	-	< 30	< 30	35	-	< 30	< 30	33	-	< 30	< 30	< 30	-
	Evening	45	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	45	< 30	-	-	37	< 30	-	-	36	< 30	-	-	35	< 30	-	-	30
150* - Area 9	Day	40	< 30	< 30	37	-	< 30	< 30	35	-	< 30	< 30	36	-	< 30	< 30	30	-
	Evening	40	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	38	< 30	-	-	38	< 30	-	-	37	< 30	-	-	36	< 30	-	-	31
342 - Area 9 (Daracon Site)	Day	65	39	48	36	-	45	49	45	-	45	46	48	-	43	42	45	-
	Evening	65	39	48	-	-	45	49	-	-	45	46	-	-	43	42	-	-
	Night	65	39	-	-	38	45	-	-	48	45	-	-	49	43	-	-	47
144a* - Area 10	Day	40	< 30	< 30	31	-	< 30	< 30	34	-	< 30	< 30	34	-	< 30	< 30	< 30	-
	Evening	38	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	37	< 30	-	-	31	< 30	-	-	35	< 30	-	-	34	< 30	-	-	< 30
145* - Area 10	Day	40	< 30	< 30	32	-	< 30	< 30	35	-	< 30	< 30	35	-	< 30	< 30	< 30	-
	Evening	38	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	37	< 30	-	-	34	< 30	-	-	36	< 30	-	-	35	< 30	-	-	30
133 - Area 11	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	34	< 30	-	< 30	32	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	34	-	-	< 30	32	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
134 - Area 11	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	32	< 30	-	< 30	30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	32	-	-	< 30	30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30

Receiver ID and Receiver Area	Period	Project Noise Trigger Level	Year 1				Year 6				Year 13				Year 18			
			Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night	Calm All Periods	3m/s SE Day/ Evening	3m/s NW Day	2m/s NW Class F Winter Evening/ Night
135 - Area 11	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	32	< 30	-	< 30	30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	32	-	-	< 30	30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
136 - Area 11	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	32	< 30	-	< 30	30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	32	-	-	< 30	30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
137d - Area 11	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
138 - Area 11	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	32	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	32	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
412 - Area 11 (Hebden Community Hall)	Day	55	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	34	< 30	-	< 30	32	< 30	-
	Evening	55	< 30	< 30	-	-	< 30	< 30	-	-	< 30	34	-	-	< 30	32	-	-
	Night	55	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
415 - Area 11 (Wild Quarry)	Day	65	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	31	< 30	-	< 30	< 30	< 30	-
	Evening	65	< 30	< 30	-	-	< 30	< 30	-	-	< 30	31	-	-	< 30	< 30	-	-
	Night	65	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30
All other private residences	Day	40	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-	< 30	< 30	< 30	-
	Evening	35	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-
	Night	35	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30	< 30	-	-	< 30

* receiver subject to acquisition

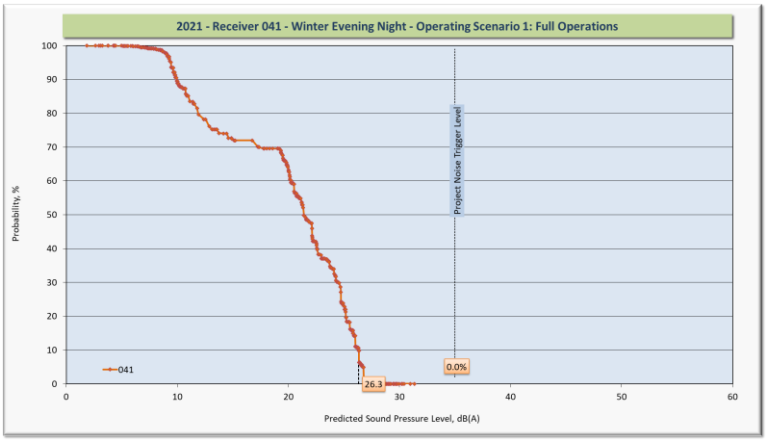
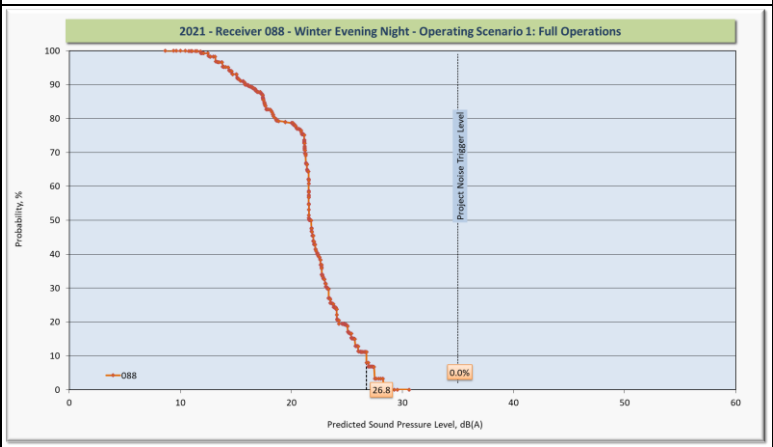
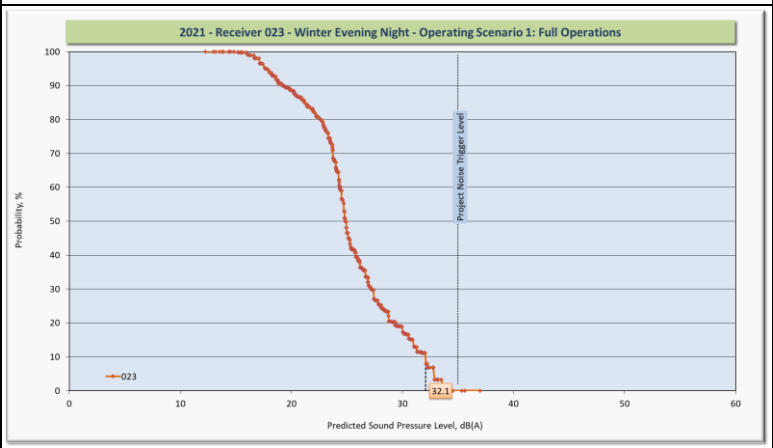
Table F.2 Predicted of 10th%ile Noise Level at Private Receiver Locations for all Standard, Noise-enhancing and Very Noise-enhancing Meteorological Conditions, LAeq,15minute dB(A)

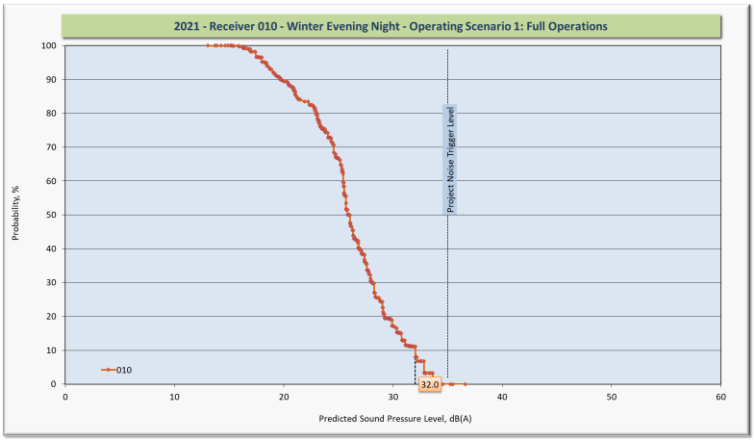
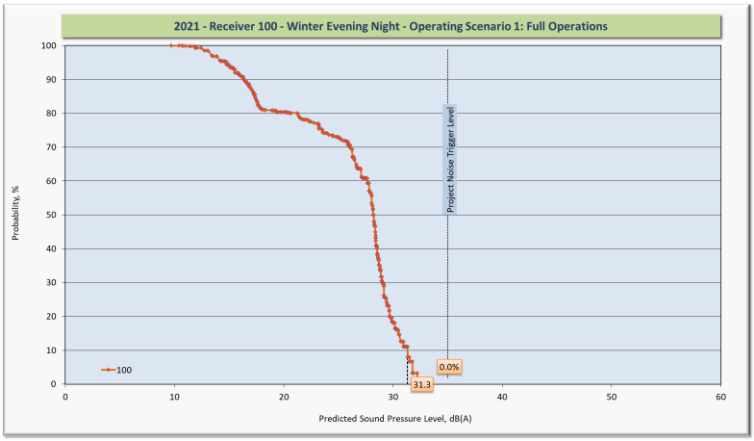
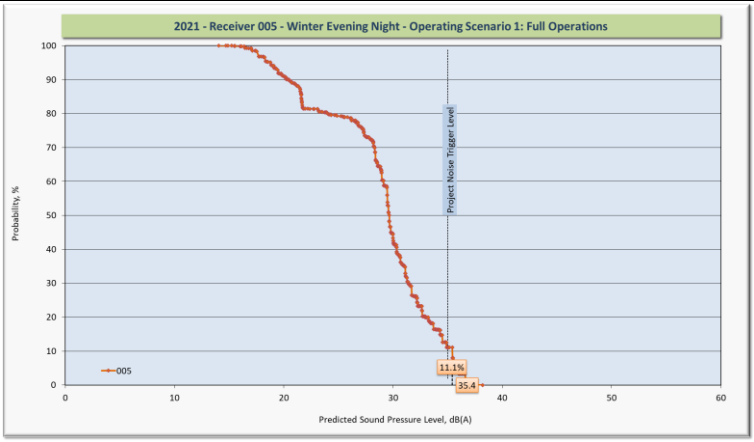
Receiver Area (Modelled Receiver)	Period	PNTL	Year 1	Year 6	Year 13	Year 18
Area 1 (R40)	All-seasons Day	40	< 30	< 30	30	< 30
	Non-winter Evening	35	< 30	< 30	30	< 30
	Non-winter Night	35	< 30	< 30	< 30	< 30
	Winter Evening/Night	35	< 30	< 30	< 30	< 30
Area 2 (R88)	All-seasons Day	40	< 30	< 30	< 30	< 30
	Non-winter Evening	35	< 30	< 30	< 30	< 30
	Non-winter Night	35	< 30	< 30	< 30	< 30
	Winter Evening/Night	35	< 30	< 30	< 30	< 30
Area 3	Contains privately-owned vacant land only - no privately-owned residence					
Area 4 North (R23)	All-seasons Day	40	31	34	35	31
	Non-winter Evening	35	< 30	31	32	< 30
	Non-winter Night	35	< 30	< 30	30	< 30
	Winter Evening/Night	35	32	35	35'	32
Area 4 South (R10)	All-seasons Day	40	30	34	33	< 30
	Non-winter Evening	35	< 30	32	31	< 30
	Non-winter Night	35	< 30	31	< 30	< 30
	Winter Evening/Night	35	32	34	35	30
Area 5 (R100)	All-seasons Day	40	31	31	33	< 30
	Non-winter Evening	35	< 30	30	32	< 30
	Non-winter Night	35	< 30	< 30	31	< 30
	Winter Evening/Night	35	31	32	33	< 30
Area 7 (R5)	All-seasons Day	40	34	34	34	30
	Non-winter Evening	35	32	33	32	< 30
	Non-winter Night	35	31	32	30	< 30
	Winter Evening/Night	35	35'	35	35'	31
Area 6	No privately-owned land					
Area 8 West (R155)	All-seasons Day	40	40 [1]	40 [1]	35	31
	Non-winter Evening	40	40 [1]	40	33	< 30
	Non-winter Night	38	38 [1]	38 [1]	31	< 30
	Winter Evening/Night	38	38'	38 [1]	38 [1]	35
Area 8 East (R143/R127a)	All-seasons Day	40	40 [1]/40 [1]	40 [1]/39	36/37	32/32
	Non-winter Evening	40	40 [1]/40 [1]	39/37	33/35	30/30
	Non-winter Night	38	38 [1]/38 [1]	38 [1]/36	32/34	< 30/< 30
	Winter Evening/Night	38	38 [1]/38 [1]	38 [1]/38 [1]	38'/38'	35/34
Area 9 (R150)	All-seasons Day	40	40 [1]	40 [1]	36	31
	Non-winter Evening	40	40 [1]	39	35	30
	Non-winter Night	38	38 [1]	38	33	< 30

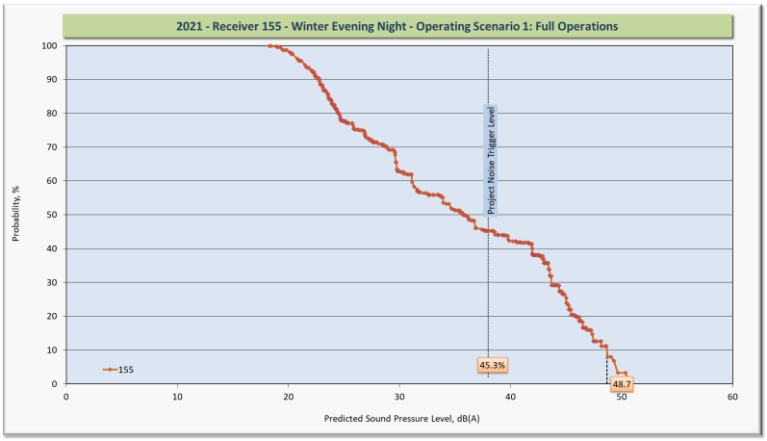
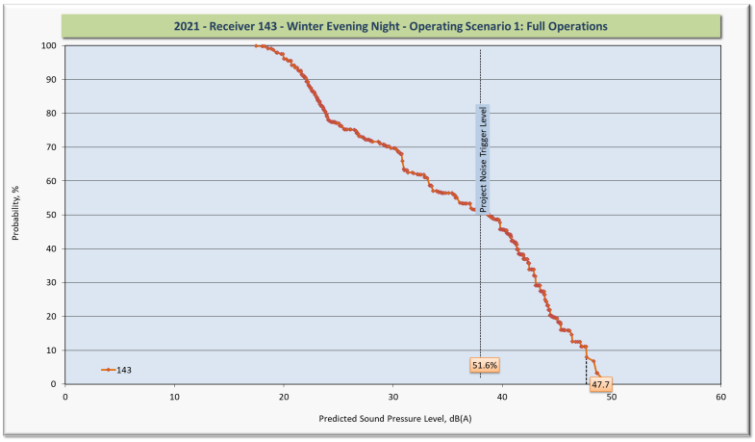
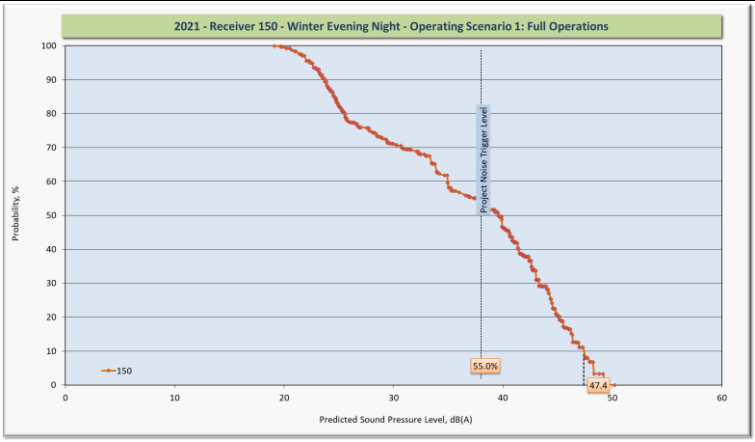
Receiver Area (Modelled Receiver)	Period	PNTL	Year 1	Year 6	Year 13	Year 18
	Winter Evening/Night	38	38 [1]	38 [1]	38 [1]	34
Area 10 (R145)	All-seasons Day	40	38	37	35	< 30
	Non-winter Evening	38	37	36	34	< 30
	Non-winter Night	37	37	35	34	< 30
	Winter Evening/Night	37	37 [1]	37 [1]	36	31
Area 11 (R134)	All-seasons Day	40	< 30	< 30	34	32
	Non-winter Evening	35	< 30	< 30	34	32
	Non-winter Night	35	< 30	< 30	32	< 30
	Winter Evening/Night	35	< 30	< 30	30	< 30

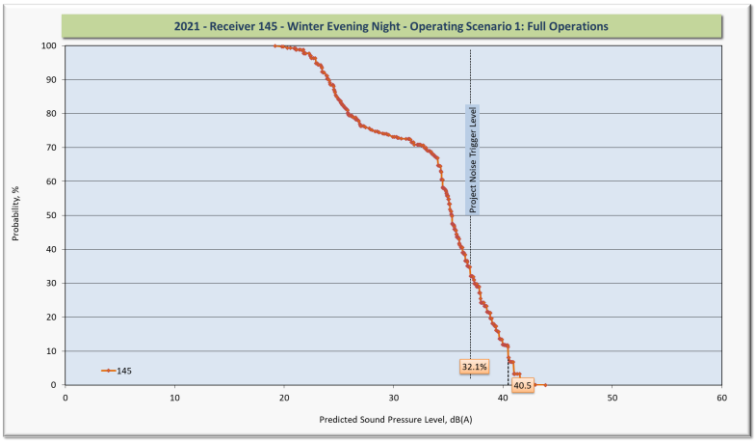
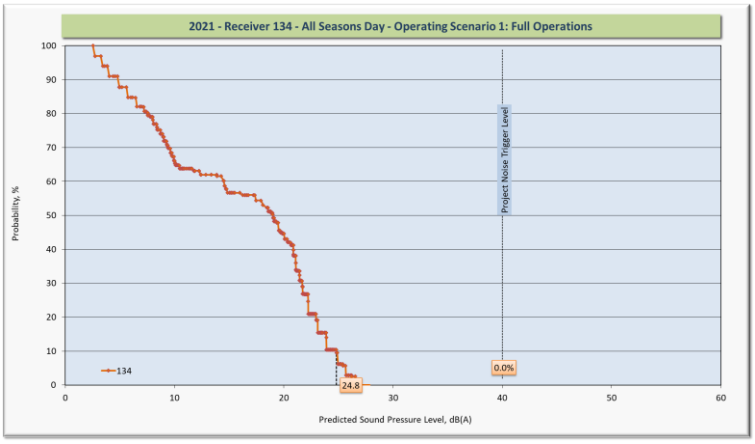
Note: [1] Project Noise Trigger Level achieved with additional noise controls in place (refer to examples in **Tables F.3a** to **F.3d**)

Table F.3a Predicted Year 1 Noise Controls at Representative Receiver Locations

Receiver Area	Predicted Noise Levels with Noise Controls Removed	Examples of Noise Control Measures required to Manage Operations to meet Project Noise Trigger Levels
Area 1		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 2		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 4 North		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights

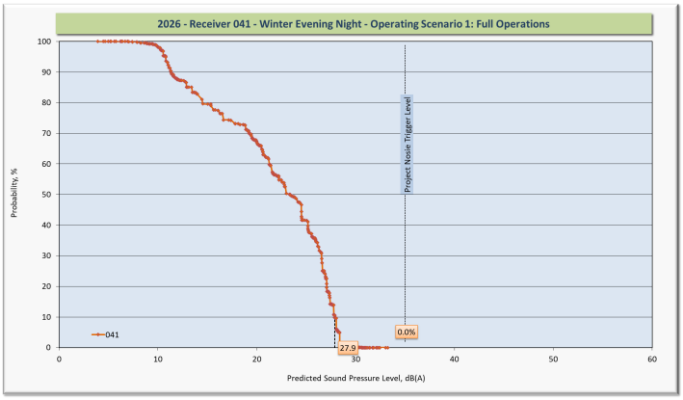
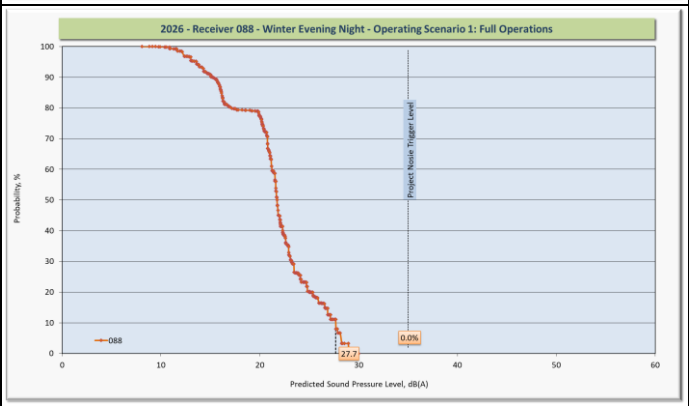
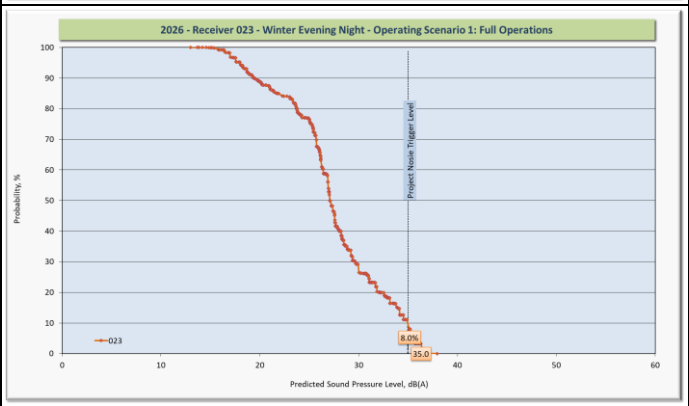
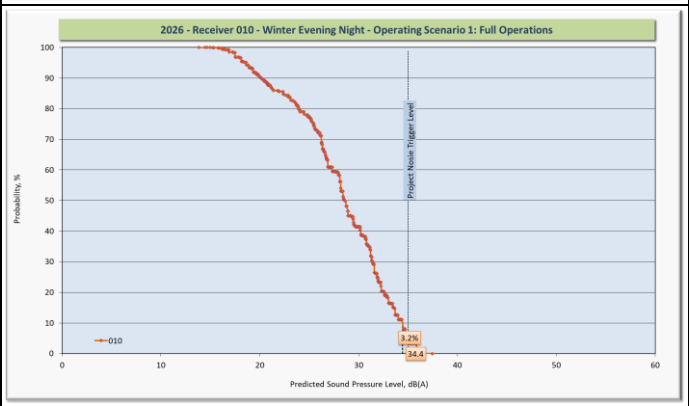
Receiver Area	Predicted Noise Levels with Noise Controls Removed	Examples of Noise Control Measures required to Manage Operations to meet Project Noise Trigger Levels
Area 4 South		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 5		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 7		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 90% of winter evening nights with minimal control required of equipment in exposed locations

