

Noise Management Plan

Mt Thorley Warkworth

DOCUMENT CONTROL

Version	Date	Revision Description	Author	Approver	Secretary Approval Date
1.0	31/08/2012	Original	Nicola Proctor Approvals Advisor	Mark Nolan Approvals Manager	-
1.1	26/09/2012	Final submitted to DP&I for approval	Kelly O'Mullane Approvals Specialist	Mark Nolan Approvals Manager	-
1.2	30/10/2012	Revised final submitted to DP&I for approval following direction to amend under Condition 4 of Schedule 3.	Kelly O'Mullane Approvals Specialist	Mark Nolan Approvals Manager	-
1.3	31/10/2012	Revised final submitted to DP&I for approval following request for amendment to Table 1.	Kelly O'Mullane Approvals Specialist	Mark Nolan Approvals Manager	31/10/2012
2.0	31/03/2014	Revised following Warkworth Modification 6 Approval	Gerard Gleeson Environment Specialist	Andrew Speechly Environment Manager	-
2.1	17/07/2014	V2.0 revised following feedback from DP&E	Gerard Gleeson Environment Specialist	Andrew Speechly Environment Manager	-
2.2	7/08/2014	V2.0 formatting and finalisation following Approval from DP&E	Gerard Gleeson Environment Specialist	Andrew Speechly Environment Manager	6/08/2014
2.3	29/01/2015	Amendment to Wambo Road compliance monitoring location	Gerard Gleeson Environment Specialist	Andrew Speechly Environment Manager	-
3.0	2/12/2015	Revision of Plan following approval of Warkworth Continuation and Mount Thorley Operations 2014 Projects	Gerard Gleeson Environment Specialist	Andrew Speechly Environment Manager	-
3.1	03/02/2016	V3.0 revised following feedback from DP&E	Gerard Gleeson Environment Specialist	Andrew Speechly Environment Manager	3/02/2016
3.2	16/02/2016	V3.1 revised – typographical error in noise criteria (page 44)	Gerard Gleeson Environment Specialist	Andrew Speechly Environment Manager	-
3.3	8/07/2016	Update to reflect launch of "InSite" and completion of Community Information session (Sections 8.1.2 and 8.1.3)	Gerard Gleeson Environment Specialist	Andrew Speechly Environment Manager	4/08/2016
3.5	30/09/2016	Amendment to Noise Monitoring Programme	Gerard Gleeson Environment Specialist	Andrew Speechly Environment Manager	30/09/2016
3.5	29/11/2016	Application of new Noise Criteria per Sch. 3 Cond. 5 of WML Approval	Gerard Gleeson Environment Specialist	Andrew Speechly Environment Manager	26/06/2017
3.6	25/07/2017	Minor revisions including changes to Standard Mitigation Measures (Section 6.2) following finding from 2017 MTW Independent Environmental Audit	Doug Fenton Environment Advisor	Andrew Speechly Environment Manager	-
4.0	30/11/2017	Revision to align with new ownership management practices. Alignment to the Noise Policy for Industry (EPA, 2017)	Dominic Brown Environment Specialist	Andrew Speechly Environment Manager	07/02/2018
4.1	18/07/2018	Minor revisions including changes to roles and responsibilities, review triggers to align with consent, and updated consultation with EPA	Doug Fenton Environment Advisor	Gary Mulhearn Environment & Community Manager	-
4.2	18/09/2018	V4.1 revised following feedback from DP&E	Doug Fenton Environment Advisor	Gary Mulhearn Environment & Community Manager	20/09/2018

4.3	31/07/2019	Minor revisions following EPL 1376 variation	Doug Fenton Environment Advisor	Gary Mulhearn Environment & Community Manager	28/08/2019
5.0	9/07/2021	Minor revisions including changes to roles and responsibilities and the frequency range of the Bulga Environmental Noise Compass. Incorporate DPIE feedback on NMP submitted 28/07/2020.	Doug Fenton Environment Advisor	Gary Mulhearn Environment & Community Manager	20/07/2021
5.1	17/12/2021	Revision to real time noise monitoring at Wambo Road monitoring location. Incorporate DPIE feedback on NMP submitted 26/08/2021.	Doug Fenton Environment and Community Advisor	Gary Mulhearn Environment & Community Manager	21/01/2022
5.2	28/07/2022	Revision to Table 1 and to External Reporting Section, other minor revisions.	Doug Fenton Environment and Community Advisor	Bill Baxter Environment & Community Manager (Acting)	08/08/2022
5.3	29/7/2025	Update to EPL references as the EPLs do not have noise requirements. Clarification to responses to real time noise alerts, other minor revisions.	Joshua van Bezouwen Environment and Community Advisor	Gary Mulhearn Environment & Community Manager	

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1 PREFACE

1.1 Introduction

Mt Thorley Warkworth (MTW) is an integrated operation of two open cut mines, Warkworth Mining Limited (WML) and Mount Thorley Operations (MTO) which are located adjacent to each other and 15 km south west of Singleton in the Hunter Valley region of New South Wales. The operation supplies international and domestic markets with semi-soft coking coal and thermal coal.

MTW is an open cut mine, using dragline and truck and shovel method. Employees work in shifts 24 hours a day, seven days a week.

Operations are centred in the Whittingham Coal Measures of the Hunter Coalfield which is part of a Permian coal basin known as the Sydney basin.

After being washed and prepared for sale, the coal is loaded onto trains for transportation 90km to the Port Waratah Coal Terminal in Newcastle where it is shipped to international customers.

Development Consent for the Warkworth Continuation and Mount Thorley Operations 2014 Projects (SSD-6464 and SSD-6465 respectively, together “the Approvals”) were granted on 26 November 2015. A modification to the Warkworth Continuation Project (SSD-6464 MOD2) was granted on 27 May 2022.

The Projects are described in detail in the Environmental Impact Statements and supporting documents (prepared by EMGA Mitchell McLennan, June 2014), and the Modification Report (SSD-6464 MOD 2, September 2021).

1.2 Scope of the Noise Management Plan

This Noise Management Plan (NMP) has been prepared in accordance with the requirements of Schedule 5, Condition 3 of the Approvals, which describes the

requirements for all management plans. In addition, the plan meets the requirements of Schedule 3, Condition 7 (WML) and Schedule 3, Condition 5 (MTO), which sets out the requirements for the NMP. **Table 1** below lists the Approval conditions required to be covered by this NMP and the sections within this document in which they are addressed.

Table 1: Approvals conditions addressed in NMP

Consent Condition	Environmental Performance Conditions	Section of NMP which addresses this requirement				
Mount Thorley Development Consent (SSD-6465)						
Sch. 3 Cond. 1	<p>Acquisition on Request</p> <p>Upon receiving a written request for acquisition from an owner of the land listed in Table 1, the Applicant shall acquire the land in accordance with the procedures in conditions 5 and 6 of Schedule 4.</p> <p><i>Table 1: Land subject to acquisition upon request</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #a6a6a6;"><i>Acquisition Basis</i></th> <th style="background-color: #a6a6a6;"><i>Land</i></th> </tr> </thead> <tbody> <tr> <td style="background-color: #a6a6a6; text-align: center;">Noise</td> <td style="text-align: center;">144, 146, 149, 915</td> </tr> </tbody> </table> <p><i>Note: To interpret the land referred to in Table 1, see the applicable figures in Appendix 3.</i></p>	<i>Acquisition Basis</i>	<i>Land</i>	Noise	144, 146, 149, 915	N/A
<i>Acquisition Basis</i>	<i>Land</i>					
Noise	144, 146, 149, 915					
Sch. 3 Cond. 2	<p>Noise Criteria</p> <p>Except for the land in Table 1, the Applicant shall ensure that the noise generated by the development does not exceed the criteria in Table 2 at any residence on privately owned land.</p>	Section 6 and Appendix A				

Consent
Condition

Environmental Performance Conditions

Section of
NMP which
addresses this
requirement

Table 2: Noise criteria dB(A)

Location	Land	Day (L _{Aeq} (15min))	Evening (L _{Aeq} (15min))	Night (L _{Aeq} (15min))	Night (L _{A1} (1 min))
Bulga	75	40	40	40	50
	42, 53, 55, 56, 57, 58, 60, 62, 63, 64, 66, 71, 72, 73, 82, 210, 211, 236, 252, 920	39	39	39	49
	16, 17, 19, 21, 24, 31, 35, 36, 37, 40, 41, 43, 44, 45, 46, 47, 48, 49, 50, 52, 54, 61, 67, 70, 74, 80, 84, 89, 215, 234, 235, 237, 238, 243, 254, 903, 917, 918, 919, 929	38	38	38	48
	18, 20, 22, 23, 26, 28, 38, 39, 230, 231, 253, 921, 922	37	37	37	47
	12, 14, 15, 226, 227, 228, 229, 909, 928, 936	36	36	36	46
	All other residences on privately owned land	35	35	35	45
Milbrodale	111	37	37	37	47
	All other residences on privately owned land	35	35	35	45
Warkworth	All other residences on privately owned land	38	38	38	48
Maison Dieu	All other residences on privately owned land	35	35	35	45
Gouldsville, Long Point	126, 262	38	38	38	48
	All other residences on privately owned land	35	35	35	45
Hambledon Hill/ Wylies Flat	All other residences on privately owned land	35	35	35	45
Mt Thorley	148	39	39	39	49
	190	38	38	38	48
	150	37	37	37	47
	All other residences on privately owned land	35	35	35	45

Note: To interpret the land referred to in Table 2, see the applicable figures 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) or an equivalent NSW Government noise policy, as amended by Appendix 6 which 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.