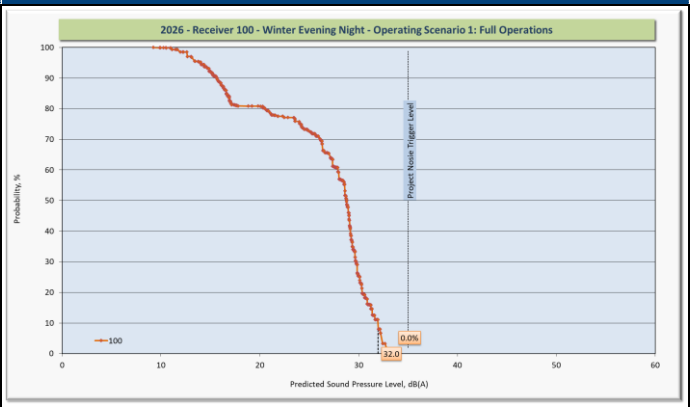
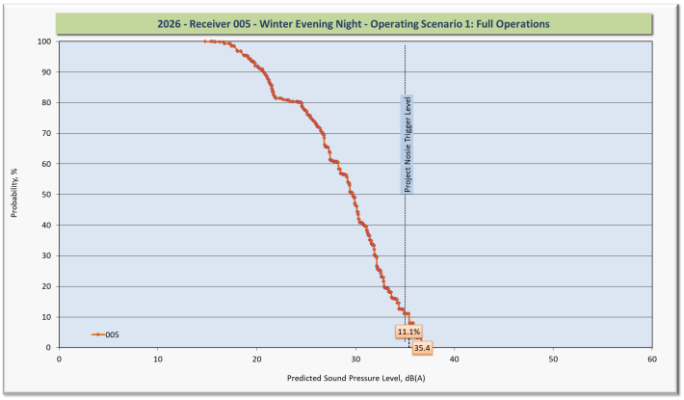
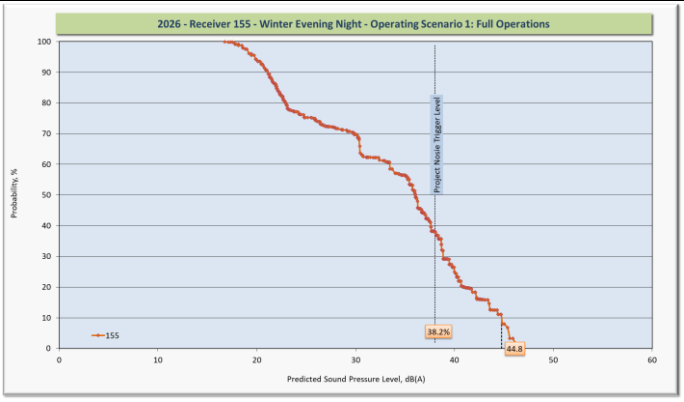
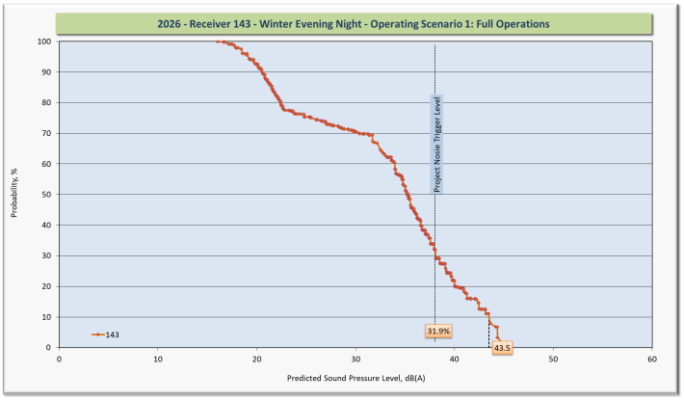
Receiver Area	Predicted Noise Levels with Noise Controls Removed	Examples of Noise Control Measures required to Manage Operations to meet Project Noise Trigger Levels
Area 8 West		Full operations 80% of all-seasons days Full operations 85% of non-winter evenings Full operations 83% of non-winter nights Full operations 55% of winter evening nights leading to stage-wise iteration of potential control options such as: 1. Stop rehab and prestrip dozers 45% of period 2. Slow dump dozers 44% of period 3. Stop high dump for Ex113 42% of period 4. Slow trucks Ex102+113+151 27% of period 5. Stop Ex113 24% of period 6. Stop drills, 2x graders, water cart, slow all dozers 20% of period 7. Stop Ex102 19% of period 8. Slow trucks on Ex101 11% of period 9. Stop Ex151 7% of period
Area 8 East		Full operations 77% of all-seasons days Full operations 83% of non-winter evenings Full operations 79% of non-winter nights Full operations 48% of winter evening nights leading to stage-wise iteration of potential control options such as: 1. Stop rehab and pre-strip dozers 52% of period 2. Slow dump dozers 46% of period 3. Stop high dump for Ex113 42% of period 4. Slow trucks Ex102+113+151 28% of period 5. Stop Ex113 24% of period 6. Stop Drills, 2x graders, water cart, slow all dozers 18% of period 7. Stop Ex102 16% of period 8. Slow or stop Ex151 8% of period
Area 9		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 45% of winter evening nights leading to stage-wise iteration of potential control options such as: 1. Stop rehab and pre-strip dozers 55% of period 2. Slow dump dozers 49% of period 3. Stop high dump for Ex113 42% of period 4. Slow trucks Ex102+113+151 34% of period

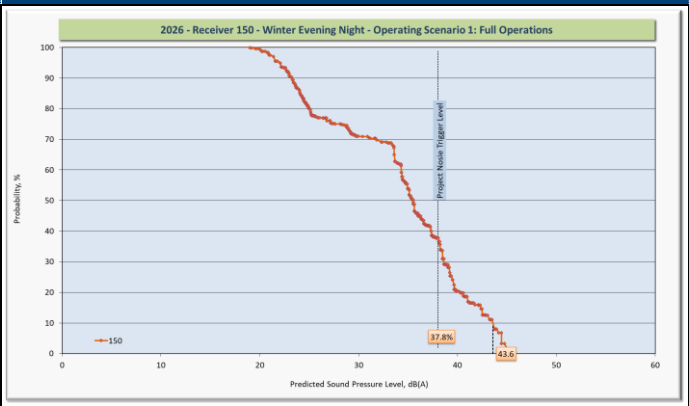
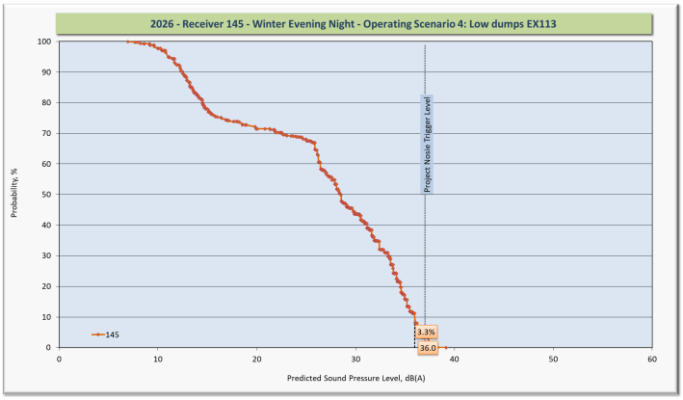
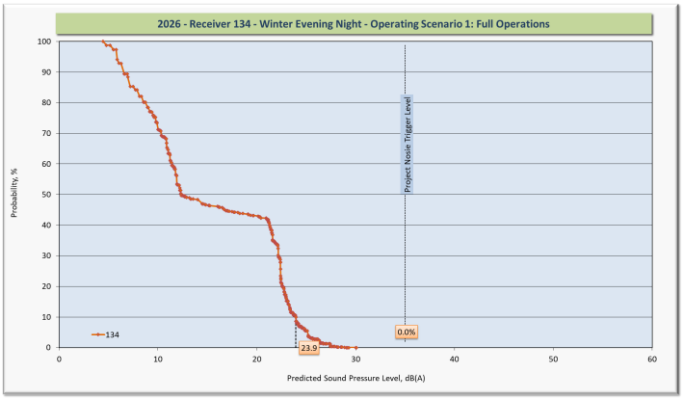
Receiver Area	Predicted Noise Levels with Noise Controls Removed	Examples of Noise Control Measures required to Manage Operations to meet Project Noise Trigger Levels
		5. Stop Ex113 29% of period 6. Stop Drills, 2x graders, water cart, slow all dozers 26% of period 7. Stop Ex102 19% of period 8. Slow or stop Ex151 8% of period
Area 10		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 68% of winter evening nights leading to stage-wise iteration of potential control options such as: 1. Stop rehab and pre-strip dozers 32% of period 2. Slow dump dozers 29% of period 3. Stop high dump for Ex113 24% of period 4. Slow trucks Ex102+113+151 17% of period 5. Stop Ex113 13% of period 6. Stop Drills, 2x graders, water cart, slow all dozers 7% of period
Area 11		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights

The results in **Table F2a** indicate the level of control likely to be required in Year 1 to meet the PNTL at Receiver 143 in Area 8 East would reduce the predicted noise levels to meet the PNTLs at all the other receiver locations.

Table F.3b Predicted Year 6 Noise Controls at Representative Receiver Locations

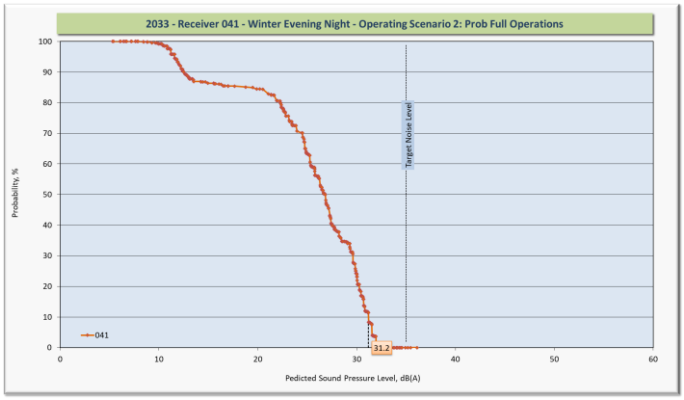
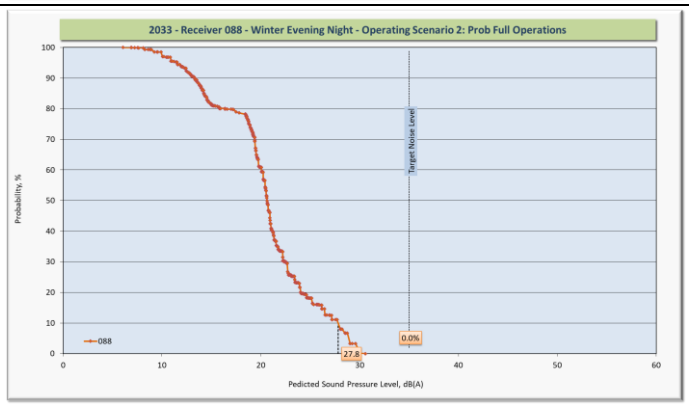
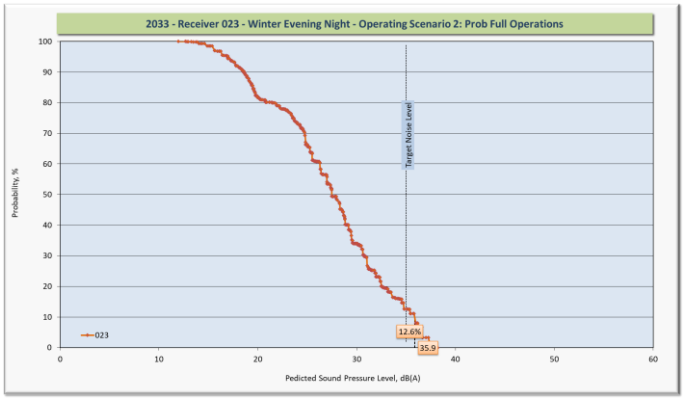
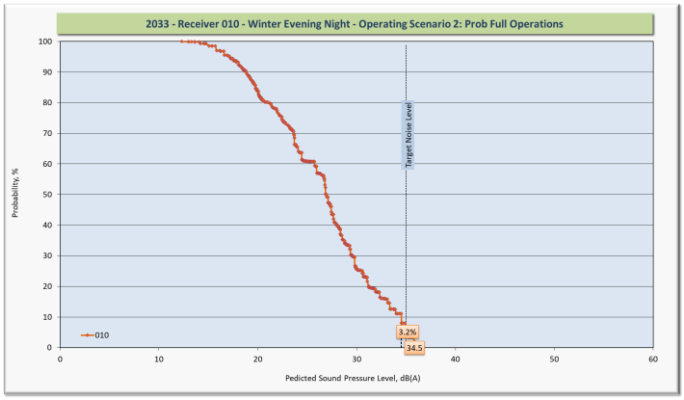
Receiver Area	Predicted Noise Levels with Noise Controls Removed	Examples of Noise Control Measures required to Manage Operations to meet PNTLs
Area 1		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 2		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 4 North		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 92% of winter evening nights with minimal control required of equipment in exposed locations
Area 4 South		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 97% of winter evening nights with minimal control required of equipment in expose locations

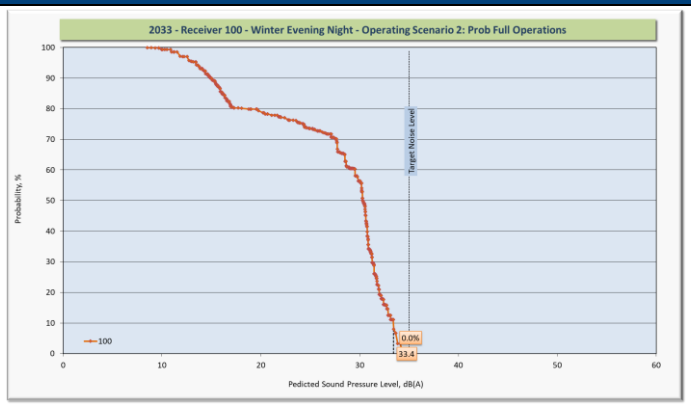
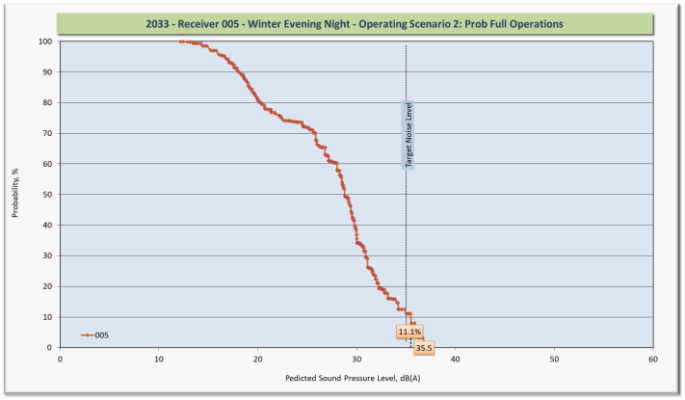
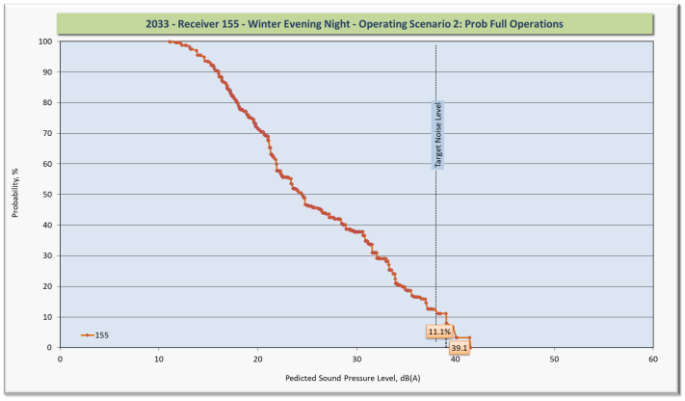
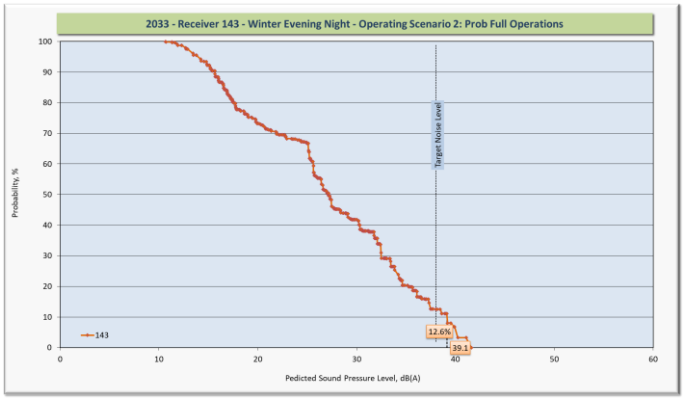
Receiver Area	Predicted Noise Levels with Noise Controls Removed	Examples of Noise Control Measures required to Manage Operations to meet PNTLs
Area 5		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 7		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 89% of winter evening nights leading to stage-wise iteration of potential control options such as: 1. Stop rehab and pre-strip dozers 11% of period 2. Slow dump dozers 8% of period 3. Stop high dump for Ex113 7% of period
Area 8 West		Full operations 85% of all-seasons days Full operations 91% of non-winter evenings Full operations 88% of non-winter nights Full operations only 62% of winter evening nights leading to stage-wise iteration of potential control options such as: 1. Stop rehab and pre-strip dozers 38% of period 2. Slow dump dozers 20% of period 3. Stop high dump for Ex113, slow Ex113 trucks and RTD on dump 18% of period 4. Stop 2 drills, W/C, graders, slow dozers 15% of period 5. Stop Ex113 11% of period 6. Stop Ex134 8% of period
Area 8 East		Full operations 88% of all-seasons days Full operations 94% of non-winter evenings Full operations 91% of non-winter nights Full operations 68% of winter evening nights leading to stage-wise iteration of potential control options such as: 1. Stop rehab and pre-strip dozers 32% of period 2. Slow dump dozers 19% of period 3. Stop high dump for Ex113, slow Ex113 trucks and RTD on dump 18% of period 4. Stop 2 drills, W/C, graders, slow dozers 13% of period 5. Stop Ex113 8% of period 6. Stop Ex134 3% of period

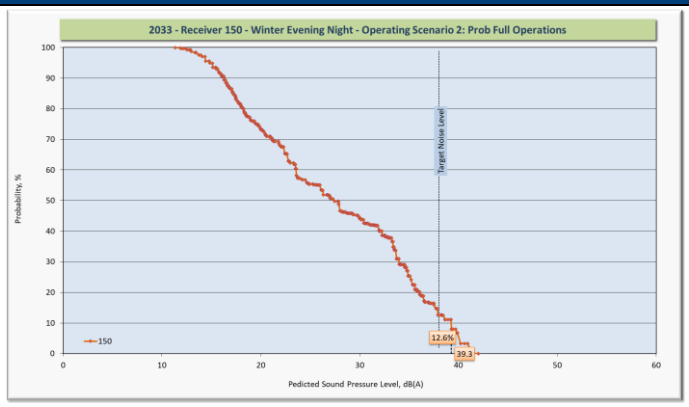
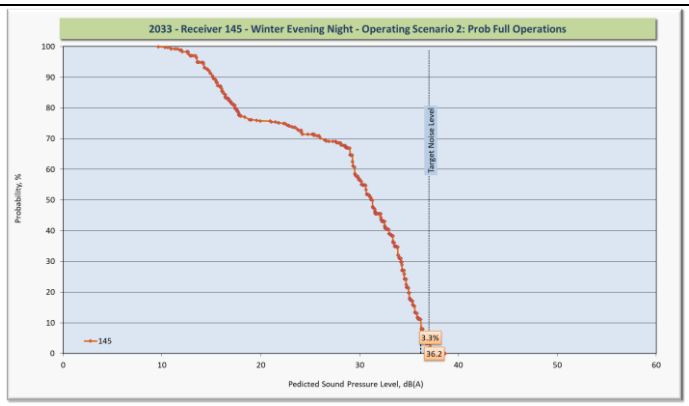
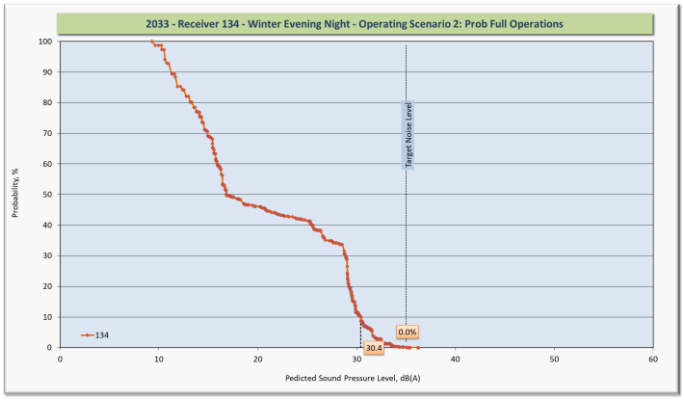
Receiver Area	Predicted Noise Levels with Noise Controls Removed	Examples of Noise Control Measures required to Manage Operations to meet PNTLs
Area 9		Full operations 88% of all-seasons days Full operations 94% of non-winter evenings Full operations 89% of non-winter nights Full operations 62% of winter evening nights leading to stage-wise iteration of potential control options such as: 1. Stop rehab and pre-strip dozers 38% of period 2. Slow dump dozers 17% of period 3. Stop high dump for Ex113, slow Ex113 trucks and RTD on dump 17% of period 4. Stop 2 drills, W/C, graders, slow dozers 13% of period 5. Stop Ex113 8% of period 6. Stop Ex134 3% of period
Area 10		Full operations 100% of all-seasons days Full operations 98% of non-winter evenings Full operations 97% of non-winter nights Full operations 82% of winter evening nights leading to stage-wise iteration of potential control options such as: 1. Stop rehab and pre-strip dozers 18% of period 2. Slow dump dozers 11% of period 3. Stop high dump for Ex113, slow Ex113 trucks and RTD on dump 8% of period 4. Stop Ex113 3% of period
Area 11		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights

The results in **Table F.3b** indicate the level of control likely to be required to meet the PNTL at Receiver 155 in Area 8 West would reduce the predicted noise levels to meet the project noise trigger levels at all the other receiver locations.

Table F.3c – Predicted Year 13 Noise Controls at Representative Receiver Locations

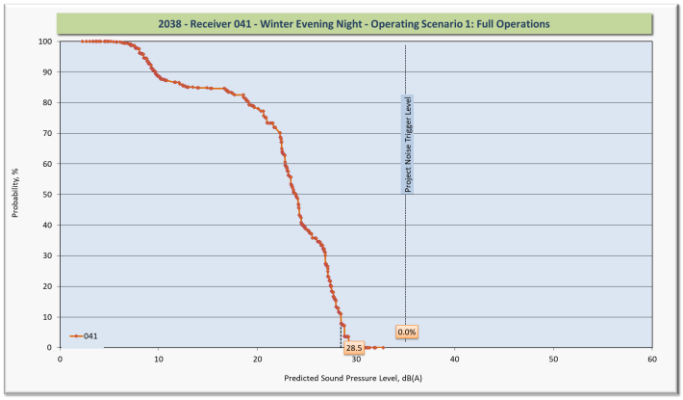
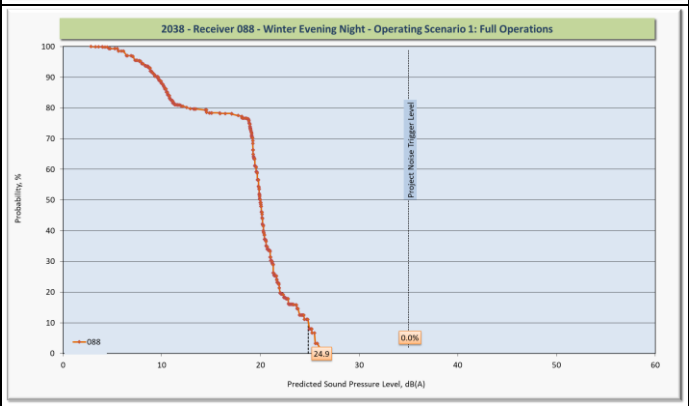
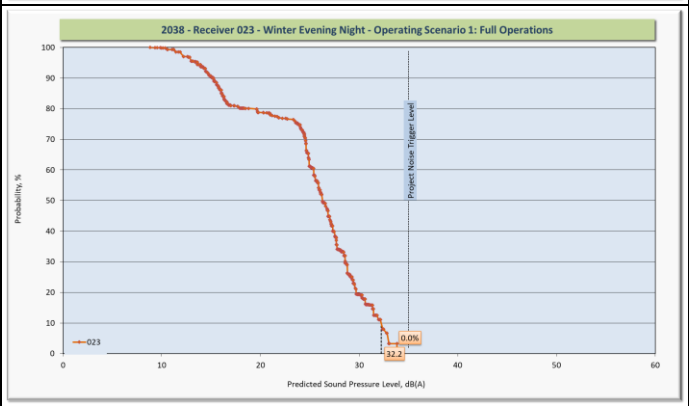
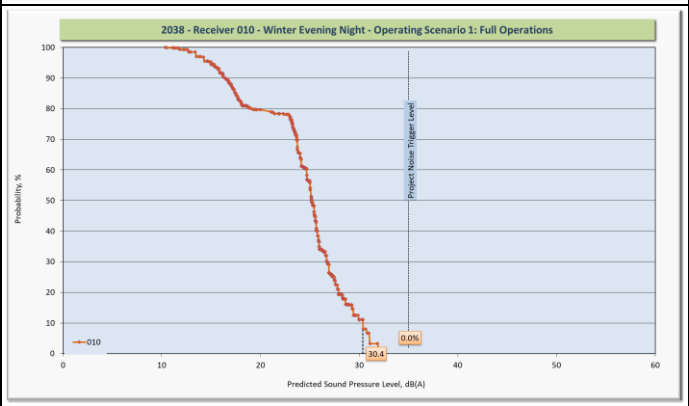
Receiver Area	Predicted Noise Levels with Noise Controls Removed	Examples of Noise Control Measures required to Manage Operations to meet PNTLs
Area 1		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 2		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 4 North		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 99% of non-winter nights Full operations 87% of winter evening nights leading to stage-wise iteration of potential control options such as: 1. Stop rehab and slow prestrip dozers 13% of period 2. Stop high dump for Ex113 and W/C and slow dump dozers 13% of period 3. Stop Ex113, 2 drills, 2 graders, 2W/C 11% of period 4. Low dump Ex104, stop remaining ancillaries and restrict all dozers 3% of period
Area 4 South		Full operations 100% of all-seasons days Full operations 100% of non-winter evening Full operations 100% of non-winter nights Full operations 97% of winter evening nights with minimal control required of equipment in exposed locations

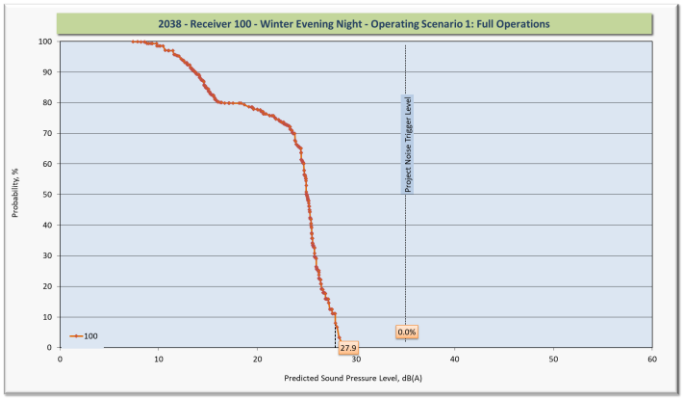
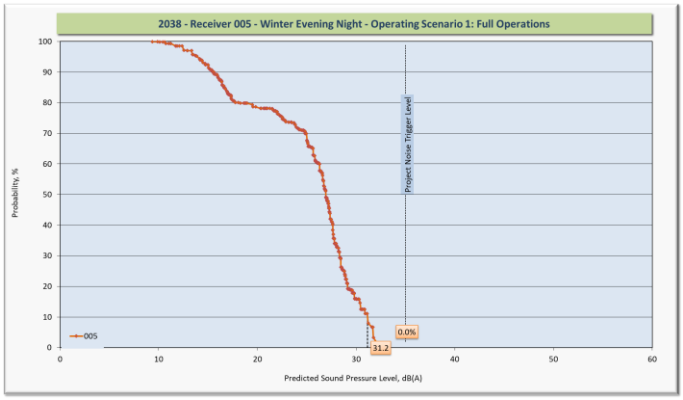
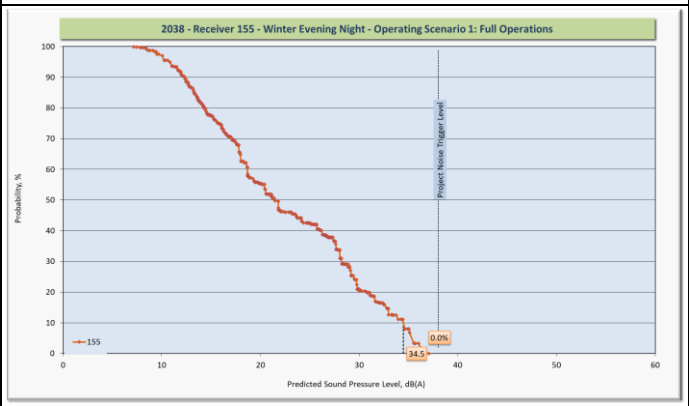
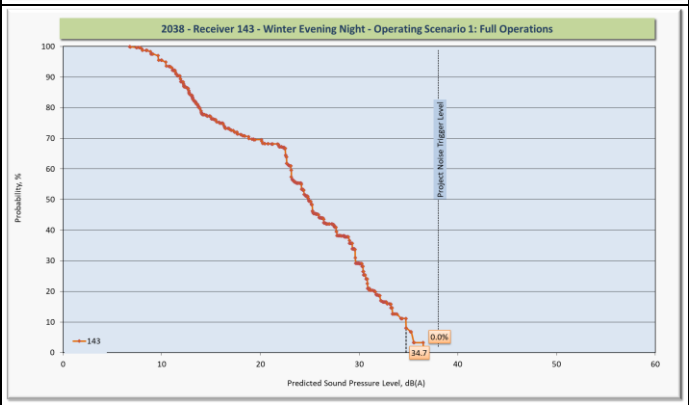
Receiver Area	Predicted Noise Levels with Noise Controls Removed	Examples of Noise Control Measures required to Manage Operations to meet PNTLs
Area 5		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 7		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 89% of winter evening nights leading to stage-wise iteration of potential control options such as: 1. Stop rehab and slow prestrip dozers 11% of period 2. Stop Ex113, 3W/C, 2 drills, 2 graders and slow dump dozers 11% of period 3. Low dump Ex104, stop additional ancillaries and restrict all dozers 3% of period
Area 8 West		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations only 89% of winter evening nights leading to stage-wise iteration of potential control options such as: 1. Stop rehab and slow prestrip dozers 11% of period 2. Stop Ex113, 3W/C, 2 drills, 2 graders and slow dump dozers 8% of period 3. Stop Ex104, remaining ancillaries and restrict all dozers 7% of period
Area 8 East		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 99% of non-winter nights Full operations only 87% of winter evening nights leading to stage-wise iteration of potential control options such as: 1. Stop rehab and slow pre-strip dozers 13% of period 2. Stop Ex113, 3W/C, 2 drills, 2 graders and slow dump dozers 13% of period 3. Stop Ex104, remaining ancillaries and restrict all dozers 11% of period 4. Stop 3rd excavator 3% of period

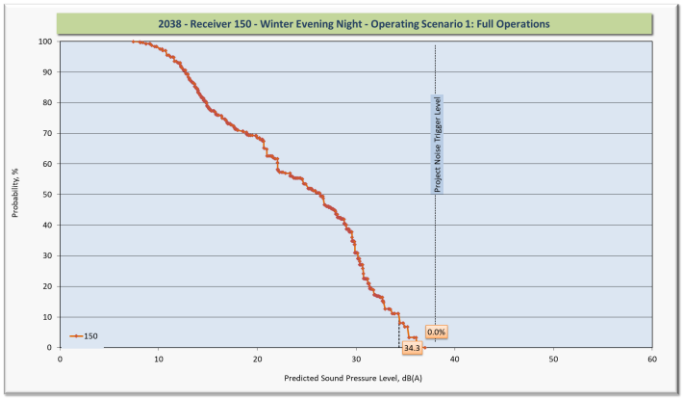
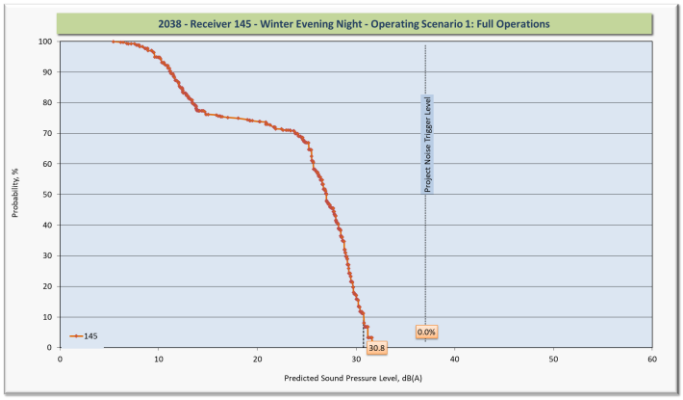
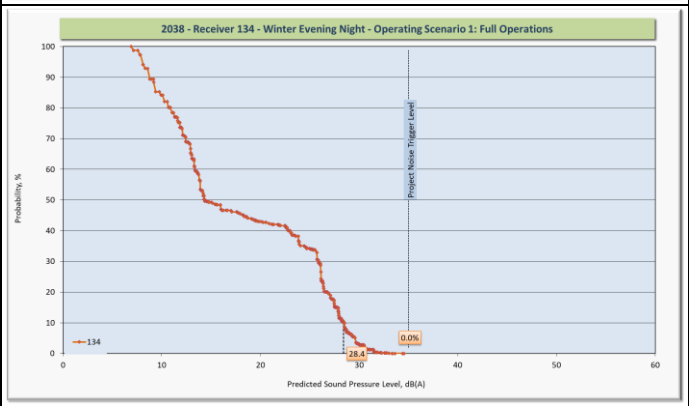
Receiver Area	Predicted Noise Levels with Noise Controls Removed	Examples of Noise Control Measures required to Manage Operations to meet PNTLs
Area 9		Full operations 100% of all-seasons days Full operations 100% of non-winter evening Full operations 99% of non-winter nights Full operations only 87% of winter evening nights leading to stage-wise iteration of potential control options such as: 1. Stop rehab and slow prestrip dozers 13% of period 2. Stop Ex113, 3W/C, 2 drills, 2 graders and slow dump dozers 13% of period 3. Low dump Ex104, stop additional ancillaries and restrict all dozers 3% of period
Area 10		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 97% of winter evening nights with minimal control required of equipment in exposed locations
Area 11		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights

The results in **Table F.3c** indicate the level of control likely to be required to meet the PNTL at Receiver 143 in Area 8 West would reduce the predicted noise levels to meet the PNTLs at all the other receiver locations.

Table F.3d – Predicted Year 18 Noise Controls at Representative Receiver Locations

Receiver Area	Predicted Noise Levels with Noise Controls Removed	Examples of Noise Control Measures required to Manage Operations to meet PNTLs
Area 1		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 2		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 4 North		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 4 South		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights

Receiver Area	Predicted Noise Levels with Noise Controls Removed	Examples of Noise Control Measures required to Manage Operations to meet PNTLs
Area 5		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 7		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 8 West		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 8 East		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights

Receiver Area	Predicted Noise Levels with Noise Controls Removed	Examples of Noise Control Measures required to Manage Operations to meet PNTLs
Area 9		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 10		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights
Area 11		Full operations 100% of all-seasons days Full operations 100% of non-winter evenings Full operations 100% of non-winter nights Full operations 100% of winter evening nights

The results in **Table F.3d** indicate the Project can operate without the implementation of any additional control measures to meet the project noise trigger levels at all receiver locations.

Table F.4 Predicted Sleep Disturbance Noise Level, LAeq,15minute and LAFmax, dB(A)

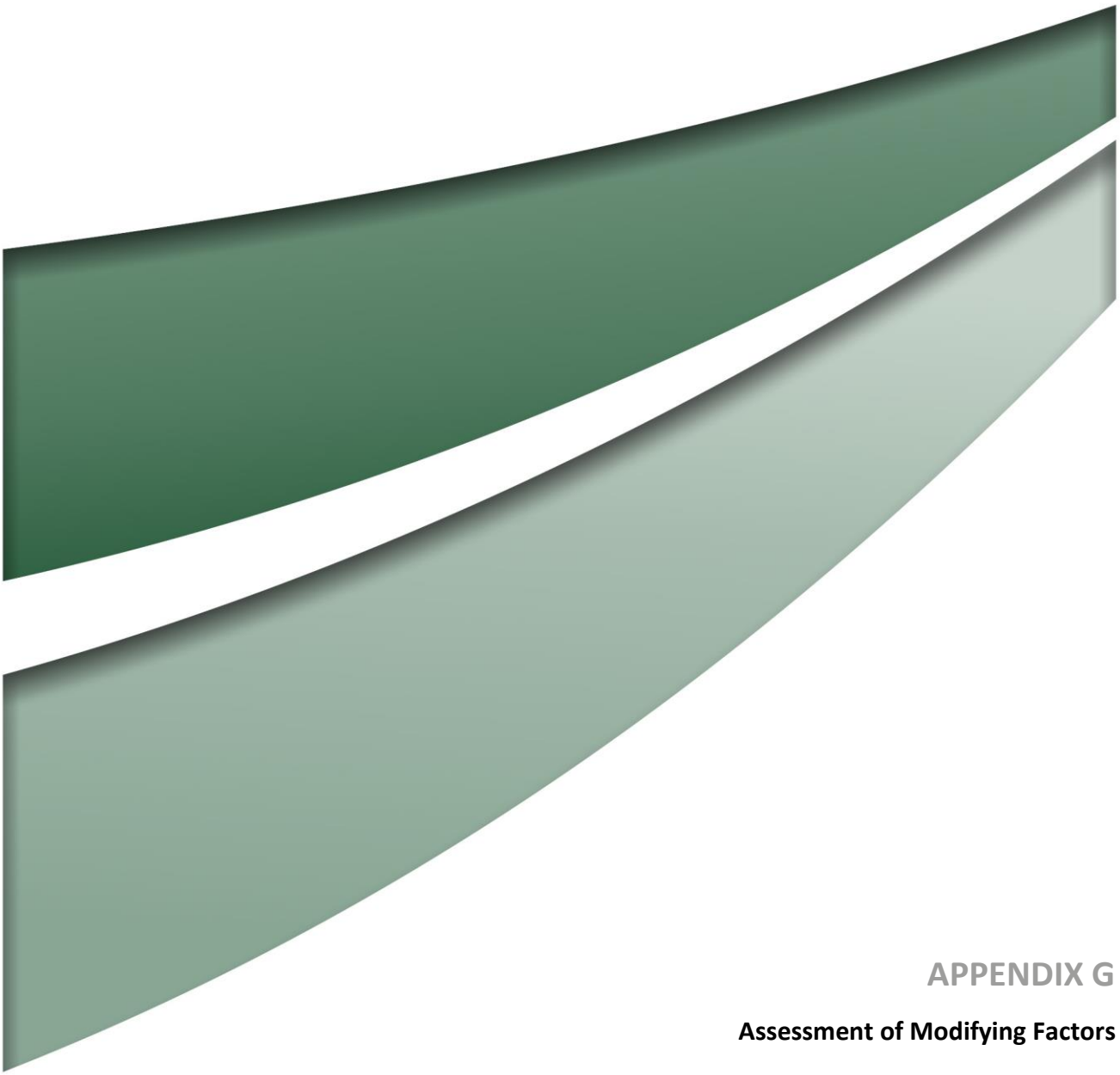
Receiver ID/Receiver Area	Sleep Disturbance Noise Goal		Year 1		Year 6		Year 13		Year 18	
	LAeq,15min	LAFmax	LAeq,15min	LAFmax	LAeq,15min	LAFmax	LAeq,15min	LAFmax	LAeq,15min	LAFmax
41 - Area 1	40	52	< 30	< 30	< 30	< 30	31	31	< 30	< 30
42 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
43 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
44a - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
44b - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
45 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
46 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
47 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
48 - Area 1	40	52	< 30	< 30	< 30	< 30	31	31	< 30	< 30
49 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
50 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
51 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
52 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
53 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
54 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
55 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
56a - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
56b - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
57 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
58 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
59 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
60 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
61 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30

Receiver ID/Receiver Area	Sleep Disturbance Noise Goal		Year 1		Year 6		Year 13		Year 18	
	LAeq,15min	LAFmax	LAeq,15min	LAFmax	LAeq,15min	LAFmax	LAeq,15min	LAFmax	LAeq,15min	LAFmax
62 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
178 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
210 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
211 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
212 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
213 - Area 1	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
15a - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
15b - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
17a - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
17b - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
63a - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
73 - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
74 - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
83 - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
85 - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
86 - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
87 - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
88 - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
162b - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
259 - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
260 - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
350 - Area 2	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
13 - Area 4 North	40	52	< 30	< 30	30	30	32	32	< 30	< 30
14 - Area 4 North	40	52	< 30	< 30	30	30	31	31	< 30	< 30

Receiver ID/Receiver Area	Sleep Disturbance Noise Goal		Year 1		Year 6		Year 13		Year 18	
	LAeq,15min	LAFmax	LAeq,15min	LAFmax	LAeq,15min	LAFmax	LAeq,15min	LAFmax	LAeq,15min	LAFmax
19 - Area 4 North	40	52	< 30	< 30	< 30	< 30	33	33	30	30
21 - Area 4 North*	40	52	< 30	30	32	32	34	34	31	31
23 - Area 4 North*	40	52	< 30	31	32	32	34	34	30	30
10 - Area 4 South	40	52	< 30	30	32	32	32	32	< 30	< 30
11 - Area 4 South	40	52	< 30	< 30	32	32	33	33	< 30	< 30
12 - Area 4 South	40	52	< 30	< 30	< 30	< 30	31	31	< 30	< 30
93 - Area 4 South	40	52	< 30	< 30	31	31	32	32	< 30	< 30
94 - Area 4 South	40	52	< 30	< 30	31	31	32	32	< 30	< 30
95 - Area 4 South	40	52	< 30	< 30	31	31	33	33	< 30	< 30
112 - Area 4 South*	40	52	< 30	31	< 30	< 30	< 30	< 30	< 30	< 30
114 - Area 4 South*	40	52	< 30	34	< 30	< 30	30	31	< 30	< 30
89 - Area 5	40	52	< 30	< 30	30	30	31	31	< 30	< 30
91 - Area 5	40	52	< 30	< 30	31	31	33	33	< 30	< 30
92 - Area 5	40	52	< 30	< 30	31	31	32	32	< 30	< 30
98 - Area 5	40	52	< 30	< 30	30	30	31	31	< 30	< 30
99 - Area 5	40	52	< 30	< 30	30	30	32	32	< 30	< 30
100 - Area 5	40	52	< 30	< 30	30	30	32	32	< 30	< 30
4 - Area 7*	40	52	< 30	33	32	32	34	34	31	31
5 - Area 7*	40	52	< 30	31	33	33	33	33	< 30	< 30
7a - Area 7	40	52	< 30	31	31	31	33	33	30	30
7b - Area 7	40	52	< 30	31	31	31	33	33	< 30	< 30
7c - Area 7	40	52	< 30	< 30	31	31	33	33	< 30	< 30
105 - Area 7*	40	52	< 30	33	32	32	34	34	31	31
152 - Area 8 West*	45	55	38	44	38	42	38	38	32	32

Receiver ID/Receiver Area	Sleep Disturbance Noise Goal		Year 1		Year 6		Year 13		Year 18	
	LAeq,15min	LAFmax	LAeq,15min	LAFmax	LAeq,15min	LAFmax	LAeq,15min	LAFmax	LAeq,15min	LAFmax
154 - Area 8 West*	45	55	37	45	38	42	37	37	31	32
155 - Area 8 West*	45	55	37	45	38	41	36	37	31	31
156 - Area 8 West*	45	55	30	47	32	43	31	31	< 30	< 30
111 - Area 8 East*	45	55	34	35	36	36	37	37	31	31
127a - Area 8 East*	45	55	36	40	36	37	37	37	32	32
127b - Area 8 East*	45	55	< 30	38	30	37	30	30	< 30	< 30
127c - Area 8 East*	45	55	35	46	35	42	34	34	30	31
127d - Area 8 East*	45	55	35	44	36	40	36	36	31	32
143 - Area 8 East*	45	55	36	44	38	41	37	37	32	32
149 - Area 9	-	-	35	35	37	37	37	37	31	31
150 - Area 9*	45	55	38	43	37	40	37	37	31	31
144a - Area 10*	42	52	31	32	35	35	35	35	< 30	< 30
145 - Area 10*	42	52	34	35	36	36	35	35	30	30
133 - Area 11	40	52	< 30	< 30	< 30	< 30	34	34	32	32
134 - Area 11	40	52	< 30	< 30	< 30	< 30	32	32	30	30
135 - Area 11	40	52	< 30	< 30	< 30	< 30	32	32	30	30
136 - Area 11	40	52	< 30	< 30	< 30	< 30	32	32	30	30
137d - Area 11	40	52	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
138 - Area 11	40	52	< 30	< 30	< 30	< 30	32	32	< 30	< 30

* Receiver subject to acquisition



APPENDIX G

Assessment of Modifying Factors

Appendix G – Assessment of Modifying Factors

Fact Sheet C of the NSW *Noise Policy for Industry* (NPfI) (EPA 2017) notes that noise sources containing characteristics such as tonality, impulsiveness, intermittency, irregularity or dominant low frequencies can cause greater annoyance than other noise at the same noise level.