Sch. 3
Cond. 3 **Additional noise mitigation upon request**

Upon receiving a written request from the owner of any residence on the land listed in Table 1 or Table 3, the Applicant shall implement additional noise mitigation measures at or in the vicinity of the residence in consultation with the landowner. These measures must be consistent with the measures outlined in the *Voluntary Land Acquisition and Mitigation Policy*. They must also be reasonable and feasible and proportionate with the level of predicted impact.

Consent Condition	Environmental Performance Conditions	Section of NMP which addresses this requirement						
	<p>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.</p> <p><i>Table 3: Land subject to additional noise mitigation upon request</i></p> <table border="1"> <thead> <tr> <th>Mitigation Basis</th> <th>Characterisation of Impact</th> <th>Receiver</th> </tr> </thead> <tbody> <tr> <td>Noise</td> <td>Moderate</td> <td>148, 190</td> </tr> </tbody> </table> <p><i>Notes:</i></p> <ul style="list-style-type: none"> To interpret the land referred to in Table 3, see the applicable figures in Appendix 3. Definitions of marginal and moderate mitigation are given in the Voluntary Land Acquisition and Mitigation Policy. 	Mitigation Basis	Characterisation of Impact	Receiver	Noise	Moderate	148, 190	
Mitigation Basis	Characterisation of Impact	Receiver						
Noise	Moderate	148, 190						
Sch. 3 Cond. 4	<p>Operating Conditions</p> <p>The Applicant shall:</p> <ol style="list-style-type: none"> Implement all reasonable and feasible measures to minimise the operational, low frequency and road noise of the development; Operate a comprehensive noise management system on site 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; Minimise the noise impacts of the development during meteorological conditions when the noise limits in this consent do not apply (see Appendix 6); and Ensure that: <ul style="list-style-type: none"> * all new trucks, dozers, drills and excavators purchased for use on the site after the date of this consent are commissioned as noise suppressed (or attenuated) units; and * the existing fleet of trucks, dozers, drills and excavators on site at the date of this approval is progressively fitted with suitable noise attenuation packages to ensure that 100% of the fleet being used on site is attenuated by the end of 2016; and carry out regular monitoring to determine whether the development is complying with the relevant conditions of this consent. 	<p>Section 6.2 and Appendix A</p> <p>Sections 6.3 and 6.4 Sections 6.4.1, 6.4.2, and 6.4.3</p> <p>Section 6.3.1 Section 6.3.1</p> <p>Appendix A</p>						
Sch. 3 Cond. 5	<p>Noise Management Plan</p> <p>The Applicant shall prepare a Noise Management Plan for the development to the satisfaction of the Secretary, and carry out the development in accordance with this plan. The plan must:</p> <ol style="list-style-type: none"> Be prepared in consultation with the EPA, and submitted to the Secretary for approval prior to the commencement of any development under this consent; Describe the measures that would be implemented to ensure compliance with the relevant noise criteria and operating conditions of this consent; Describe the proposed noise management system in detail; Include provisions for keeping the local community informed about the operation of the noise management system and monitoring programs (including any correction factors under the <i>NSW Industrial Noise Policy</i>), including regular briefings and a public information session within 6 months of the granting of this development consent; Include a monitoring program that: <ul style="list-style-type: none"> Evaluates and reports on: <ul style="list-style-type: none"> * the effectiveness of the noise management system on site; * the effectiveness of the noise attenuation program (see condition 4(d)); * compliance against the noise criteria in this consent; and * compliance against the noise operating condition; 	<p>This Management Plan</p> <p>Appendix B Section 6</p> <p>Section 6</p> <p>Section 8.1.3</p> <p>Appendix A</p>						