Where the noise source contains annoying characteristics, the NPfI outlines the correction factors that should be applied to the noise from the source measured or predicted at the receiver before comparison with the Project Noise Trigger Level (PNTL).

The modifying factors that are potentially relevant to the assessment of the Project are:

- Tonal noises with prominent frequency determined according to the following criteria:
  - Level of one-third octave band exceeds the level of the adjacent bands on both sides by:
    - 5 dB or more if the centre frequency of the band containing the tone is above 400 Hz;
    - 8 dB or more if the centre frequency of the band containing the tone is 160 to 400 Hz inclusive;
    - 15 dB or more if the centre frequency of the band containing the tone is below 160 Hz.
- Low frequency determined according to the following criteria:
  - Compare the predicted dB(A) and dB(C), if the difference is than 15 dB and
    - If the Low Frequency Threshold (NPfI Table C2) is exceeded by up to 5 dB and cannot be mitigated, a 2 dB penalty is applicable during the evening and night-time.
    - If the Low Frequency Threshold (NPfI Table C2) is exceeded by more than 5 dB and cannot be mitigated, a 5 dB penalty is applicable during the evening and night-time or a 2 dB penalty during the daytime.
- Intermittent noise applied to night-time only:
  - Subjectively assessed where the noise level varies by more than 5 dB.
- Duration:
  - Measured as a single-event noise where the duration may range from 1.5 minutes to 2.5 hours over any 24-hour period.

The NPfI states that the modifying factors are to be applied to the noise from the source measured or predicted at the receiver and before comparison with the criteria. Where two or more modifying factors are present, the maximum correction is limited to 10 dB. However, the NPfI also notes that where a source emits tonal and low frequency noise, only one 5 dB correction should be applied if the tone is in the low-frequency range.

Noise Modelling

The noise model for the Project was prepared on the basis that equipment generating noise in the potentially audible range of 25 to 20,000 Hz range is well maintained. Failure to replace damaged mufflers, acoustic louvres and associated attenuation equipment could result in the generation of unacceptable tonal or low frequency noises. Notwithstanding this, each item of equipment used in the ENM noise model of the Project was assessed for tonal noise and low frequency noise in accordance with the procedure outlined in the NPfI. While the NPfI provides guidance for the assessment of tonal and low frequency noise, three important additional factors need to be considered:

- Air attenuation over distance reduces the high frequency noises. The contribution air makes to the absorption of high frequency sound is a function of air temperature, humidity, and frequency. It is reasonable to conclude that if a high frequency noise is inaudible due to the distance from the source then it should not be included in the tonal noise assessment described above.

- There is a threshold to the audibility of low frequency noises that the human ear can detect. As with the high frequency noises, if low frequency noises are inaudible, it is reasonable to conclude that they should not be included in the low frequency noise assessment described above. The threshold of audibility is defined in *AS ISO 389.7 2003 'Acoustics- Reference zero for the calibration of audiometric equipment Part 7: Reference threshold of hearing under free-field and diffuse field listening conditions'*.

- The modelling software used for the Noise Impact Assessment does not consider 1/3 octave frequencies below 25Hz and so analysis of the low frequency noise below 25 Hz against NPfI Table C2 is not possible. Analysis of monitoring data from continuous real-time monitoring units indicates the 10 Hz to 20 Hz frequency range is only 10 to 20 dB above the measured 25 Hz sound pressure level during noise-enhancing conditions. This relationship has been used as a guide in the analysis of the low frequency noise component below 25Hz.

Based on the above, for each predicted noise result an analysis of audibility, as defined by AS ISO 389.7 2003, is made against each one-third octave band down to 25 Hz. Where the predicted noise result for an octave band was found to be inaudible the octave band noise result is excluded from the assessment of tonality and low frequency noise.

The tonal assessments of the predicted noise levels at example receiver locations under the NPfI default worst case meteorological conditions (3°C/100 m inversion with 2 m/s drainage flow from the north-west) are presented in **Figures G.1** to **G.39** for receiver locations where the predicted noise level is greater than 30 dBA as a selection of the receivers most potential to be affected by tonal and low frequency noise.

Low Frequency Noise Assessment

Low frequency analysis of the noise levels at the receivers shows that the difference between C-weighted and A-weighted noise levels is greater the 15 dB at selected locations, however the predicted noise levels do not exceed the reference curve and therefore penalties for low frequency noise are not applicable in accordance with the NPfI.

For the receivers listed in **Tables G.1** to **G.4**, the following is noted (refer to example locations in **Figures G.1** to **G.39**) with regard to the predicted noise levels:

- The predicted noise levels are generally within a few dB of the background noise environment.

- The predicted noise levels comprise of noise only in the range of 25 Hz to 2,000 Hz (i.e. almost entirely made up of low frequency noise in the range of 50 to 1,250Hz). This is due to the combined effects of distance attenuation and noise attenuation applied at the source rendering the high frequency components inaudible.

- Generally, the predicted Linear-weighted low frequency noise analysis comprises frequencies below 160Hz. These in turn combine to make up the largest component of the combined single number C-weighted result. This provides a C-weighted predicted noise level which is relatively high compared to the A-weighted noise level but that is not always audible to the human ear.

- The 10 Hz to 20 Hz frequency range has been assessed as 10 to 20 dB above the predicted 25 Hz sound pressure level. The predicted noise levels do not exceed the NPfI reference curve when the 10 Hz to 20 Hz frequency range are included in the assessment.

- The predicted noise levels shown are for worst-case NPfI meteorological conditions.

The predicted noise levels shown are due to the Project only and do not consider the masking effect of the background noise environment. The NPfI states that in examining results in relation to the assessment of modifying factors that 'noise from all sources, individually and in combination, that contribute to the total noise at a site' should be considered. Given the predicted noise levels are relatively low compared to the background noise environment, with consideration of the masking effect of the background noise environment, it is unlikely that the predicted low frequency noise levels from the Project would be overly intrusive or cause greater annoyance than that of the full spectrum analysis. It is also noted that source identification in the 10 Hz to 20 Hz frequency range is difficult as these frequencies are less audible to the human ear and, if audible, source orientation for frequencies below 80 Hz can be difficult.

Table G.1 Year 1 night time predicted NPfI low frequency modifying factors under 3°C/100 m inversion with a 2 m/s drainage flow from the north-west (where predicted LAeq,15min > 30dBA)

Receiver ID	Predicted Noise Level dB(A)	Predicted Noise Level dB(C)	dB(C) minus dB(A)	Predicted Noise Level Exceed LF Threshold[1]?	Penalty Applicable?
2	32	47	15	No	No
111*	34	48	14	Not applicable	No
127a*	36	49	13	Not applicable	No
127c*	35	46	11	Not applicable	No
127d*	35	46	11	Not applicable	No
143*	36	48	12	Not applicable	No
144a*	31	44	13	Not applicable	No
145*	34	46	12	Not applicable	No
147*	35	50	15	No	No
149*	37	48	11	Not applicable	No
150*	38	49	11	Not applicable	No
152*	38	50	12	Not applicable	No
154*	37	49	12	Not applicable	No
155*	37	49	12	Not applicable	No
342	39	49	10	Not applicable	No

Note [1] NPfI Table C2 low frequency threshold
* receiver subject to acquisition

Table G.2 Year 6 night time predicted NPfI low frequency modifying factors under 3°C/100 m inversion with a 2 m/s drainage flow from the north-west (where predicted LAeq,15min > 30dBA)

Receiver ID	Predicted Noise Level dB(A)	Predicted Noise Level dB(C)	dB(C) minus dB(A)	Predicted Noise Level Exceed LF Threshold[1]?	Penalty Applicable?
2	34	49	15	No	No
4*	32	45	13	Not applicable	No
5*	32	47	15	No	No
6	30	45	15	No	No
7a	31	45	14	Not applicable	No
7b	31	45	14	Not applicable	No
7c	30	45	15	No	No
10	32	46	14	Not applicable	No
11	31	45	14	Not applicable	No
21*	32	45	13	Not applicable	No
23*	31	44	13	Not applicable	No
91	31	47	16	No	No
92	30	45	15	No	No
93	31	45	14	Not applicable	No
94	30	45	15	No	No
95	31	47	16	No	No
105*	31	44	13	Not applicable	No
111*	36	50	14	Not applicable	No
127a*	36	49	13	Not applicable	No
127c*	34	46	12	Not applicable	No
127d*	35	46	11	Not applicable	No
143*	38	49	11	Not applicable	No
144a*	35	49	14	Not applicable	No
145*	35	50	15	No	No
147*	36	51	15	No	No
149	36	49	13	Not applicable	No
150*	37	49	12	Not applicable	No
152*	38	50	12	Not applicable	No
154*	38	49	11	Not applicable	No
155*	38	49	11	Not applicable	No
156*	31	44	13	Not applicable	No
342	48	57	9	Not applicable	No

Note [1] NPfI Table C2 low frequency threshold
* receiver subject to acquisition

Table G.3 Year 13 night time predicted NPfI low frequency modifying factors under 3°C/100 m inversion with a 2 m/s drainage flow from the north-west (where predicted LAeq,15min > 30dBA)

Receiver ID	Predicted Noise Level dB(A)	Predicted Noise Level dB(C)	dB(C) minus dB(A)	Predicted Noise Level Exceed LF Threshold[1]?	Penalty Applicable?
2	34	49	15	No	No
4*	33	47	14	Not applicable	No
5*	33	48	15	No	No
6	32	48	16	No	No
7a	33	48	15	No	No
7b	32	48	16	No	No
7c	32	47	15	No	No
10	31	46	15	No	No
11	32	47	15	No	No
13	31	45	14	Not applicable	No
14	31	46	15	No	No
19	32	45	13	Not applicable	No
21*	33	47	14	Not applicable	No
23*	33	47	14	Not applicable	No
91	32	49	17	No	No
92	31	47	16	No	No
93	31	46	15	No	No
94	31	47	16	No	No
95	32	48	16	No	No
98	31	48	17	No	No
99	32	48	16	No	No
100	32	49	17	No	No
105*	33	47	14	No	No
111*	37	52	15	Not applicable	No
127a*	36	50	14	Not applicable	No
127c*	33	46	13	Not applicable	No
127d*	35	48	13	Not applicable	No
143*	36	49	13	Not applicable	No
144a*	35	50	15	No	No
145*	35	50	15	No	No
147*	36	51	15	No	No
149	35	47	12	Not applicable	No
150*	36	50	14	Not applicable	No
152*	37	50	13	Not applicable	No
154*	37	50	13	Not applicable	No
155*	36	49	13	Not applicable	No
156*	31	44	13	Not applicable	No
342	49	59	10	Not applicable	No

Note [1] NPfI Table C2 low frequency threshold
* receiver subject to acquisition

Table G.4 Year 18 night time predicted NPfI low frequency modifying factors under 3°C/100 m inversion with a 2 m/s drainage flow from the north-west (where predicted LAeq,15min > 30dBA)

Receiver ID	Predicted Noise Level dB(A)	Predicted Noise Level dB(C)	dB(C) minus dB(A)	Predicted Noise Level Exceed LF Threshold[1]?	Penalty Applicable?
4*	31	45	14	Not applicable	No
21*	31	45	14	Not applicable	No
23*	30	44	14	Not applicable	No
105*	31	44	13	Not applicable	No
111*	31	47	16	No	No
127a*	32	47	15	No	No
127c*	30	43	13	Not applicable	No
127d*	32	46	14	Not applicable	No
143*	32	46	14	Not applicable	No
147*	31	47	16	No	No
149	30	45	15	No	No
150*	31	47	16	No	No
152*	32	47	15	No	No
154*	32	46	14	Not applicable	No
155*	31	45	14	Not applicable	No
342	48	57	9	Not applicable	No

Note 1: NPfI Table C2 low frequency threshold
* receiver subject to acquisition

Tonal Noise Assessment

The ENM noise models incorporated over 100 1/3 octave noise sources per model. The tonal noises that can be generated by the Project would emanate from:

- reversing beepers on mobile equipment
- alarms and sirens
- 50 Hz drives associated with rotating machinery
- mechanical gearbox gear noise on drives
- hydraulics systems.

While individually these noise sources may be observed to have tonal aspects in close proximity to the equipment, the cumulative sound power attributable to the Project would not typically have tonal noises that exceed the criteria set out in the NPfI.

The results of the analysis in **Figures G.1** to **G.39** show that the noise generated at the source by the cumulative sound power attributable to the mining operation does not exceed the tonal noise criteria set out in the NPfI.

Assessment for Impulsive or Intermittent Noise and Single-event Duration

As a 24 hour per day, 7 day per week operation the Project would not normally generate noises that are impulsive or intermittent in character or give rise to short duration single-event noises.

Assessment of Predicted Noise Levels

Based on the analysis of the modifying factors that are potentially relevant to the noise impact assessment of the Project, a modifying factor correction does not need to be applied to the predicted noise levels.

References

Australian Standard ISO 389.7 2003 *Acoustics- Reference zero for the calibration of audiometric equipment Part 7: Reference threshold of hearing under free-field and diffuse field listening conditions*

Department of Planning 2013. *NSW Draft Guideline: Mining. Noise Monitoring Application Note.*

NSW Environment Protection Authority 2017. *New South Wales Noise Policy for Industry*.