Consent Condition	Environmental Performance Conditions	Section of NMP which addresses this requirement
	<ul style="list-style-type: none"> Includes a program to calibrate and 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 trigger for further attended monitoring where there is a risk of non-compliance with the noise criteria in this consent); and Defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents. 	
Sch. 4 Cond 1	<p>Notification of Landowners / Tenants</p> <p>Within 1 month of the date of this consent, the Applicant shall:</p> <p>a) Notify in writing the owners of:</p> <ul style="list-style-type: none"> The land listed in Table 1 of schedule 3 that they have the right to require the Applicant to acquire their land in accordance with the procedures in conditions 5-6 below at any stage during the development; Any residence on the land listed in Table 3 of schedule 3 that they have the right to request the Applicant to ask for additional noise mitigation measures to be installed at their residence at any stage during the development 	NA
Sch. 4 Cond. 3	<p>As soon as practicable after obtaining monitoring results showing:</p> <p>a) An exceedance of any relevant criteria in Schedule 3, the Applicant shall notify affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the development is again complying with the relevant criteria</p>	Section 8.1.2
Sch. 5 Cond. 2	<p>Adaptive Management</p> <p>The applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in Schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act of EP&A Regulation.</p> <p>Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity:</p> <p>a) Take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;</p> <p>b) Consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and</p> <p>c) Implement remediation measures as directed by the Secretary.</p>	Sections 6 and 8.1.2
Sch. 5 Cond. 3	<p>Management Plan Requirements</p> <p>The Applicant shall ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:</p> <p>a) Detailed baseline data;</p> <p>b) A description of</p> <ul style="list-style-type: none"> The relevant statutory requirements (including any relevant consent, licence or lease conditions); Any relevant limits or performance measures / criteria; The specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development of any management measures; <p>c) A description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures / criteria;</p> <p>d) A program to monitor and report on the:</p>	<p>Appendix C</p> <p>Table 1.1, Table 1.2; Appendix A</p> <p>Section 6</p> <p>Appendix A Section 6.5</p> <p>Section 6.6</p>

Consent Condition	Environmental Performance Conditions	Section of NMP which addresses this requirement
	<ul style="list-style-type: none"> • Impacts and environmental performance of the development; • Effectiveness of any management measures (see c above) <p>e) A contingency plan to manage any unpredicted impacts and their consequences;</p> <p>f) A program to investigate and implement ways to improve the environmental performance of the development over time;</p> <p>g) A protocol for managing any:</p> <ul style="list-style-type: none"> • Incidents; • Complaints; • Non-compliances with statutory requirements; and • Exceedances of the impact assessment criteria and/or performance criteria; and <p>h) A protocol for periodic review of the plan.</p> <p><i>Note: The Secretary may waive some of these requirements if they are unnecessary for particular management plans.</i></p>	<p>Section 8.1.2 and 8.4</p> <p>Section 8.5</p>
Sch. 5 Cond. 5	<p>Review of Strategies, Plans and Programs</p> <p>Within 3 months of the submission of an:</p> <ul style="list-style-type: none"> a) Annual review under condition 4 above; b) Incident report under condition 7 below; c) Audit under condition 9 below; and d) Any modification to the conditions of this consent (unless the conditions require otherwise), <p>The Applicant shall review, and if necessary revise, the strategies, plans and programs required under this consent to the satisfaction of the Director-General.</p> <p>Where this review leads to revisions in any such document, then within 4 weeks of the review, unless the Secretary agrees otherwise, the revised document must be submitted to the Secretary for approval.</p> <p><i>Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.</i></p>	Section 8.5
Sch. 5 Cond. 7	<p>Incident Reporting</p> <p>The Applicant shall immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident, the Applicant shall provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.</p>	Section 8.1.2 and Appendix A
Sch. 5 Cond. 8	<p>Regular Reporting</p> <p>The Applicant shall provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.</p>	Section 8.1.2
Sch. 5, Cond. 11	<p>Access to Information</p> <p>From the commencement of development under this consent, the Applicant shall:</p> <ul style="list-style-type: none"> a) Make the following information publically available on its website: <ul style="list-style-type: none"> • The EIS; • Current statutory approvals for the development; • Approved strategies, plans or programs required under the conditions of this consent; • A comprehensive summary of the monitoring results of the development, which have been reported in accordance with the various plans and programs approved under the conditions of this consent, or any approved plans and programs; 	<p>Section 8.1.2</p> <p>Section 8.1.3</p>