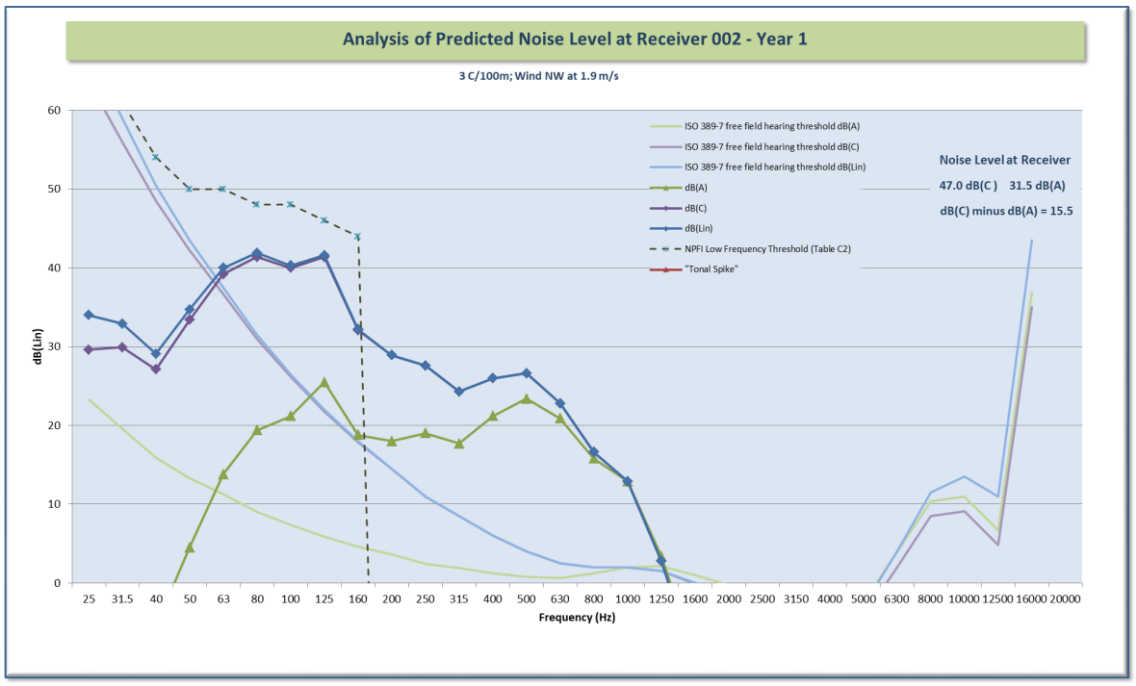


Figure G.1 Tonal and Low Frequency Analysis of at Receiver 2 Year 1

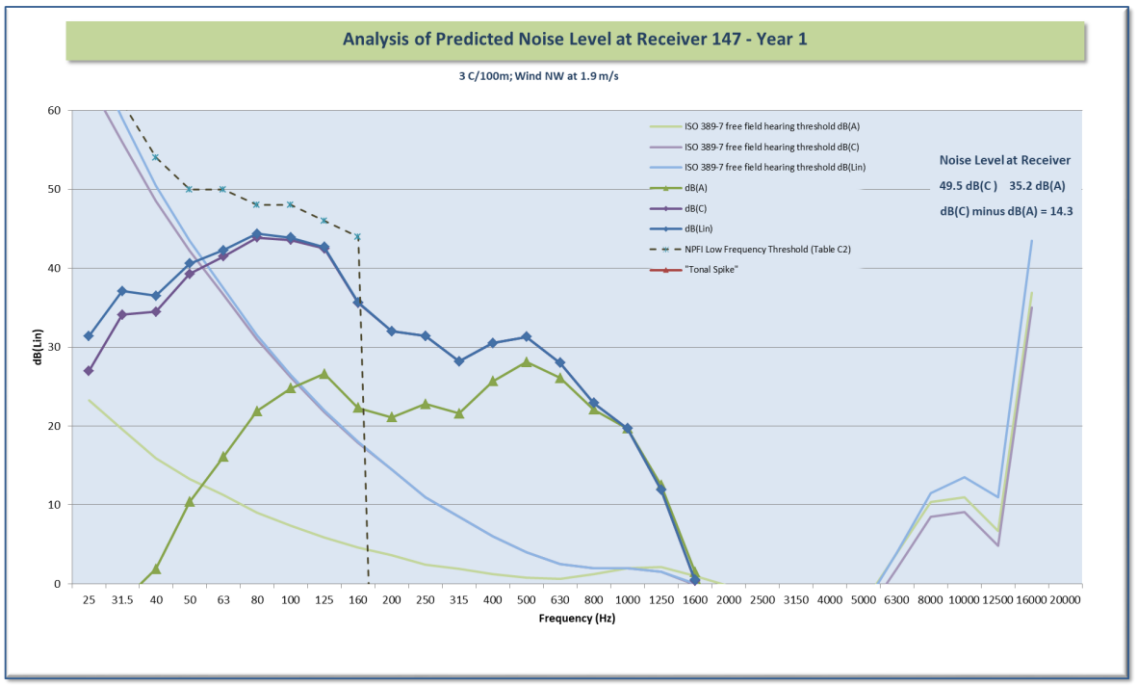


Figure G.2 Tonal and Low Frequency Analysis of at Receiver 147 Year 1

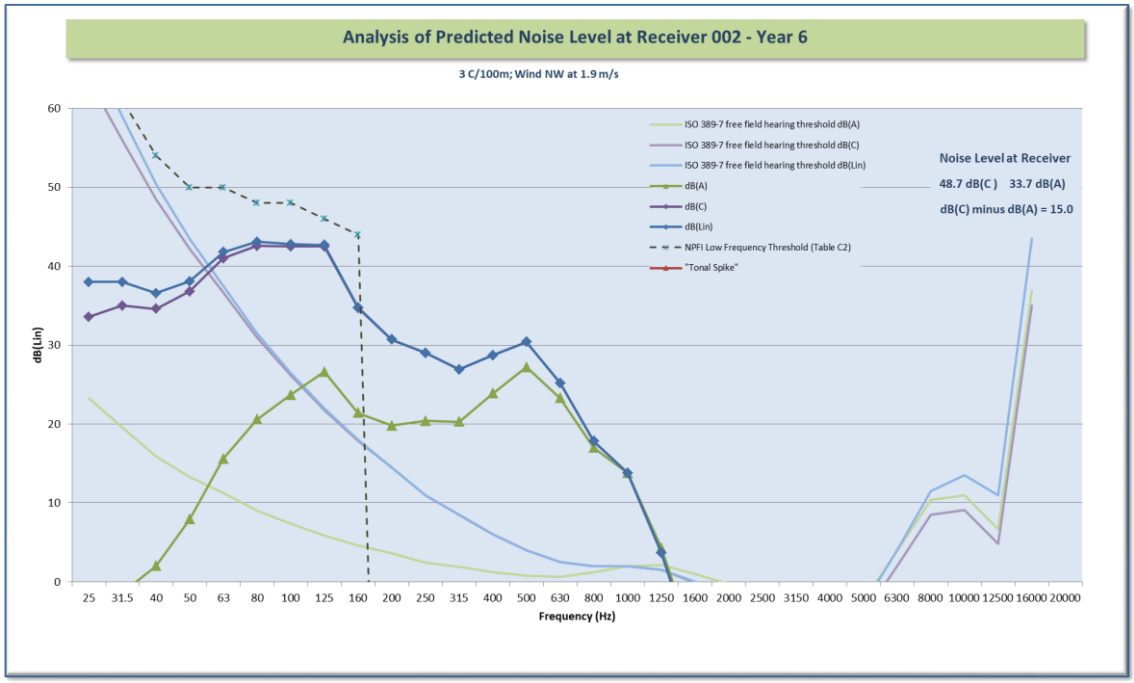


Figure G.3 Tonal and Low Frequency Analysis of at Receiver 2 Year 6

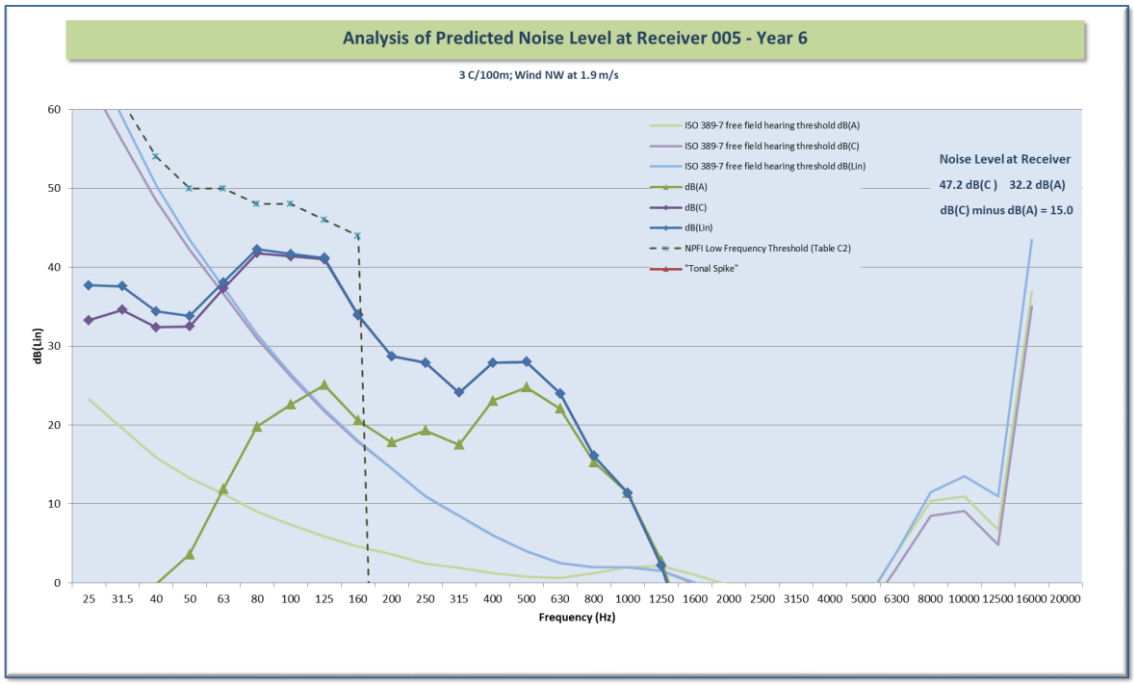


Figure G.4 Tonal and Low Frequency Analysis of at Receiver 5 Year 6

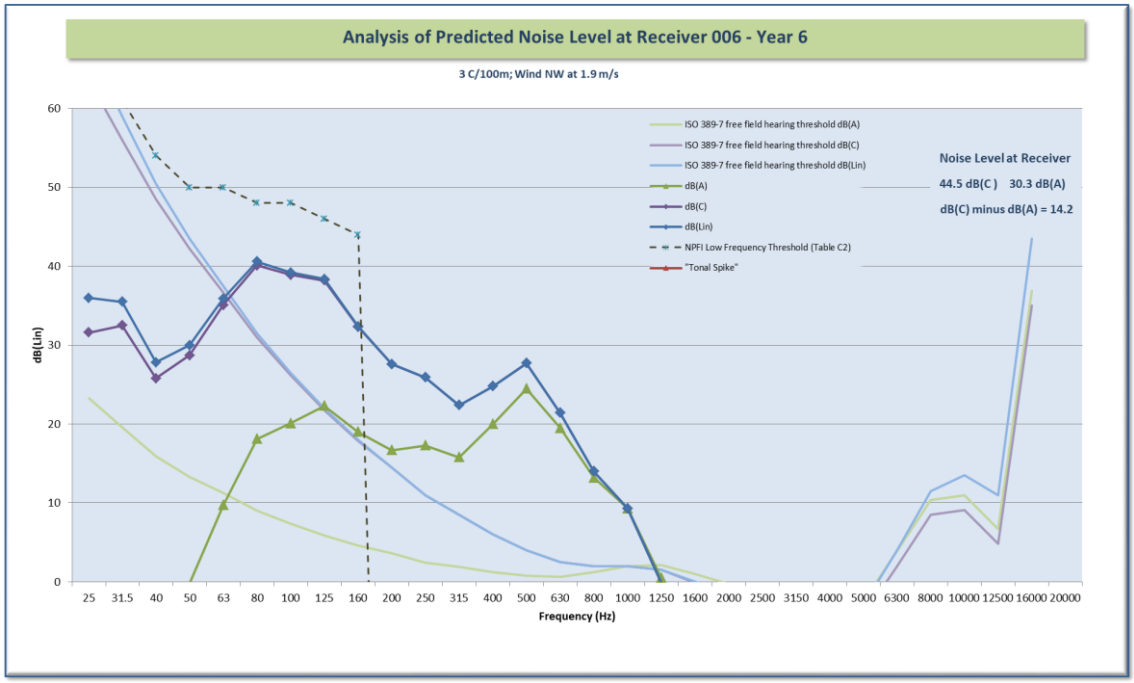


Figure G.5 Tonal and Low Frequency Analysis of at Receiver 6 Year 6

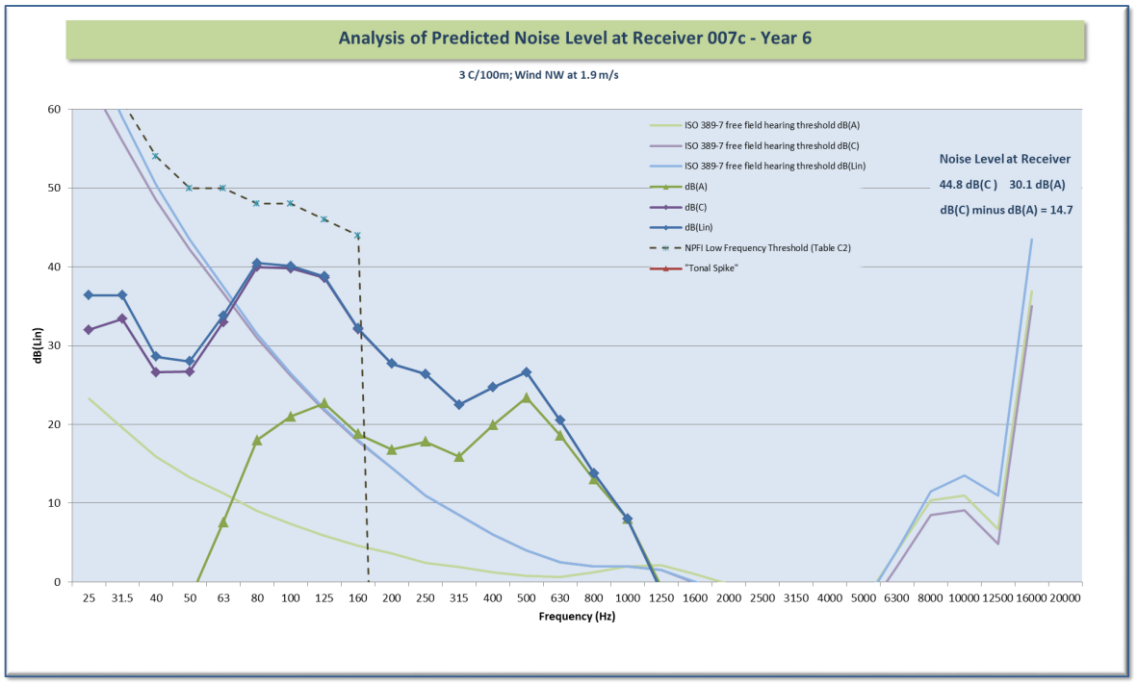


Figure G.6 Tonal and Low Frequency Analysis of at Receiver 7c Year 6

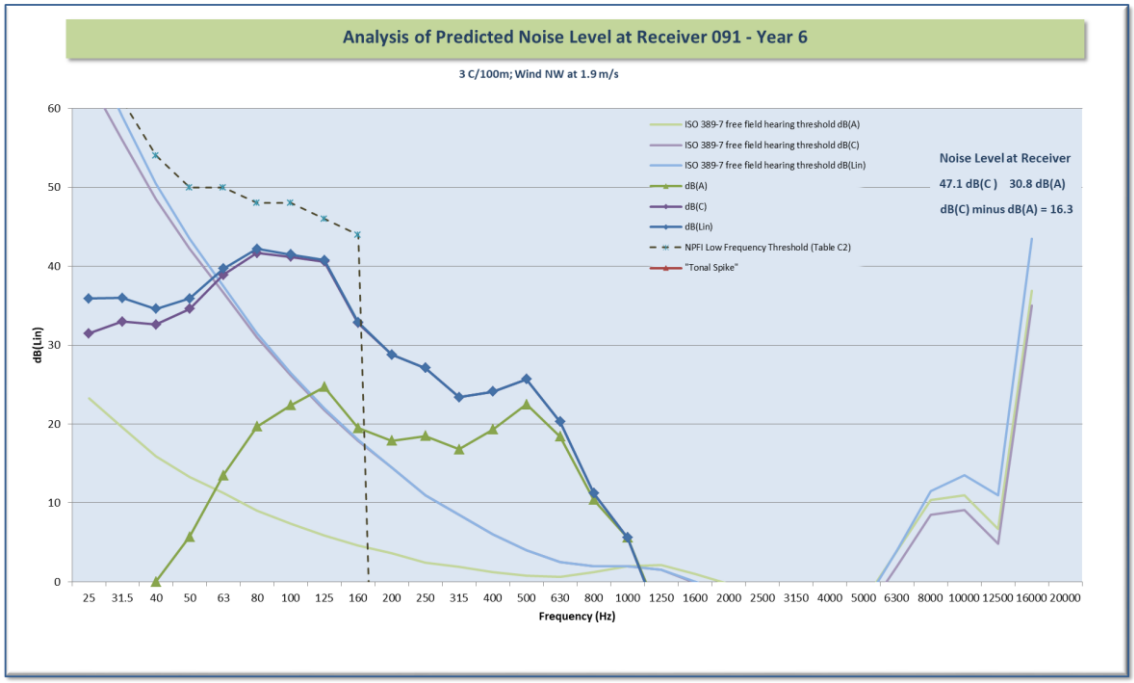


Figure G.7 Tonal and Low Frequency Analysis of at Receiver 91 Year 6

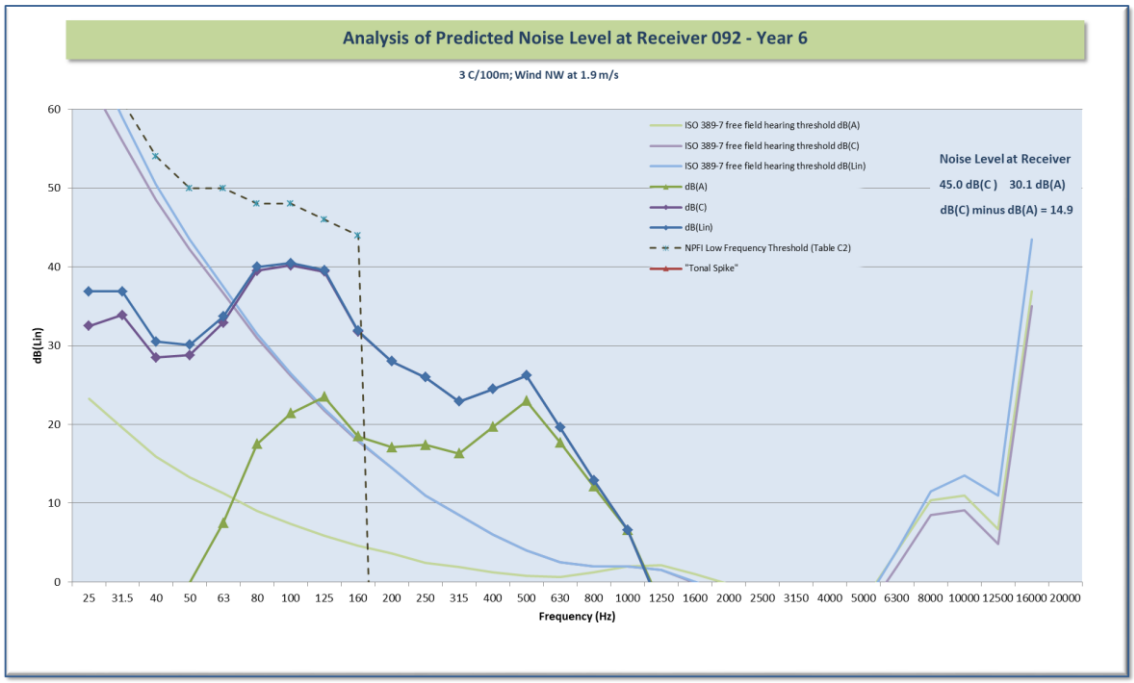


Figure G.8 Tonal and Low Frequency Analysis of at Receiver 92 Year 6

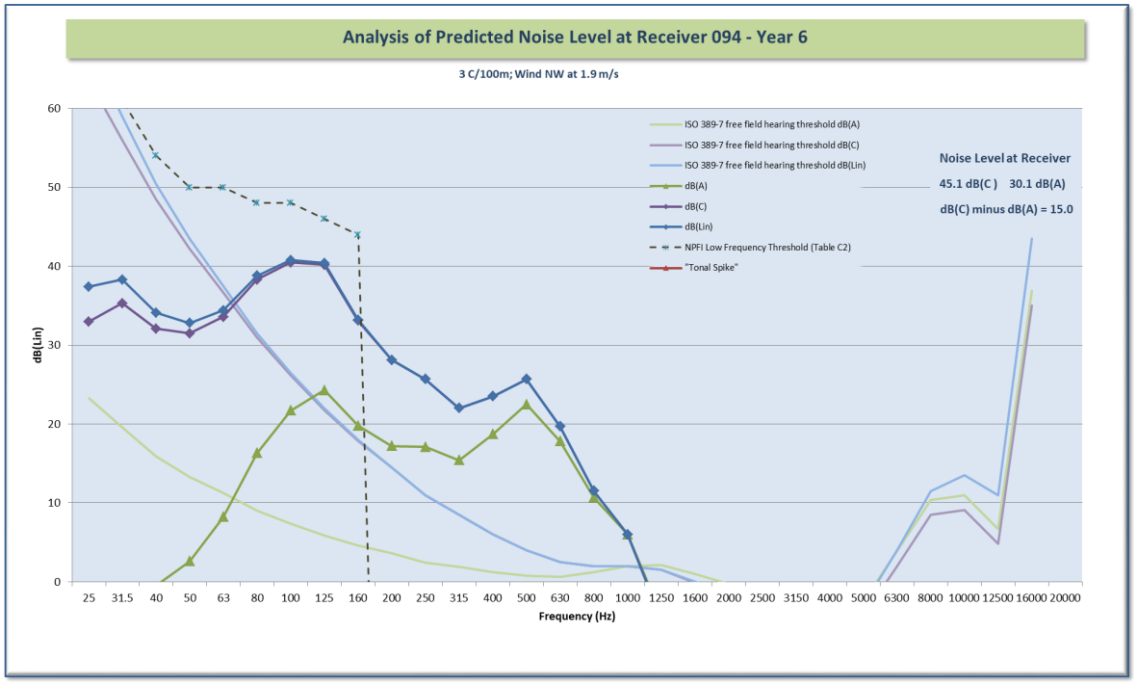


Figure G.9 Tonal and Low Frequency Analysis of at Receiver 94 Year 6

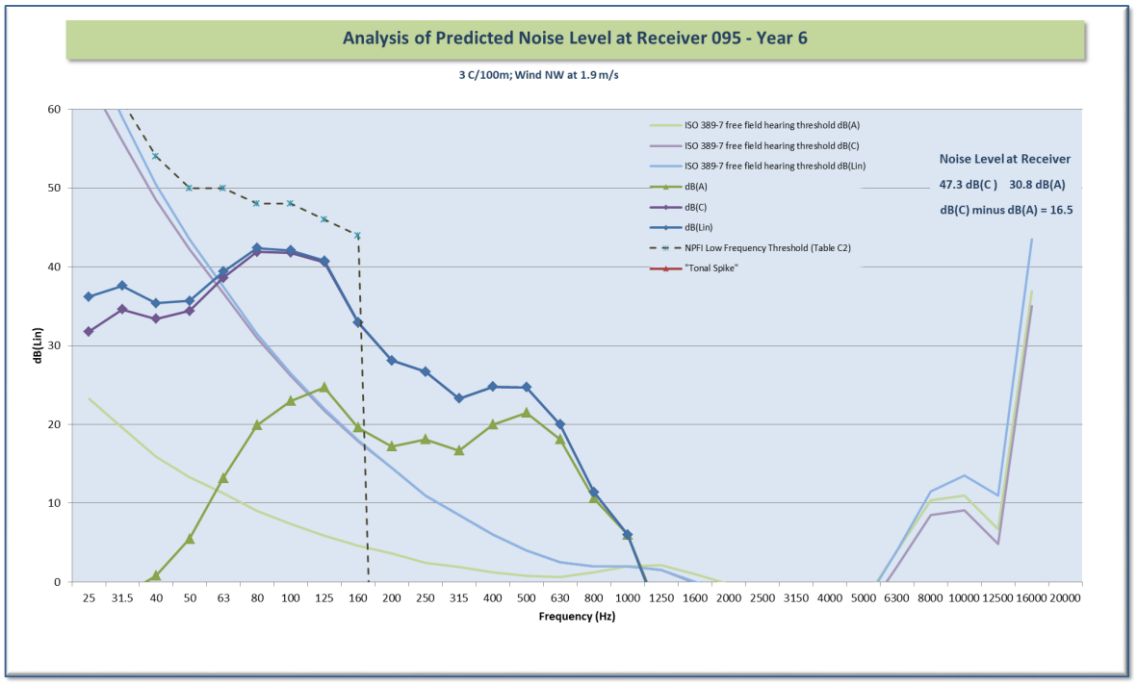


Figure G.10 Tonal and Low Frequency Analysis of at Receiver 95 Year 6

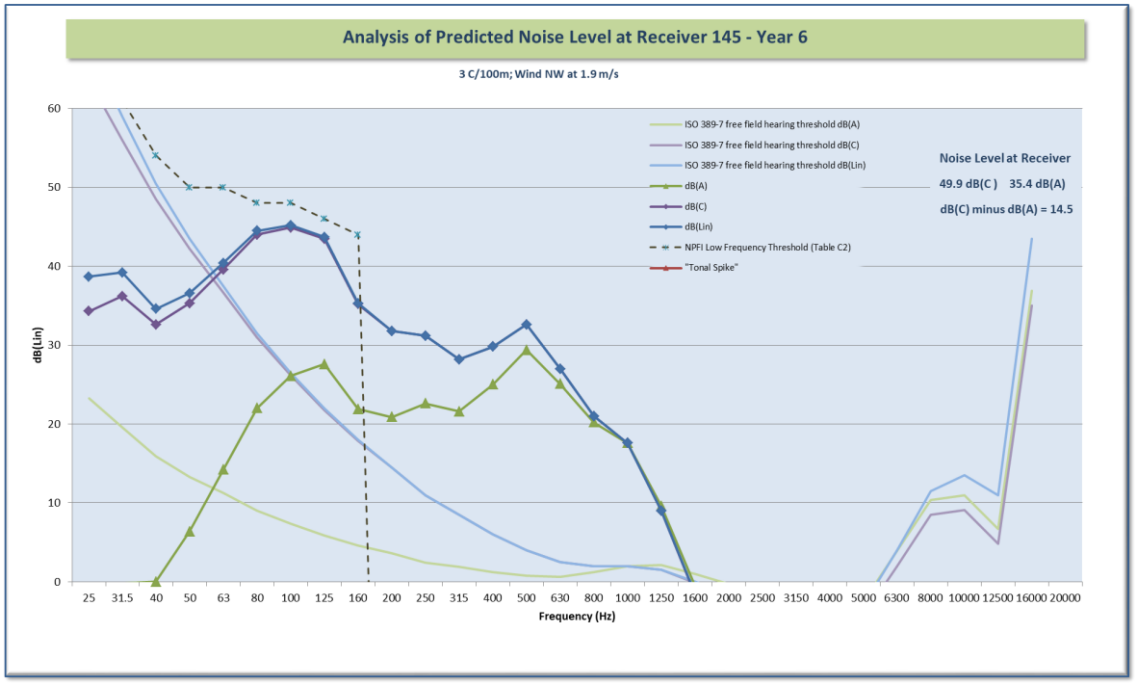


Figure G.11 Tonal and Low Frequency Analysis of at Receiver 145 Year 6

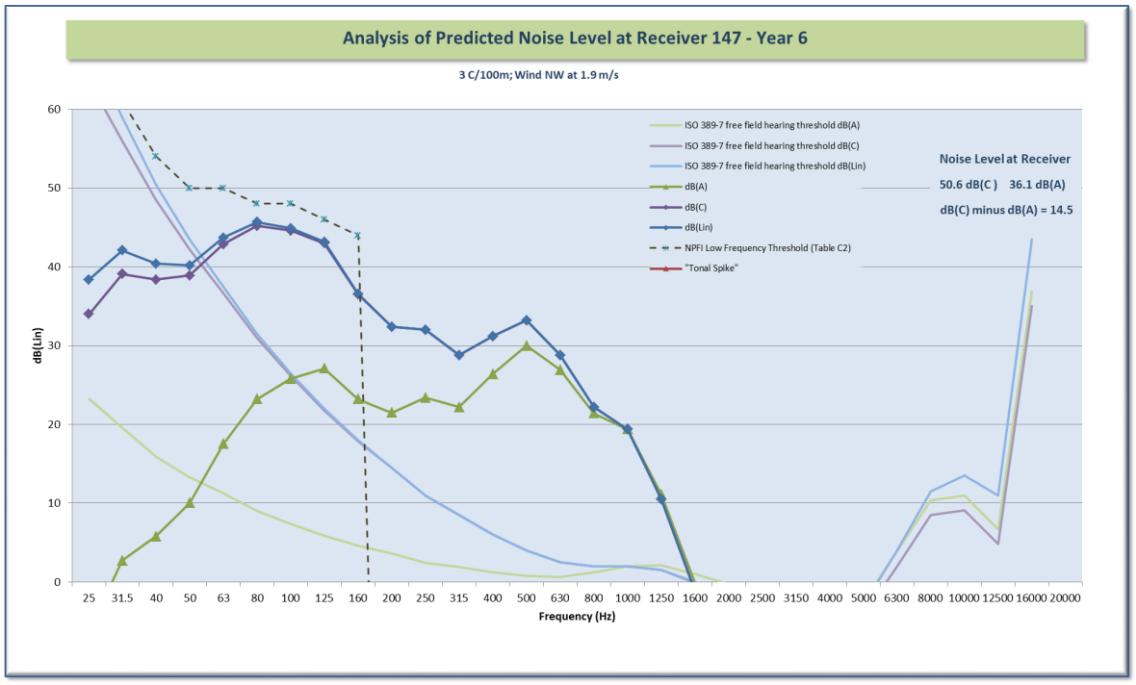


Figure G.12 Tonal and Low Frequency Analysis of at Receiver 147 Year 6

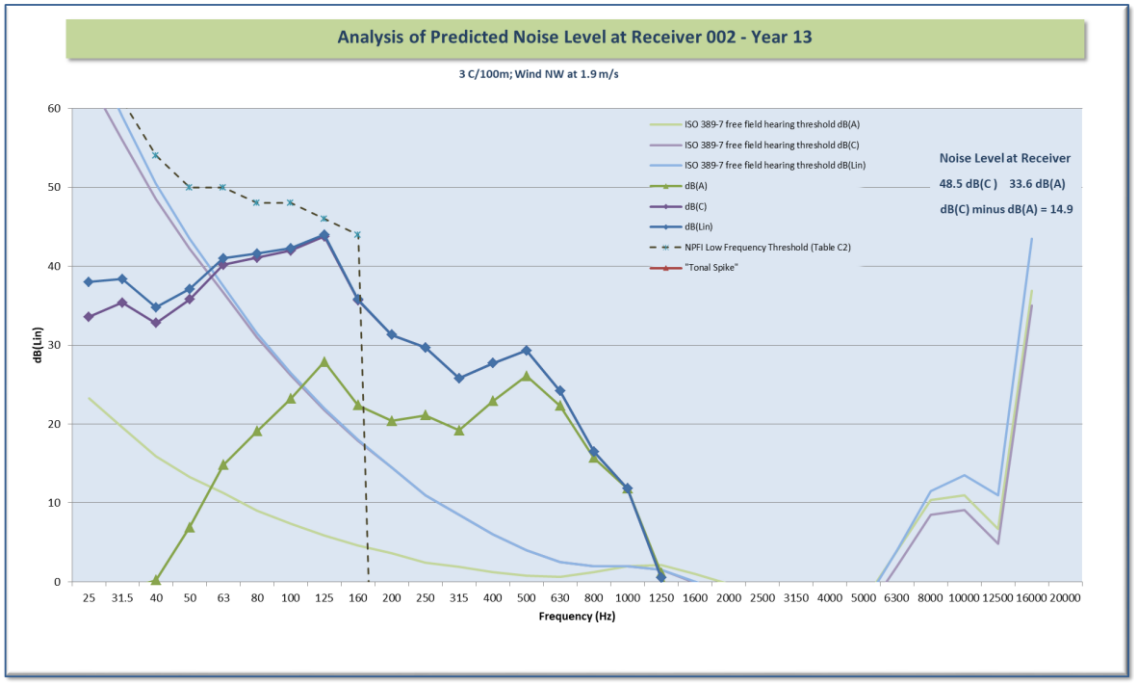


Figure G.13 Tonal and Low Frequency Analysis of at Receiver 2 Year 13

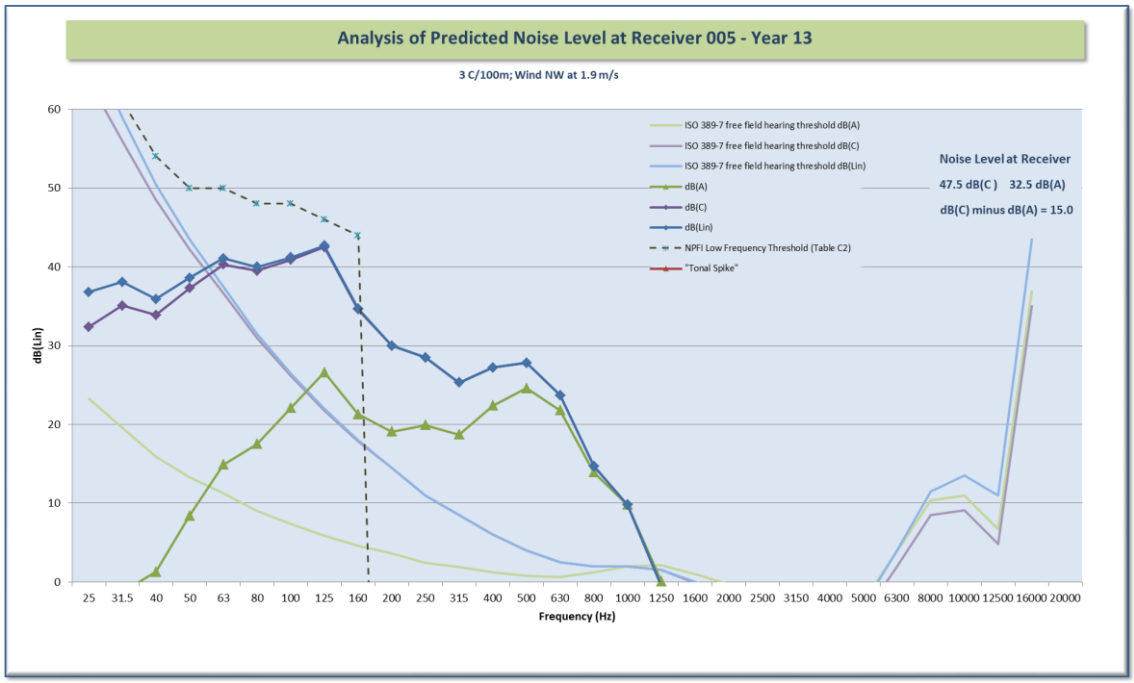


Figure G.14 Tonal and Low Frequency Analysis of at Receiver 5 Year 13

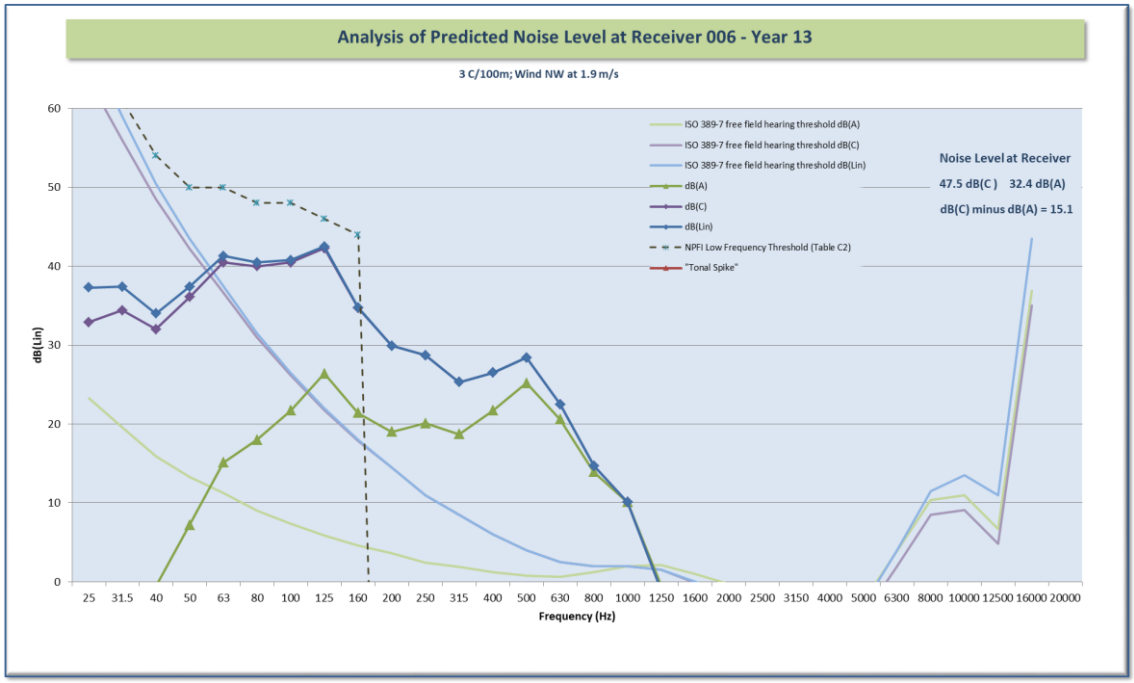


Figure G.15 Tonal and Low Frequency Analysis of at Receiver 6 Year 13

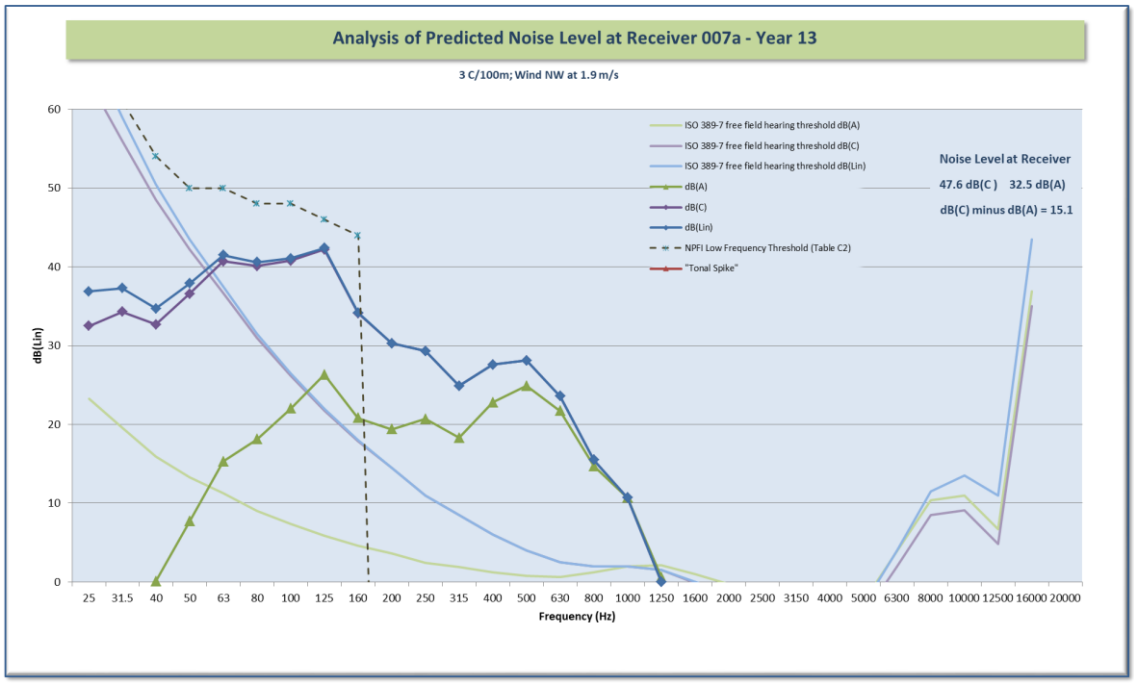


Figure G.16 Tonal and Low Frequency Analysis of at Receiver 7a Year 13

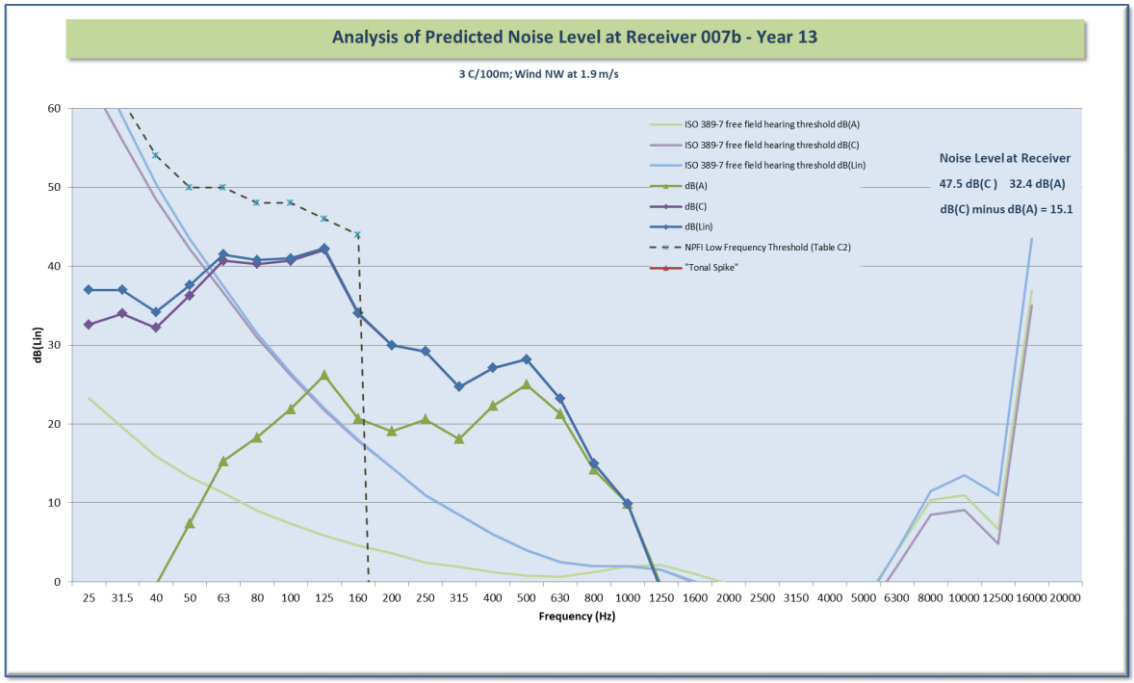


Figure G.17 Tonal and Low Frequency Analysis of at Receiver 7b Year 13

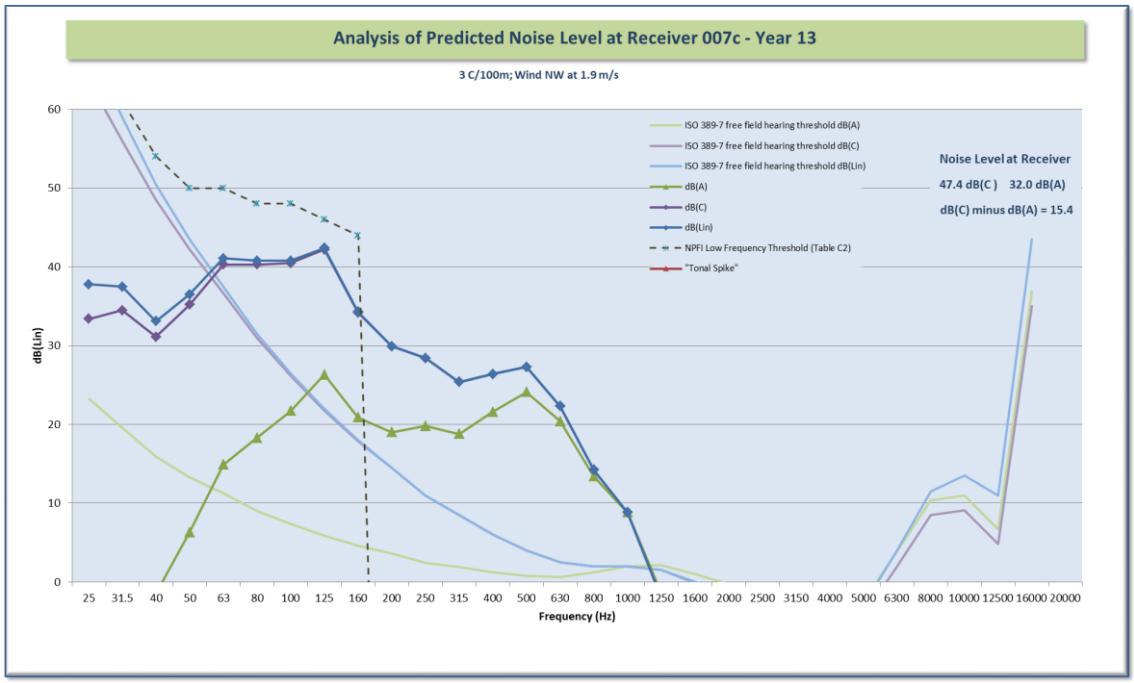


Figure G.18 Tonal and Low Frequency Analysis of at Receiver 7c Year 13

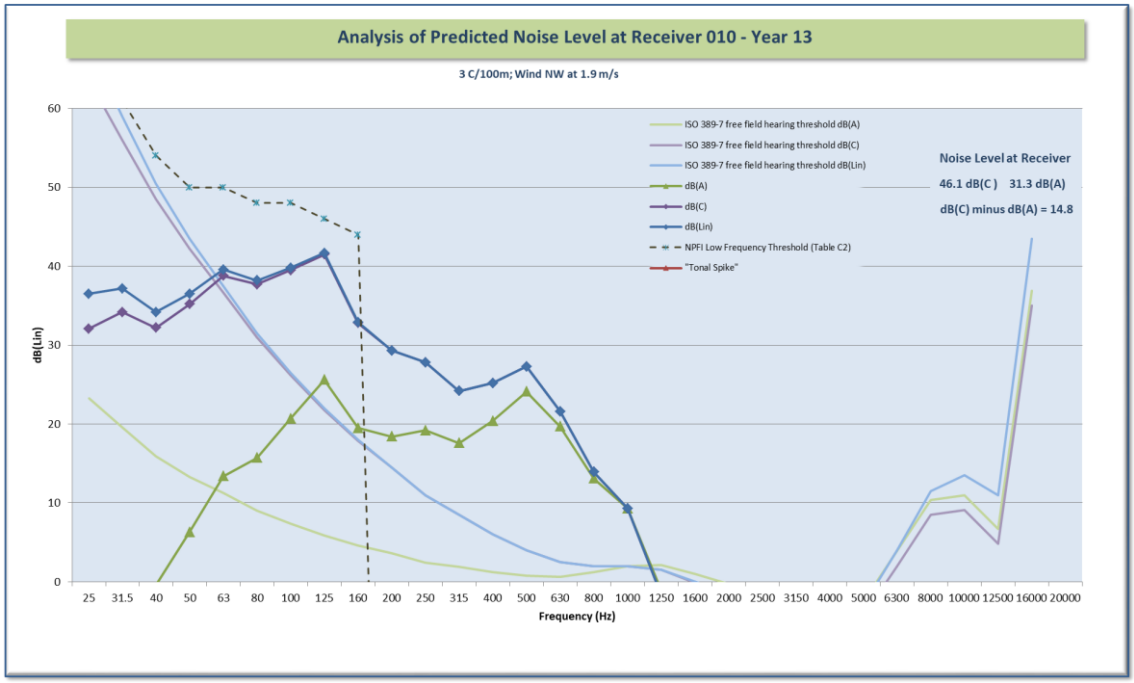


Figure G.19 Tonal and Low Frequency Analysis of at Receiver 10 Year 13

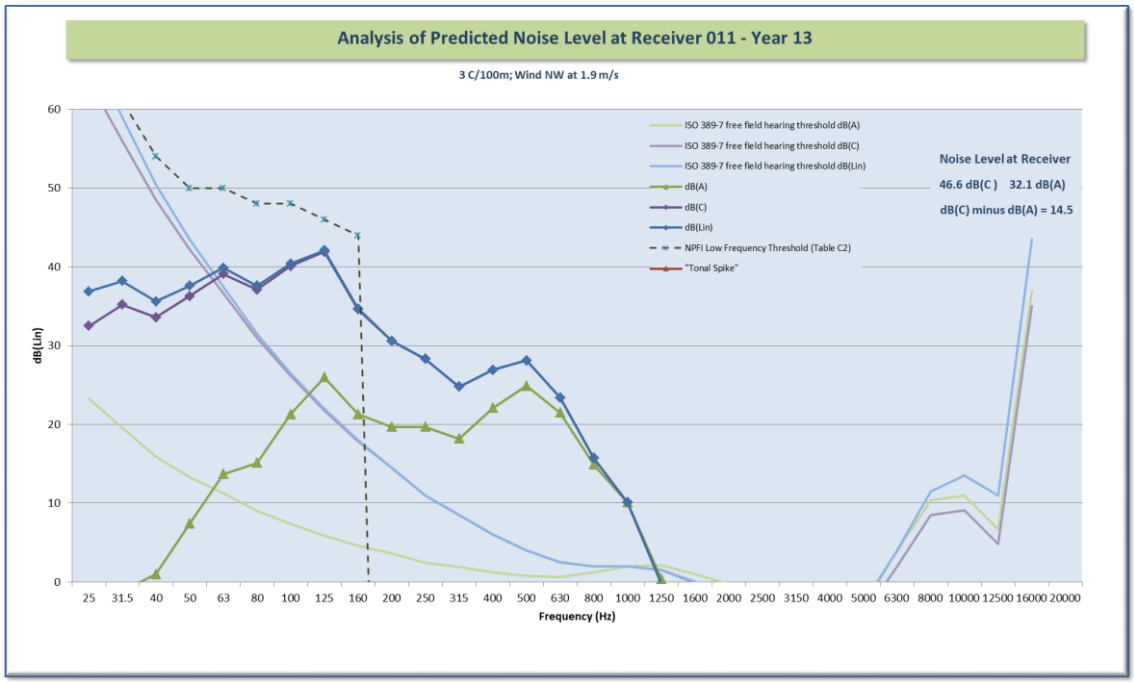


Figure G.20 Tonal and Low Frequency Analysis of at Receiver 11 Year 13