Consent Condition	Environmental Performance Conditions	Section of NMP which addresses this requirement
	<ul style="list-style-type: none"> • The results of real time noise monitoring, updated daily (unless otherwise agreed by the Secretary); • A complaints register, which is to be updated monthly; • Minutes of CCC meetings; • The annual reviews of the development (for the last 5 years, if applicable); • Any independent environmental audit, and the Applicant's response to the recommendations in any audit; • Any other matter required by the Director-General; and <p>b) Keep this information up to date</p>	
Appendix 6 Cond. 1	<p>Noise Compliance Assessment Applicable Meteorological Conditions</p> <p>The noise criteria in Table 2 of Schedule 3 are to apply under all meteorological conditions except the following:</p> <ul style="list-style-type: none"> a) Wind speeds greater than 3m/s at 10m above ground level; or b) Stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or c) Stability category G temperature inversion conditions 	Appendix A
Appendix 6 Cond. 2	<p>Determination of Meteorological Conditions</p> <p>Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station located on the site</p>	Appendix A
Appendix 6 Cond. 3, 4, 5	<p>Compliance Monitoring</p> <p>Attended monitoring is to be used to evaluate compliance with the relevant conditions of this consent. This monitoring must be carried out at least 12 times a year, unless the Secretary directs otherwise. Unless otherwise agreed with the Secretary, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the <i>NSW Industrial Noise Policy</i> (as amended from time to time) or an equivalent NSW Government noise policy, in particular the requirements relating to:</p> <ul style="list-style-type: none"> a) Monitoring locations for the collection of representative noise data; b) Meteorological conditions during which collection of noise data is not appropriate; c) Equipment used to collect noise data, and conformance with Australian Standards relevant to such equipment; and d) Modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors, apart from adjustments for: <ul style="list-style-type: none"> • Duration; or • Low frequency noise, where it is demonstrated that the dBC – dBA noise difference is caused by distance attenuation only. 	Appendix A
Warkworth Mining Limited Development Consent (SSD-6464 MOD 2)		
Sch. 3 Cond. 1	<p>Acquisition upon request</p> <p>Upon receiving a written request for acquisition from an owner of the land listed in Table 1, the Applicant must acquire the land in accordance with the procedures in conditions 5 and 6 of schedule 4.</p>	N/A

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Noise	34, 81, 148, 150, 190, 192, J													
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Sch. 3 Cond. 2	The Applicant is only required to acquire property 77 if the owner of this land no longer has voluntary land acquisition rights under the planning approvals for the Wambo mine and/or its associated rail facilities.	N/A												
Sch. 3 Cond. 3	<p>Additional Mitigation upon request</p> <p>Upon receiving a written request from the owner of any residence on the land listed in Table 1 or Table 2, the Applicant must implement additional noise mitigation measures at or in the vicinity of the residence in consultation with the landowner. These measures must be consistent with the measures outlined in the <i>Voluntary Land Acquisition and Mitigation Policy</i>. They must also be reasonable and feasible and proportionate with the level of predicted impact.</p> <p>If within 3 months of receiving this request from the owner, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Planning Secretary for resolution.</p> <p><i>Table 2: Land subject to additional mitigation upon request</i></p> <table border="1"> <thead> <tr> <th>Mitigation Basis</th> <th>Characterisation of Impact</th> <th>Land</th> </tr> </thead> <tbody> <tr> <td>Noise</td> <td>Moderate</td> <td>12, 14, 15, 126, 128, 130, 139, 152, 183, 191, 192, 217, 262, 263</td> </tr> </tbody> </table> <p><i>Notes:</i></p> <ul style="list-style-type: none"> To interpret the land referred to in Table 2, see the applicable figures in Appendix 3. Definitions of marginal and moderate mitigation are given in the <i>Voluntary Land Acquisition and Mitigation Policy</i>. 	Mitigation Basis	Characterisation of Impact	Land	Noise	Moderate	12, 14, 15, 126, 128, 130, 139, 152, 183, 191, 192, 217, 262, 263	N/A						
Mitigation Basis	Characterisation of Impact	Land												
Noise	Moderate	12, 14, 15, 126, 128, 130, 139, 152, 183, 191, 192, 217, 262, 263												
Sch. 3 Cond. 4	<p>Noise Criteria – Before January 2017</p> <p>Before 1 January 2017, except for the land in Table 1, the Applicant must ensure that the noise generated by the development does not exceed the noise criteria in condition 18 of DA-300-9-2002-i.</p> <p><i>Notes:</i></p> <ul style="list-style-type: none"> The referenced noise criteria in Condition 18 of DA-300-9-2002-i are reproduced in Appendix 9. These noise criteria apply in the interim period until the completion of the Applicant's noise attenuation program, which is to be completed by the end of 2016 (see condition 6(d) below). From 1 January 2017, the noise criteria in condition 5 will apply. <p>Noise criteria in condition 18 of DA-300-9-2002-i</p> <table border="1"> <thead> <tr> <th>Day/Evening/Night $L_{Aeq}(15\text{ minute})$</th> <th>Land Number</th> </tr> </thead> <tbody> <tr> <td>39</td> <td>31, 38, 58</td> </tr> <tr> <td>38</td> <td>5, 35, 47, 70 Bulga Village¹ Warkworth Village²</td> </tr> <tr> <td>37</td> <td>4, 39, 40, 41, 45, 49, 50, 56, 69</td> </tr> <tr> <td>36</td> <td>7, 9, 11, 42, 43, 54, 55, 125</td> </tr> <tr> <td>35</td> <td>All other residential or sensitive receptors, excluding: 10, 34, 36, 46, 127, 128, 129</td> </tr> </tbody> </table>	Day/Evening/Night $L_{Aeq}(15\text{ minute})$	Land Number	39	31, 38, 58	38	5, 35, 47, 70 Bulga Village ¹ Warkworth Village ²	37	4, 39, 40, 41, 45, 49, 50, 56, 69	36	7, 9, 11, 42, 43, 54, 55, 125	35	All other residential or sensitive receptors, excluding: 10, 34, 36, 46, 127, 128, 129	Appendix A
Day/Evening/Night $L_{Aeq}(15\text{ minute})$	Land Number													
39	31, 38, 58													
38	5, 35, 47, 70 Bulga Village ¹ Warkworth Village ²													
37	4, 39, 40, 41, 45, 49, 50, 56, 69													
36	7, 9, 11, 42, 43, 54, 55, 125													
35	All other residential or sensitive receptors, excluding: 10, 34, 36, 46, 127, 128, 129													
Sch. 3 Cond. 5	<p>Noise Criteria – From 1 January 2017</p> <p>From 1 January 2017, except for the land in Table 1, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 3 at any residence on privately-owned land.</p>	Appendix A												