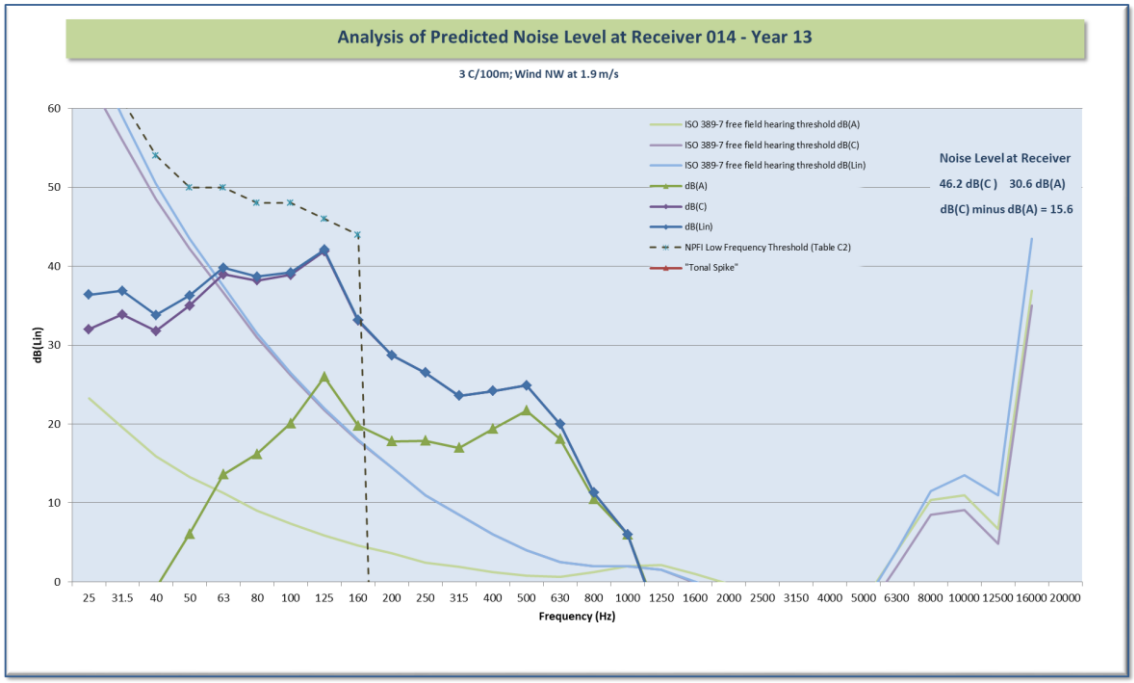


Figure G.21 Tonal and Low Frequency Analysis of at Receiver 14 Year 13

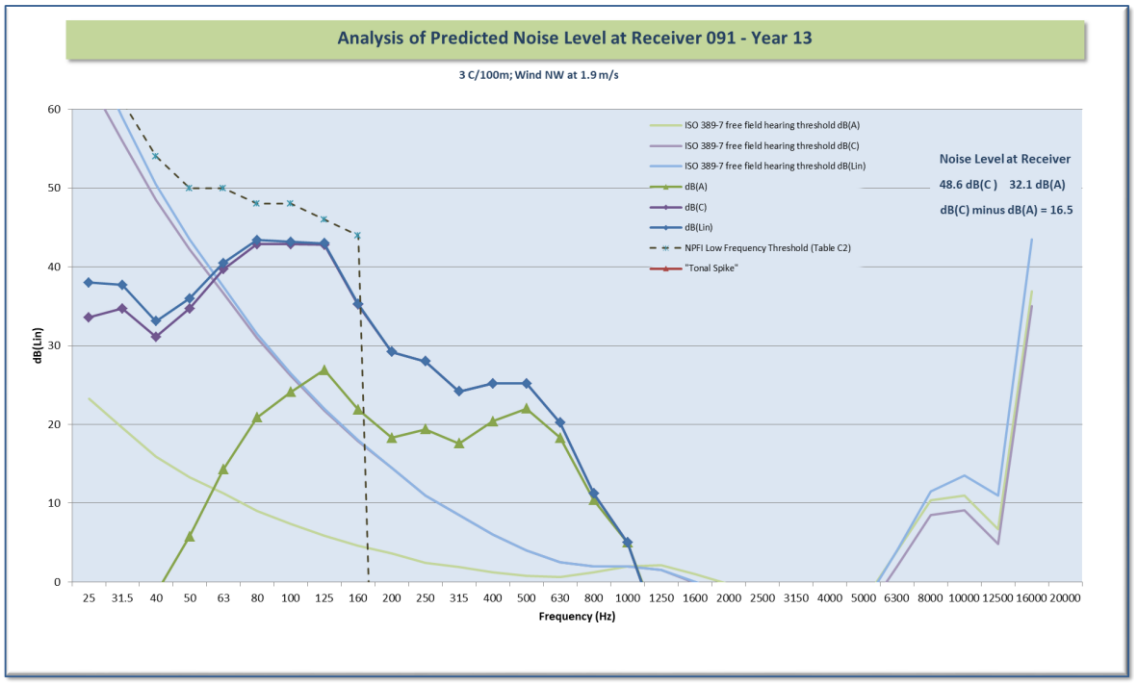


Figure G.22 Tonal and Low Frequency Analysis of at Receiver 91 Year 13

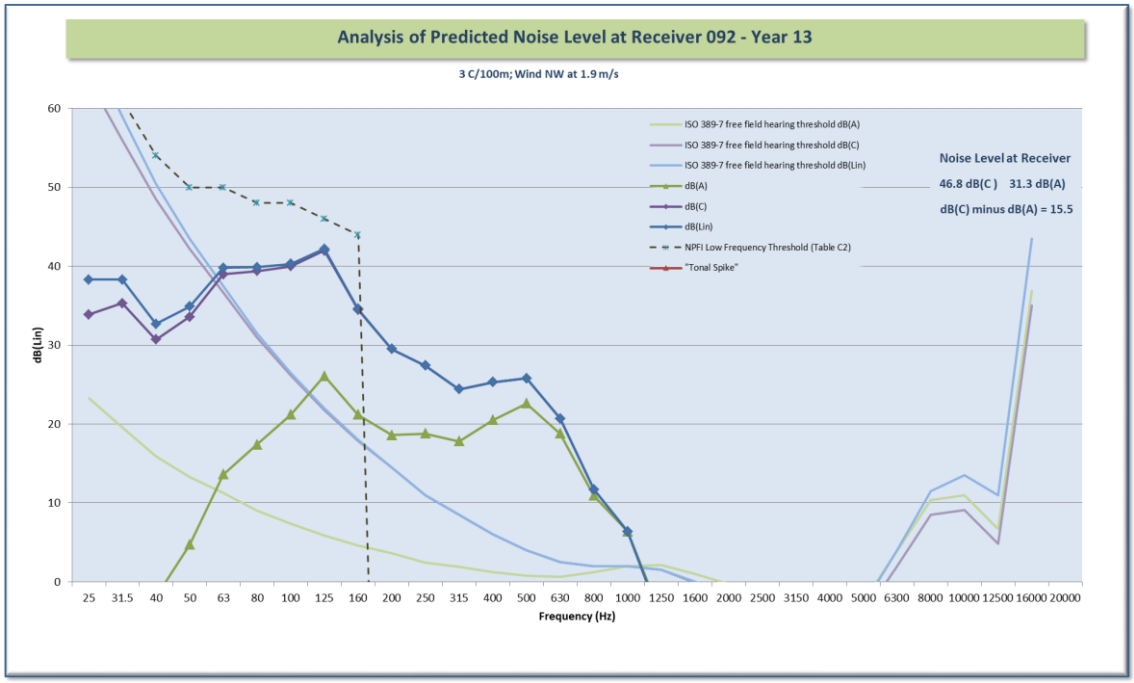


Figure G.23 Tonal and Low Frequency Analysis of at Receiver 92 Year 13

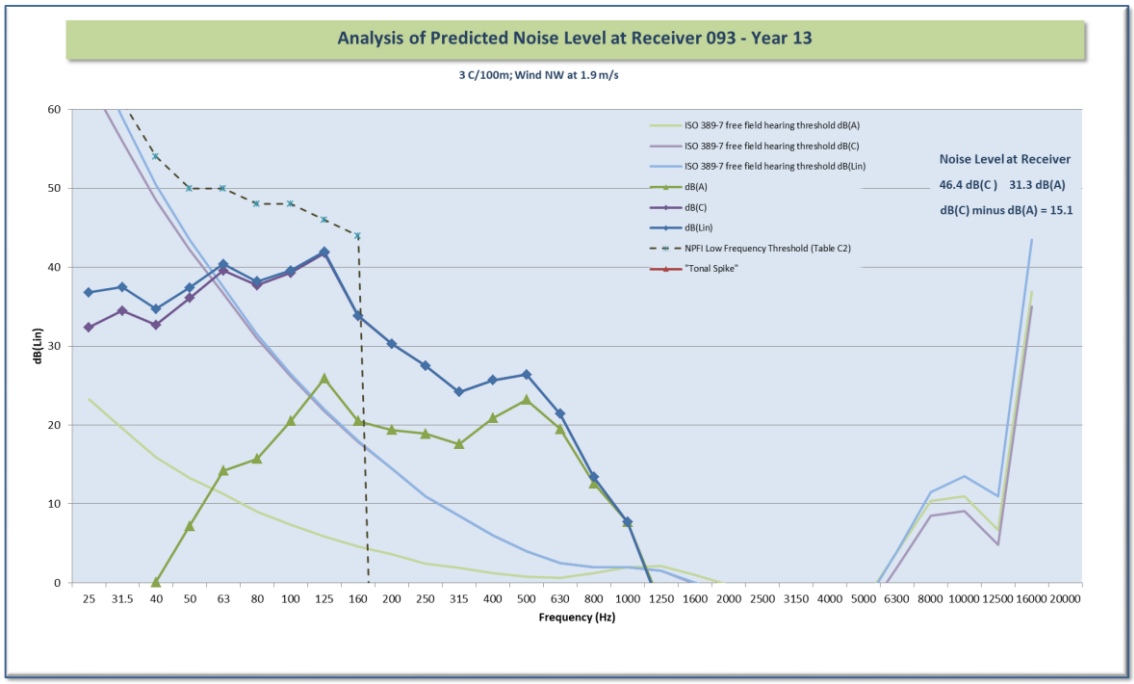


Figure G.24 Tonal and Low Frequency Analysis of at Receiver 93 Year 13

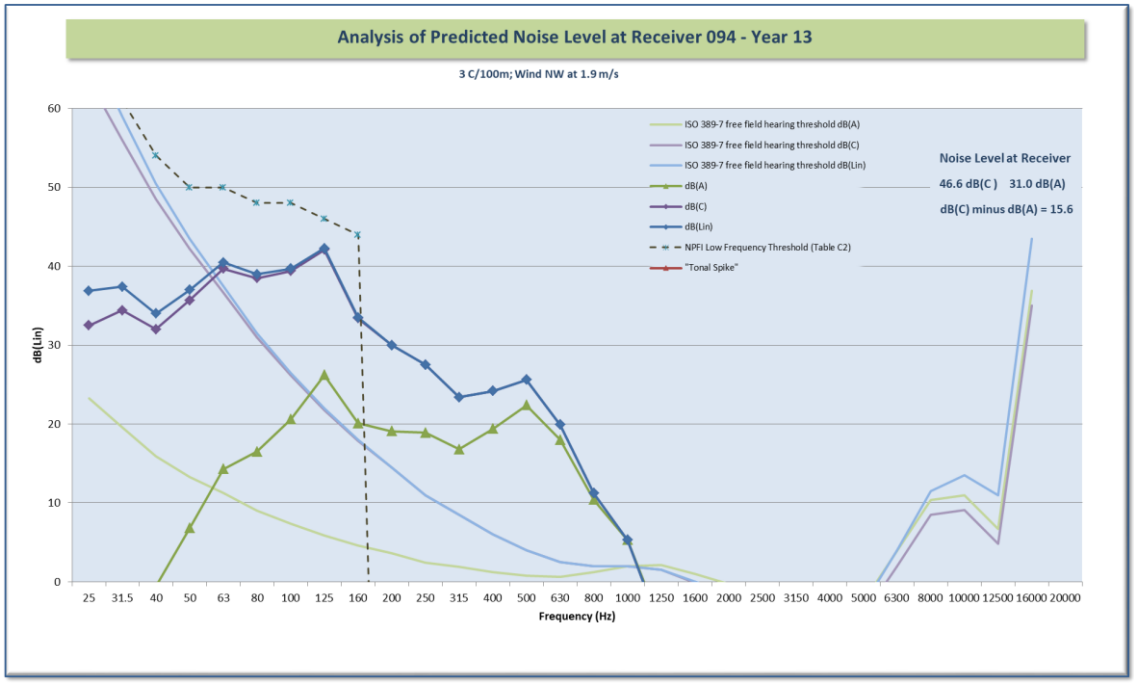


Figure G.25 Tonal and Low Frequency Analysis of at Receiver 94 Year 13

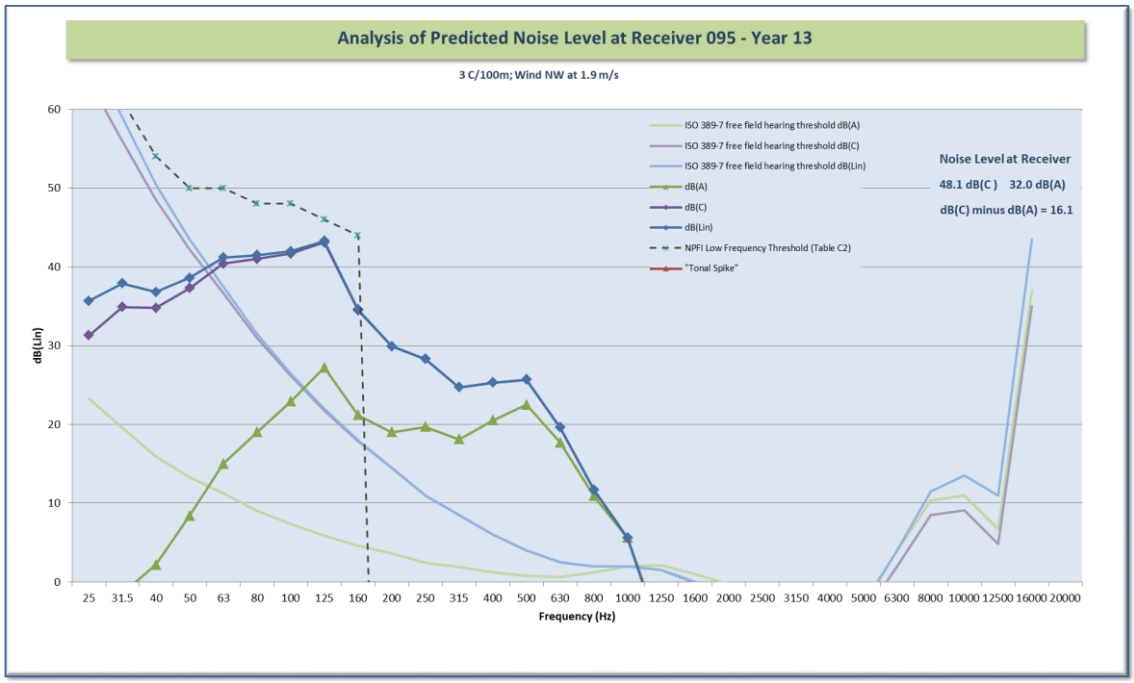


Figure G.26 Tonal and Low Frequency Analysis of at Receiver 95 Year 13

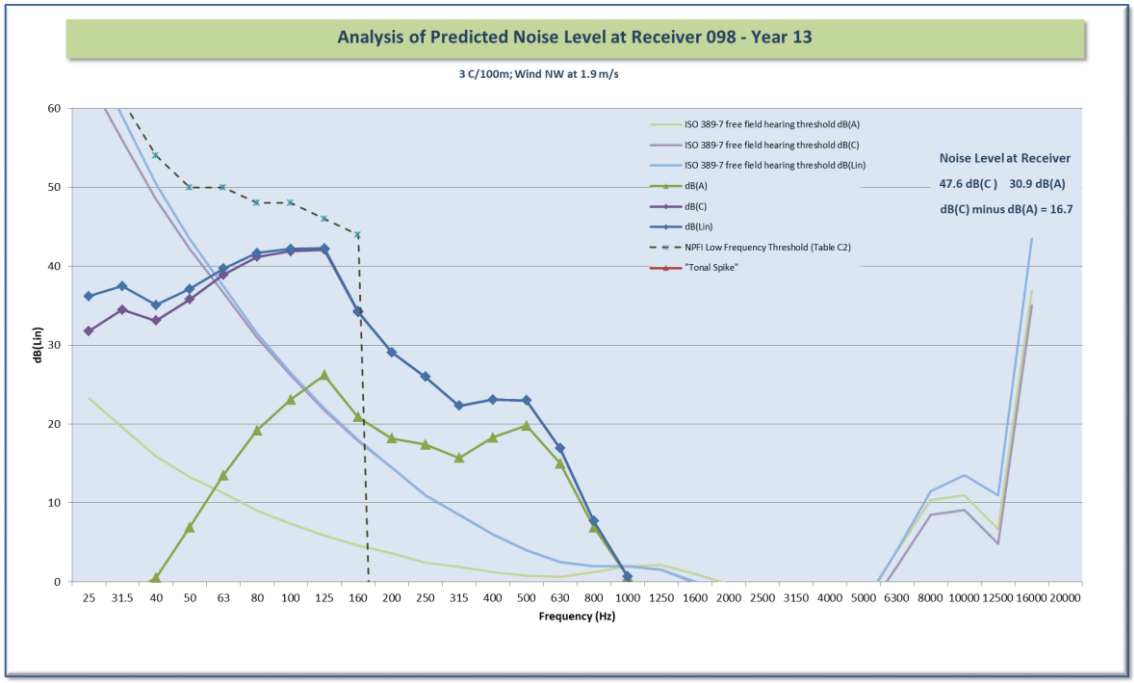


Figure G.27 Tonal and Low Frequency Analysis of at Receiver 98 Year 13

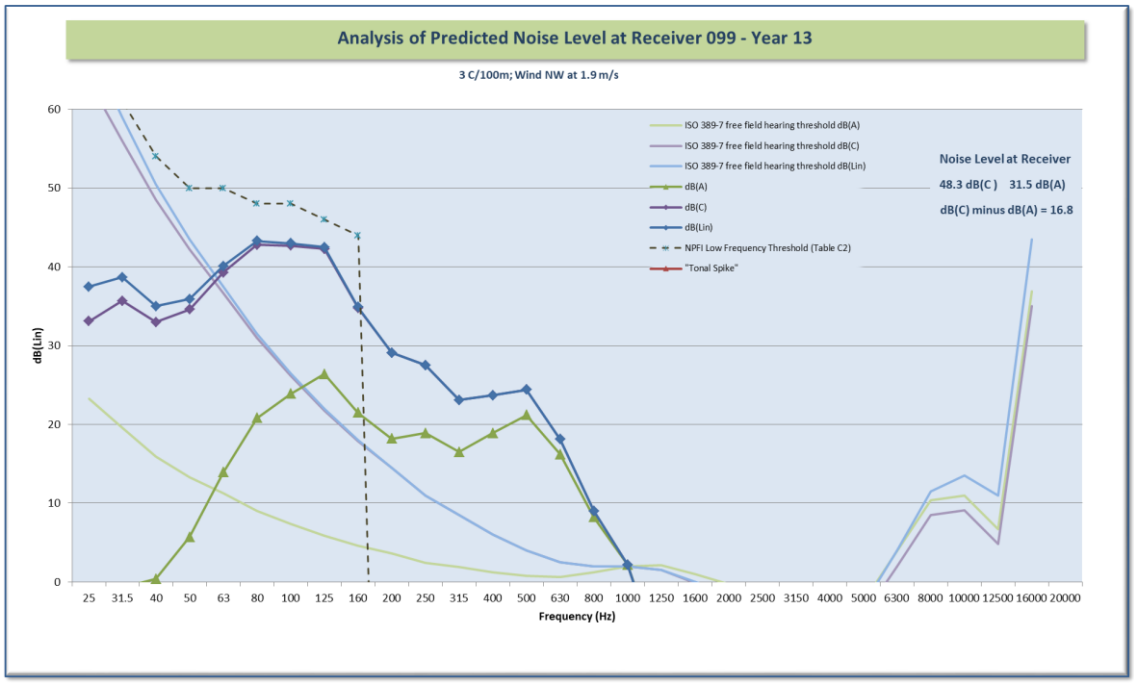


Figure G.28 Tonal and Low Frequency Analysis of at Receiver 99 Year 13

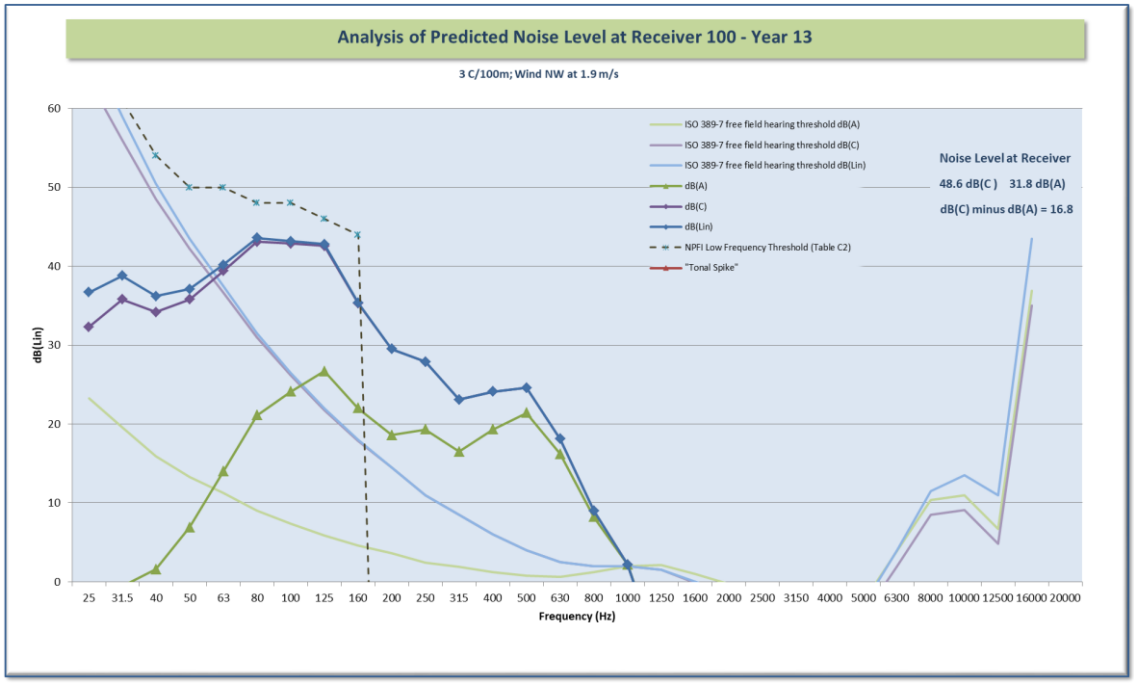


Figure G.29 Tonal and Low Frequency Analysis of at Receiver 100 Year 13

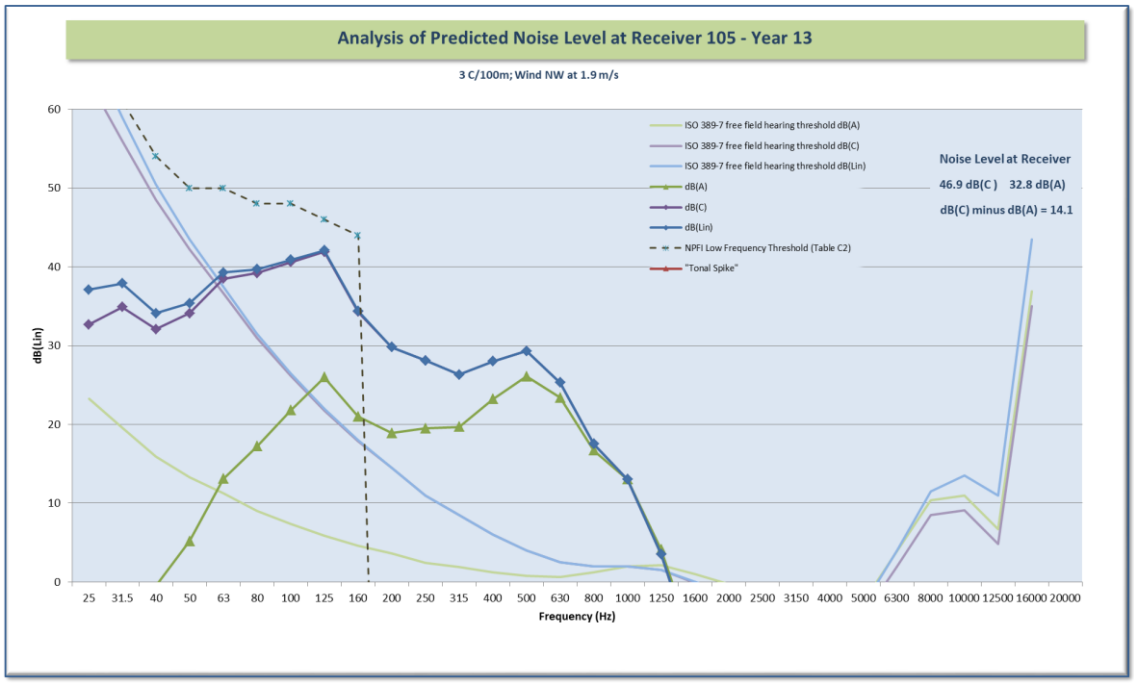


Figure G.30 Tonal and Low Frequency Analysis of at Receiver 105 Year 13