Consent Condition	Environmental Performance Conditions	Section of NMP which addresses this requirement
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Table 3: Noise criteria dB(A)

Location	Land	Day (L_{Aeq} (15min))	Evening (L_{Aeq} (15min))	Night (L_{Aeq} (15min))	Night (L_{A1} (1 min))
Bulga	17, 19	40	40	40	50
	37, 43, 52, 62, 63, 64, 66, 71, 72, 73, 75, 82, 210, 211, 236, 252, 920	39	39	39	49
	12, 14, 15, 16, 18, 20, 21, 22, 23, 24, 26, 28, 31, 35, 36, 38, 39, 40, 41, 42, 44, 45, 46, 47, 48, 49, 50, 53, 54, 55, 56, 57, 58, 60, 61, 67, 70, 74, 80, 84, 89, 215, 217, 229, 231, 234, 235, 237, 238, 243, 253, 254, 903, 917, 918, 919, 921 929	38	38	38	48
	8, 9, 225, 226, 227, 228, 230, 266, 922	37	37	37	47
	4, 6, 7, 10, 221, 222, 223	36	36	36	46
	All other residences on privately owned land	35	35	35	45
	Milbrodale	111	36	36	36
All other residences on privately owned land		35	35	35	45
Warkworth	All other residences on privately owned land	38	38	38	48
Maison Dieu	All other residences on privately owned land	35	35	35	45
Gouldsville, Long Point	126, 262	41	41	41	51
	128	39	39	39	49
	130, 139	38	38	38	48
	All other residences on privately owned land	35	35	35	45
Hambleton Hill/ Wylies Flat	192	40	40	40	50
	152, 191, 263	39	39	39	49
	183	38	38	38	48
	181, 182, 184, 185, 186, 187, 937a, 937b	37	37	37	47
	155, 156, 157, 180, 937d, 937e	36	36	36	46
	All other residences on privately owned land	35	35	35	45

Consent Condition	Environmental Performance Conditions	Section of NMP which addresses this requirement			
Mount Thorley	^a 144, ^a 915	43	43	43	53
	^a 146	42	42	42	52
	148, 188	36	36	36	46
	All other residences on privately owned land	35	35	35	45
<p><i>Notes:</i></p> <ul style="list-style-type: none"> To interpret the land referred to in Table 3, see the applicable figures in Appendix 3. ^a Noise limits developed relative to current acquisition criteria. <p>Noise generated by the development is to be measured in accordance with the relevant requirements of the <i>NSW Industrial Noise Policy</i> (as may be updated from time-to-time) or an equivalent NSW Government noise policy, as amended by Appendix 7 which 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.</p>					
Sch. 3 Cond. 6	<p>Operating Conditions The Applicant must:</p> <p>a) Implement all reasonable and feasible measures to minimise the operational, low frequency and road noise of the development;</p> <p>b) Operate a comprehensive noise management system on site 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;</p> <p>c) Minimise the noise impacts of the development during meteorological conditions when the noise limits in this consent do not apply (see Appendix 7); and</p> <p>d) Ensure that:</p> <p style="margin-left: 20px;">* all new trucks, dozers, drills and excavators purchased for use on the site after the date of this consent are commissioned as noise suppressed (or attenuated) units; and</p> <p style="margin-left: 20px;">* the existing fleet of trucks, dozers, drills and excavators on site at the date of this approval is progressively fitted with suitable noise attenuation packages to ensure that 100% of the fleet being used on site is attenuated by the end of 2016; and</p> <p>e) carry out regular monitoring to determine whether the development is complying with the relevant conditions of this consent.</p>				<p>Section 6.2</p> <p>Section 6.3.1</p> <p>Sections 6.3 and 6.4.1</p> <p>Section 6.4.1</p> <p>Section 3.2</p> <p>Appendix A</p>
Sch. 3 Cond. 7	<p>Noise Management Plan The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary, and carry out the development in accordance with this plan. The plan must:</p> <p>a) Be prepared in consultation with the EPA, and submitted to the Planning Secretary for approval prior to the commencement of any development under this consent;</p> <p>b) Describe the measures that would be implemented to ensure compliance with the relevant noise criteria and operating conditions of this consent;</p> <p>c) Describe the proposed noise management system in detail;</p> <p>d) Include provisions for keeping the local community informed about the operation of the noise management system and monitoring programs (including any correction factors under the <i>NSW Industrial Noise Policy</i>), including regular briefings and a public information session within 6 months of the granting of this development consent;</p> <p>e) Include a monitoring program that:</p>				<p>This Management Plan</p> <p>Appendix B Section 6 Section 6</p> <p>Section 8.1.3</p> <p>Appendix A</p>