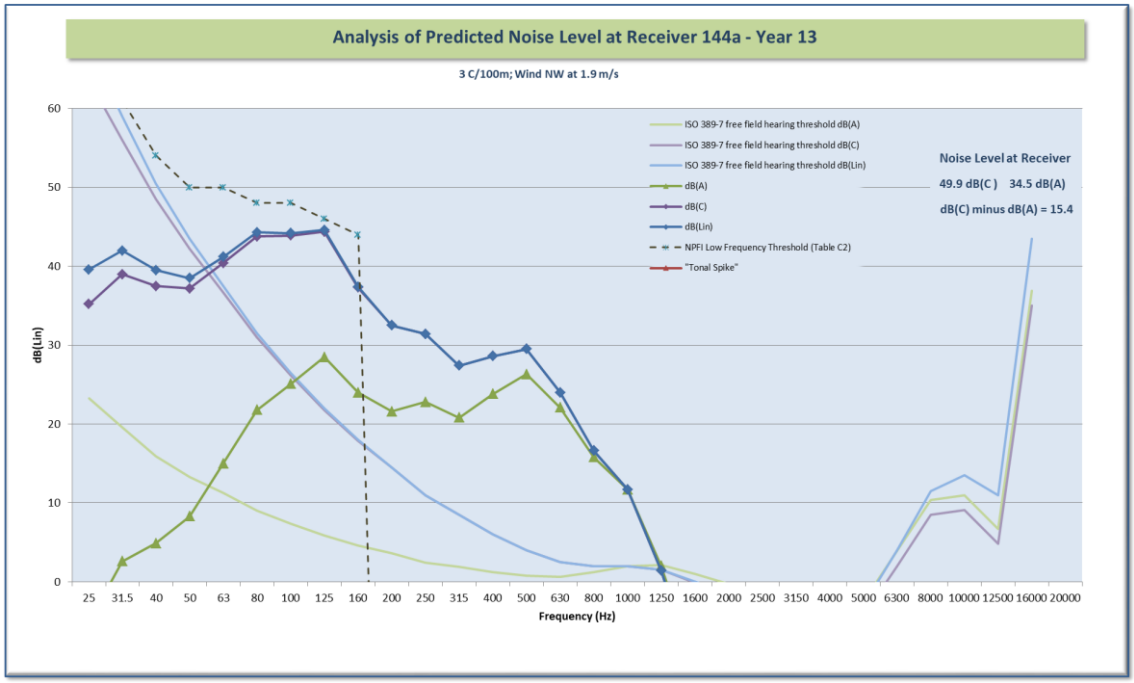


Figure G.31 Tonal and Low Frequency Analysis of at Receiver 144a Year 13

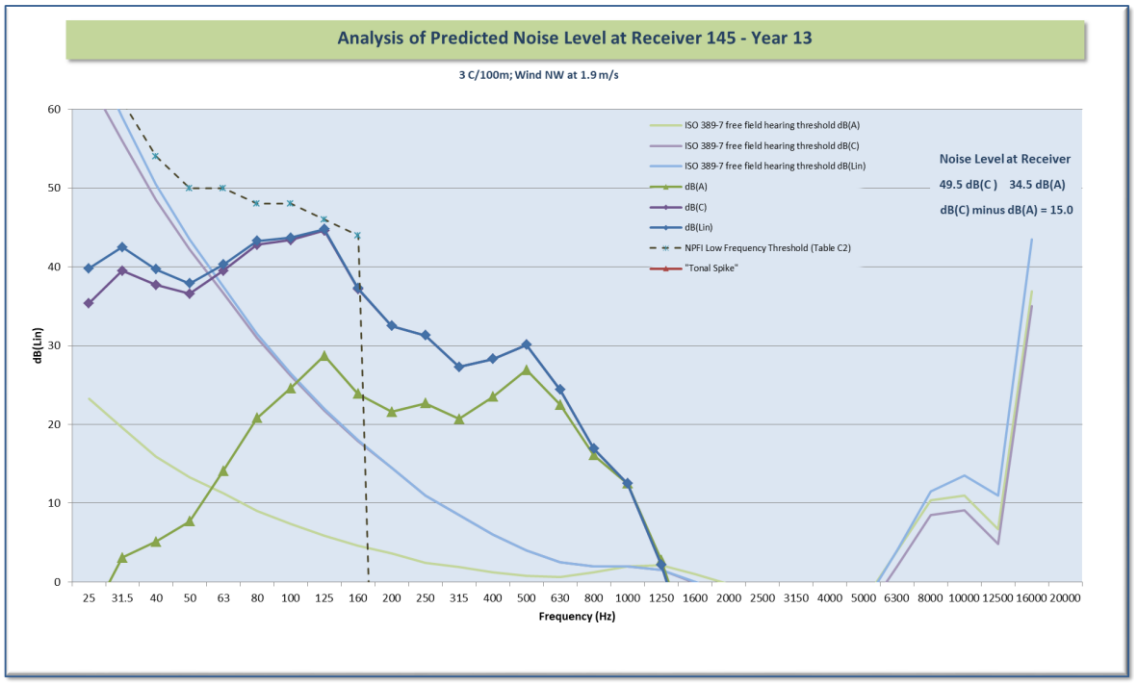


Figure G.32 Tonal and Low Frequency Analysis of at Receiver 145 Year 13

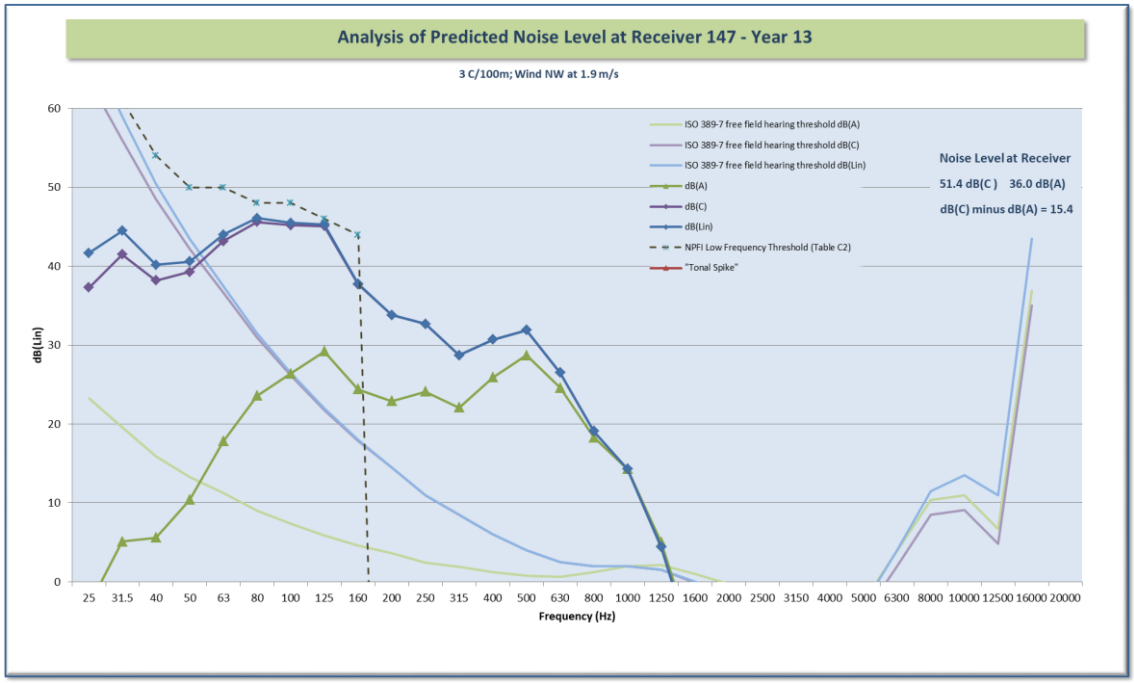


Figure G.33 Tonal and Low Frequency Analysis of at Receiver 147 Year 13

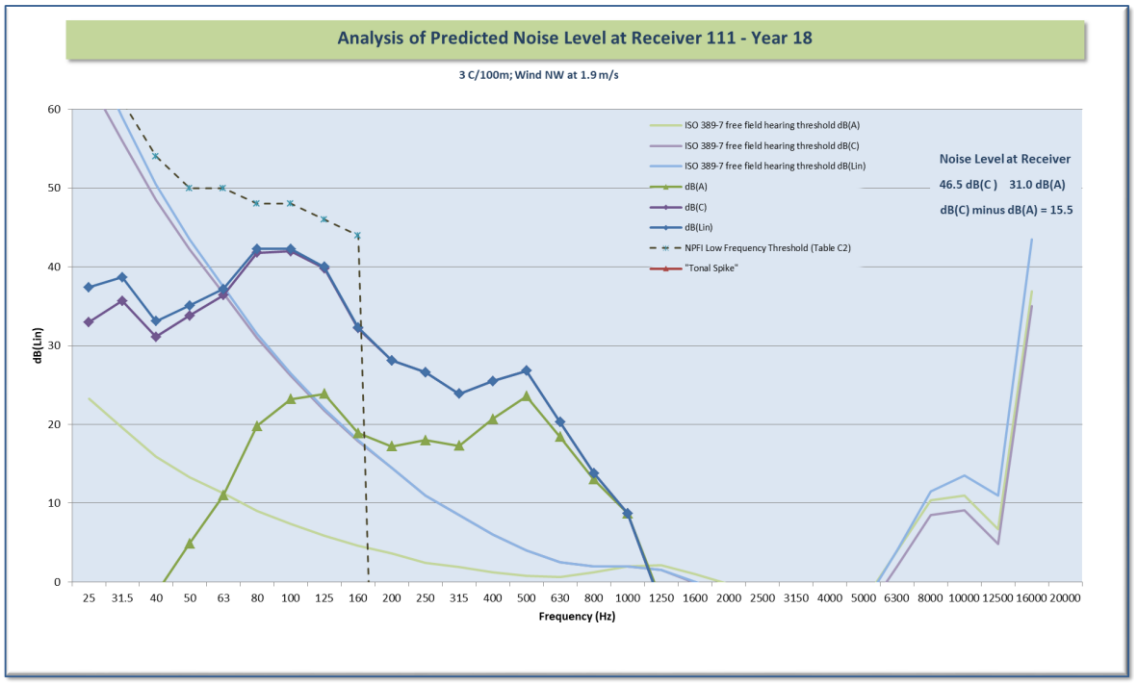


Figure G.34 Tonal and Low Frequency Analysis of at Receiver 111 Year 18

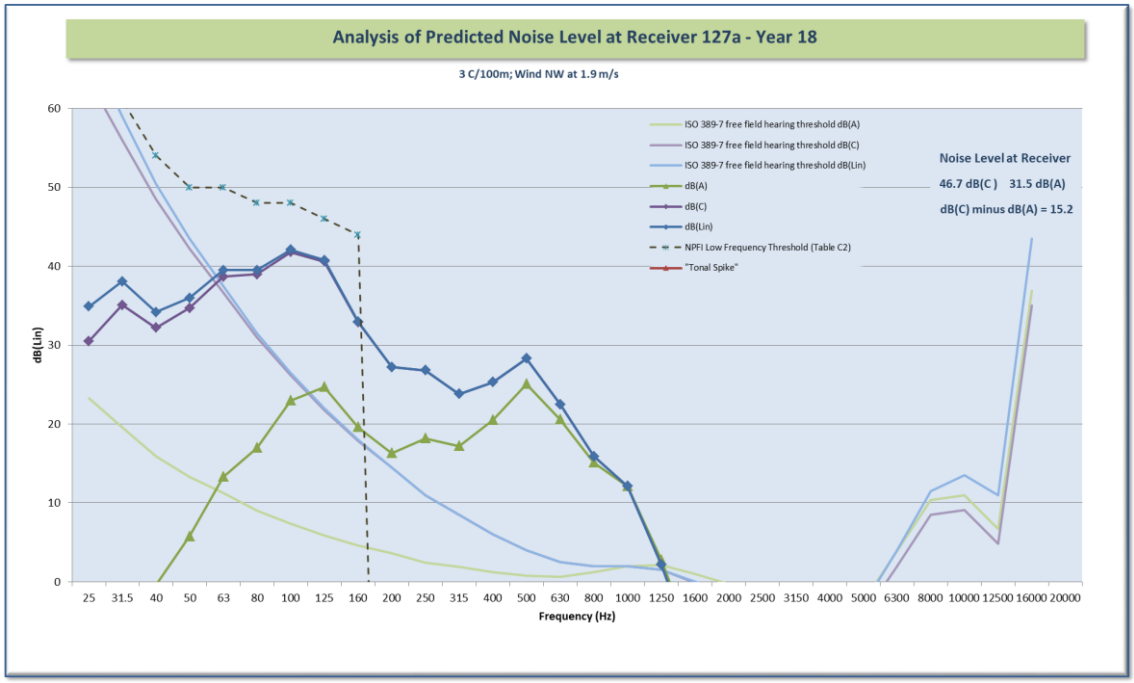


Figure G.35 Tonal and Low Frequency Analysis of at Receiver 127a Year 18

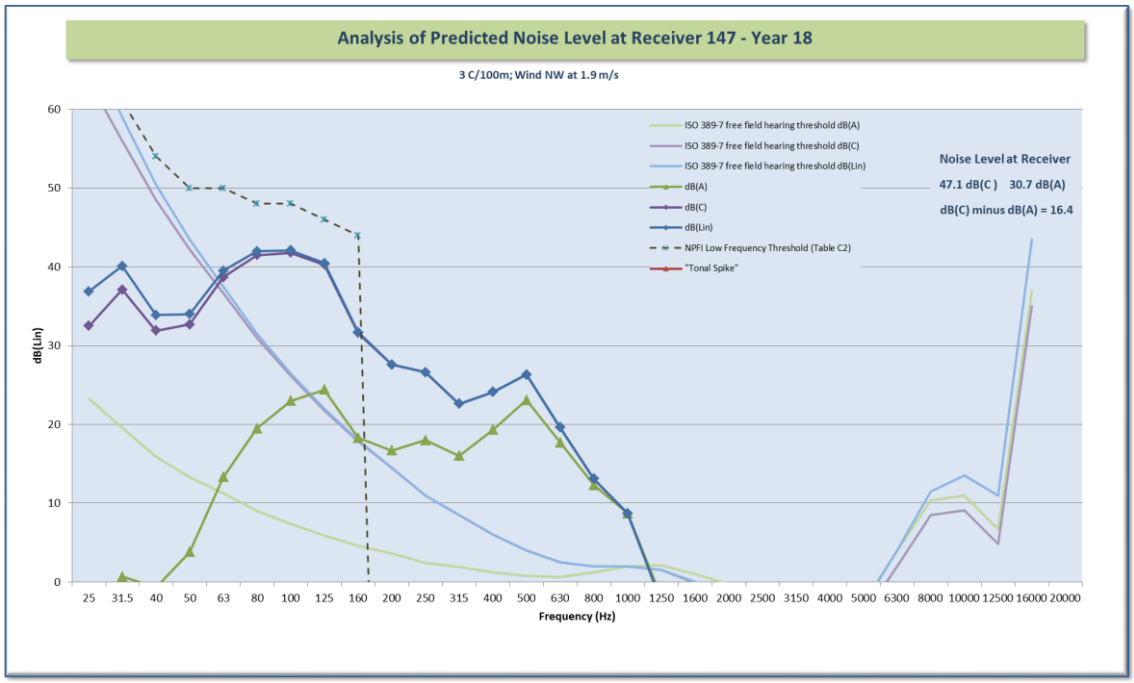


Figure G.36 Tonal and Low Frequency Analysis of at Receiver 147 Year 18

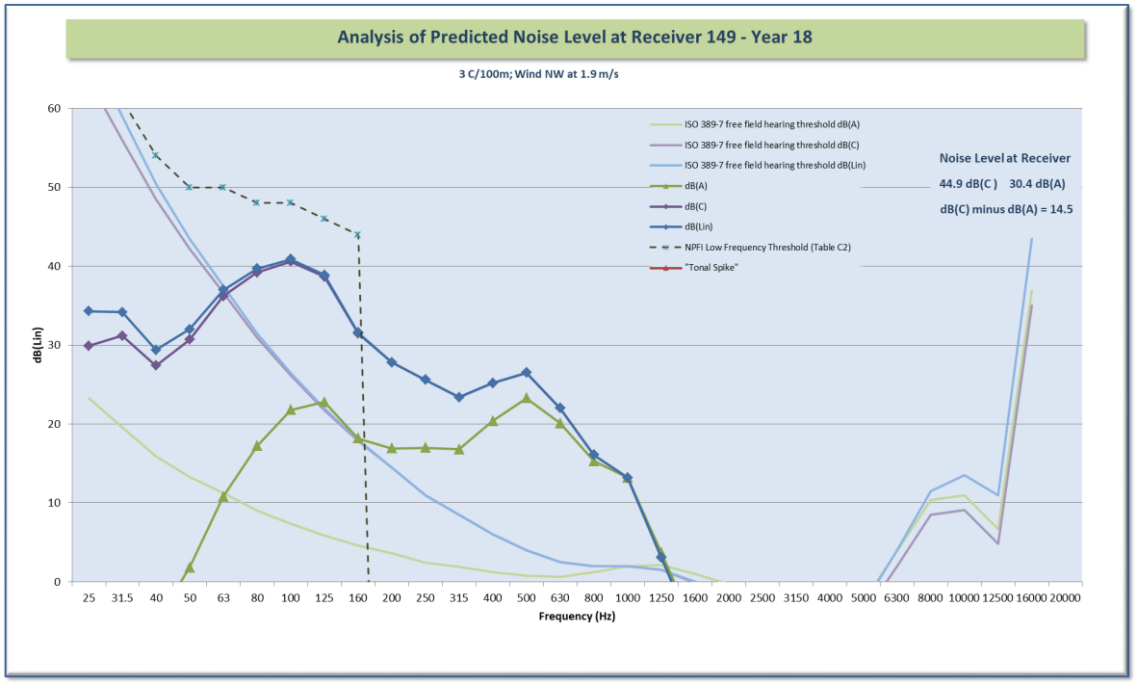


Figure G.37 Tonal and Low Frequency Analysis of at Receiver 149 Year 18

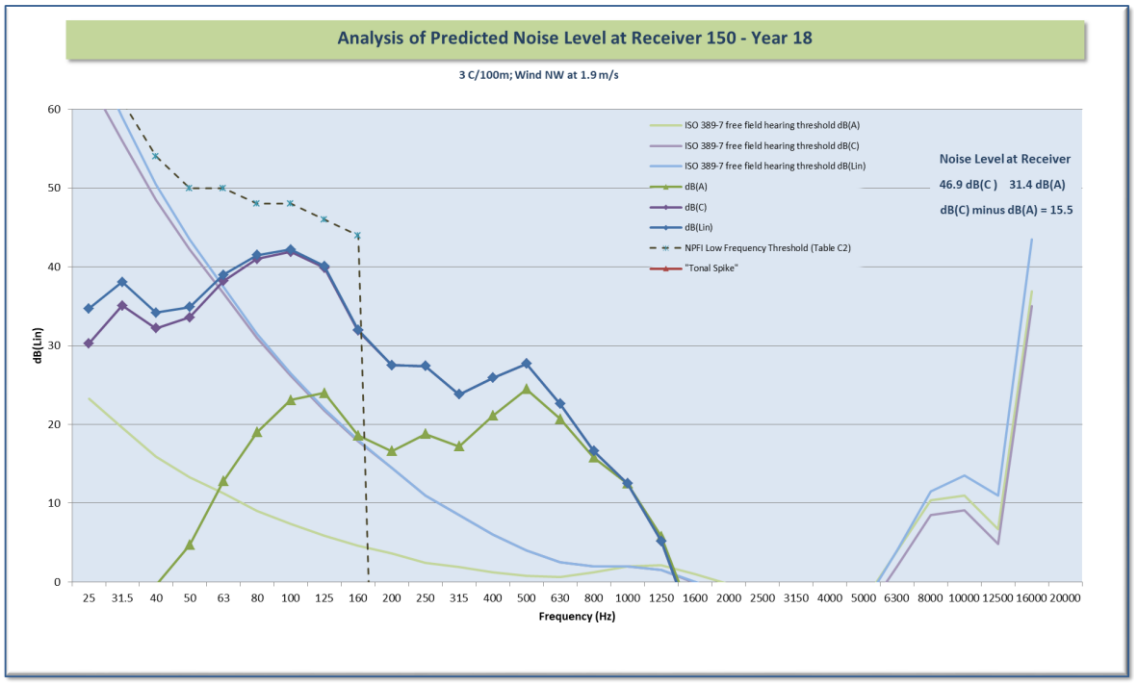


Figure G.38 Tonal and Low Frequency Analysis of at Receiver 150 Year 18

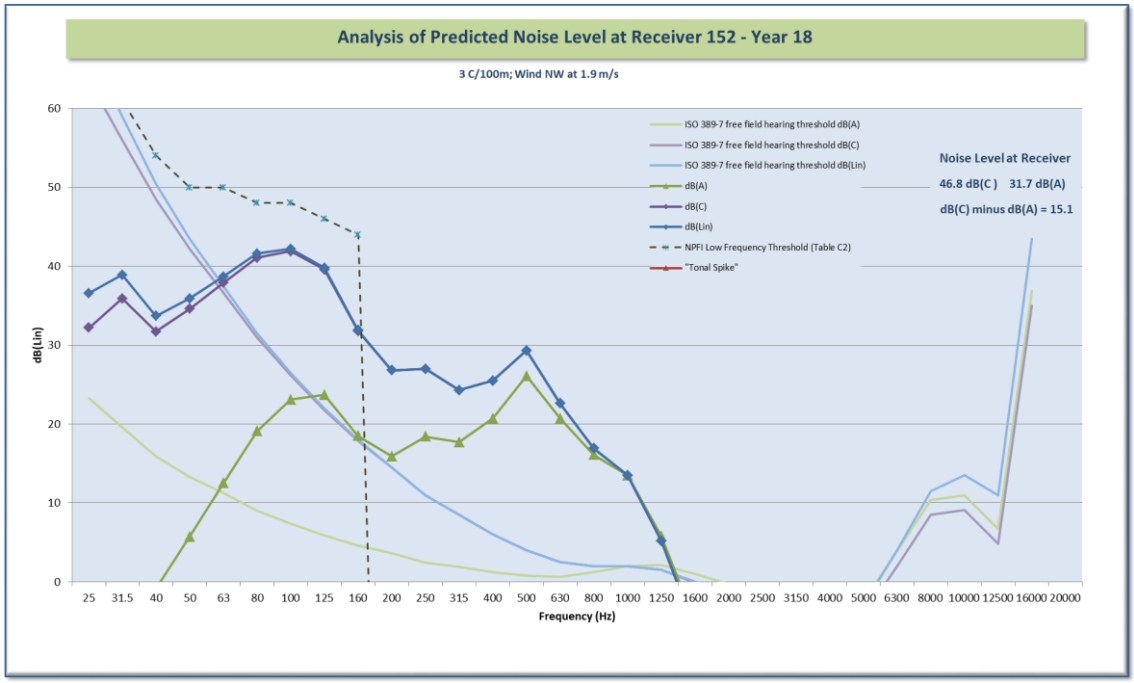


Figure G.39 Tonal and Low Frequency Analysis of at Receiver 152 Year 18

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