Consent Condition	Environmental Performance Conditions	Section of NMP which addresses this requirement
	<ul style="list-style-type: none"> • Evaluates and reports on: <ul style="list-style-type: none"> * the effectiveness of the noise management system on site; * the effectiveness of the noise attenuation program (see condition 4(d)); * compliance against the noise criteria in this consent; and * compliance against the noise operating condition; • Includes a program to calibrate and 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 trigger for further attended monitoring where there is a risk of non-compliance with the noise criteria in this consent); and • Defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents. 	
Sch. 4 Cond. 2	<p>Notification of Landowners / Tenants Prior to entering into any tenancy agreement for any land owned by the Applicant that is predicted to experience exceedances of the recommended dust and/or noise criteria, or for any of the land listed in Table 1 that is subsequently purchased by the Applicant, the Applicant must:</p> <ul style="list-style-type: none"> a) Advise the prospective tenants of the potential health and amenity impacts associated with living on the land, and give them a copy of the NSW Health fact sheet entitled “Mine Dust and You” (as may be updated from time to time); and b) Advise the prospective tenants of the rights they would have under this consent, <p>to the satisfaction of the Planning Secretary.</p>	N/A
Sch. 4 Cond. 3	<p>As soon as practicable after obtaining monitoring results showing:</p> <ul style="list-style-type: none"> a) An exceedance of any relevant criteria in schedule 3, the Applicant must notify affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the development is again complying with the relevant criteria; 	Section 8.1.2
Sch. 4, Cond. 4	<p>Independent Review If an owner of privately-owned land considers the development to be exceeding the criteria in schedule 3 at his/her land, then he/she may ask the Planning Secretary in writing for an independent review of the impacts of the development on his/her land. If the Planning Secretary is satisfied that an independent review is warranted, then the Applicant must:</p> <ul style="list-style-type: none"> a) Commission a suitably qualified, experienced and independent expert, whose appointment has been approved by the Planning Secretary to: <ul style="list-style-type: none"> • Consult with the landowner to determine his/her concerns; • Conduct monitoring to determine whether the development is complying with the relevant impact assessment criteria in Schedule 3; and • If the development is not complying with these criteria then: <ul style="list-style-type: none"> ○ Determine if more than one mine or development is responsible for the exceedance, and if so the relative share of each mine or development regarding the impact on the land; and ○ Identify the measures that could be implemented to ensure compliance with the relevant criteria; and b) Give the Planning Secretary and landowner a copy of the independent review within 2 months of the Planning Secretary’s decision, unless the Planning Secretary agrees otherwise.. 	Section 7.1
Sch. 5 Cond. 3	<p>Management Plan Requirements The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:</p> <ul style="list-style-type: none"> a) Detailed baseline data; 	Appendix C

Consent Condition	Environmental Performance Conditions	Section of NMP which addresses this requirement
	<p>b) A description of</p> <ul style="list-style-type: none"> • The relevant statutory requirements (including any relevant consent, licence or lease conditions); • Any relevant limits or performance measures / criteria; • The specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development of any management measures; <p>c) A description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures / criteria;</p> <p>d) A program to monitor and report on the:</p> <ul style="list-style-type: none"> • Impacts and environmental performance of the development; • Effectiveness of any management measures (see c above) <p>e) A contingency plan to manage any unpredicted impacts and their consequences;</p> <p>f) A program to investigate and implement ways to improve the environmental performance of the development over time;</p> <p>g) A protocol for managing any:</p> <ul style="list-style-type: none"> • Incidents; • Complaints; • Non-compliances with statutory requirements; and • Exceedances of the impact assessment criteria and/or performance criteria; and <p>h) A protocol for periodic review of the plan.</p> <p><i>Note: The Planning Secretary may waive some of these requirements if they are unnecessary for particular management plans.</i></p>	<p>Table 1</p> <p>Appendix A Section 6</p> <p>Section 6.5 Section 6.6</p> <p>Sections 8.1.1, 8.1.2 and 8.4</p> <p>Section 8.5</p>
Sch. 5 Cond. 4	<p>Annual Review</p> <p>By the end of March each year, the Applicant must review the environmental performance of the development for the previous calendar year to the satisfaction of the Planning Secretary. This review must:</p> <p>a) Describe the development (including any rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current next year;</p> <p>b) Include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against the</p> <ul style="list-style-type: none"> • The relevant statutory requirements, limits or performance measurements / criteria; • The monitoring results of previous years; and • The relevant predictions in the EIS; <p>c) Identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;</p> <p>d) Identify any trends in the monitoring data over the life of the development;</p> <p>e) Identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and</p>	Section 8.1.2

Consent Condition	Environmental Performance Conditions	Section of NMP which addresses this requirement
	f) Describe what measures will be implemented over the next year to improve the environmental performance of the development.	
Sch. 5 Cond. 5	<p>Review of Strategies, Plans and Programs Within 3 months of the submission of an:</p> <p>e) Annual review under condition 4 above;</p> <p>f) Incident report under condition 7 below;</p> <p>g) Audit under condition 9 below; and</p> <p>h) Any modification to the conditions of this consent (unless the conditions require otherwise),</p> <p>The Applicant must review, and if necessary revise, the strategies, plans and programs required under this consent to the satisfaction of the Planning Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review, unless the Planning Secretary agrees otherwise, the revised document must be submitted to the Planning Secretary for approval. <i>Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.</i></p>	Section 8.5
Sch. 5 Cond. 7	<p>Incident Notification The Applicant must immediately notify the Department and any other relevant agencies after it becomes aware of the incident. The notification must be in writing via the Department’s Major Projects Website and identify the development (including the development application number and name) and set out the location and nature of the incident.</p> <p>Non-Compliance Notification Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing via the Department’s Major Projects Website and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance. <i>Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.</i></p>	Section 8.1.2
Sch. 5 Cond. 8	<p>Regular Reporting The Applicant must provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.</p>	Section 8.1.2
Sch. 5, Cond. 11	<p>Access to Information From the commencement of development under this consent, the Applicant shall:</p> <p>c) Make the following information publically available on its website:</p> <ul style="list-style-type: none"> • The EIS; • Current statutory consents for the development; • Approved strategies, plans or programs required under the conditions of this consent; • A comprehensive summary of the monitoring results of the development, which have been reported in accordance with the various plans and programs approved under the conditions of this consent, or any approved plans and programs; • The results of real time noise monitoring, updated daily (unless otherwise agreed by the Planning Secretary); • A complaints register, which is to be updated on a monthly basis; • Minutes of CCC meetings; 	Section 8.1.2

Consent Condition	Environmental Performance Conditions	Section of NMP which addresses this requirement
	<ul style="list-style-type: none"> • The annual reviews of the development (for the last 5 years, if applicable); • Any independent environmental audit, and the Applicant's response to the recommendations in any audit; • Any other matter required by the Planning Secretary; and <p>d) Keep this information up to date</p>	
App. 7 Cond. 1	<p>Noise Compliance Assessment Applicable Meteorological Conditions</p> <p>The noise criteria in Table 3 in Schedule 3 are to apply under all meteorological conditions except the following:</p> <ul style="list-style-type: none"> a) Wind speeds greater than 3m/sec at 10m above ground level; b) Stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or c) Stability category G temperature inversion conditions. 	Appendix A
App. 7 Cond. 2	<p>Determination of Meteorological Conditions</p> <p>Except for wind speed at microphone height, the data to be used for determining meteorological conditions must be that recorded by the meteorological station located on the site.</p>	Appendix A
App. 7 Cond. 3	<p>Compliance Monitoring</p> <p>Attended monitoring is to be used to evaluate compliance with the relevant conditions of this consent.</p>	Appendix A
App. 7 Cond. 4	<p>This monitoring must be carried out at least 12 times a year, unless the Planning Secretary directs otherwise.</p>	Appendix A
App. 7 Cond. 5	<p>Unless otherwise agreed with the Planning Secretary, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the <i>NSW Industrial Noise Policy</i> (as amended from time to time), or an equivalent NSW Government policy, in particular the requirements relating to:</p> <ul style="list-style-type: none"> a) Monitoring locations for the collection of representative noise data; b) Meteorological conditions during which collection of noise data is not appropriate; c) Equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and d) Modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for: <ul style="list-style-type: none"> * duration; or * low frequency noise, where it is demonstrated that the dBC – dBA difference is caused by distance attenuation only. 	Appendix A

App. 9 Interim Noise Criteria

Noise criteria in condition 18 of DA-300-9-2002-i

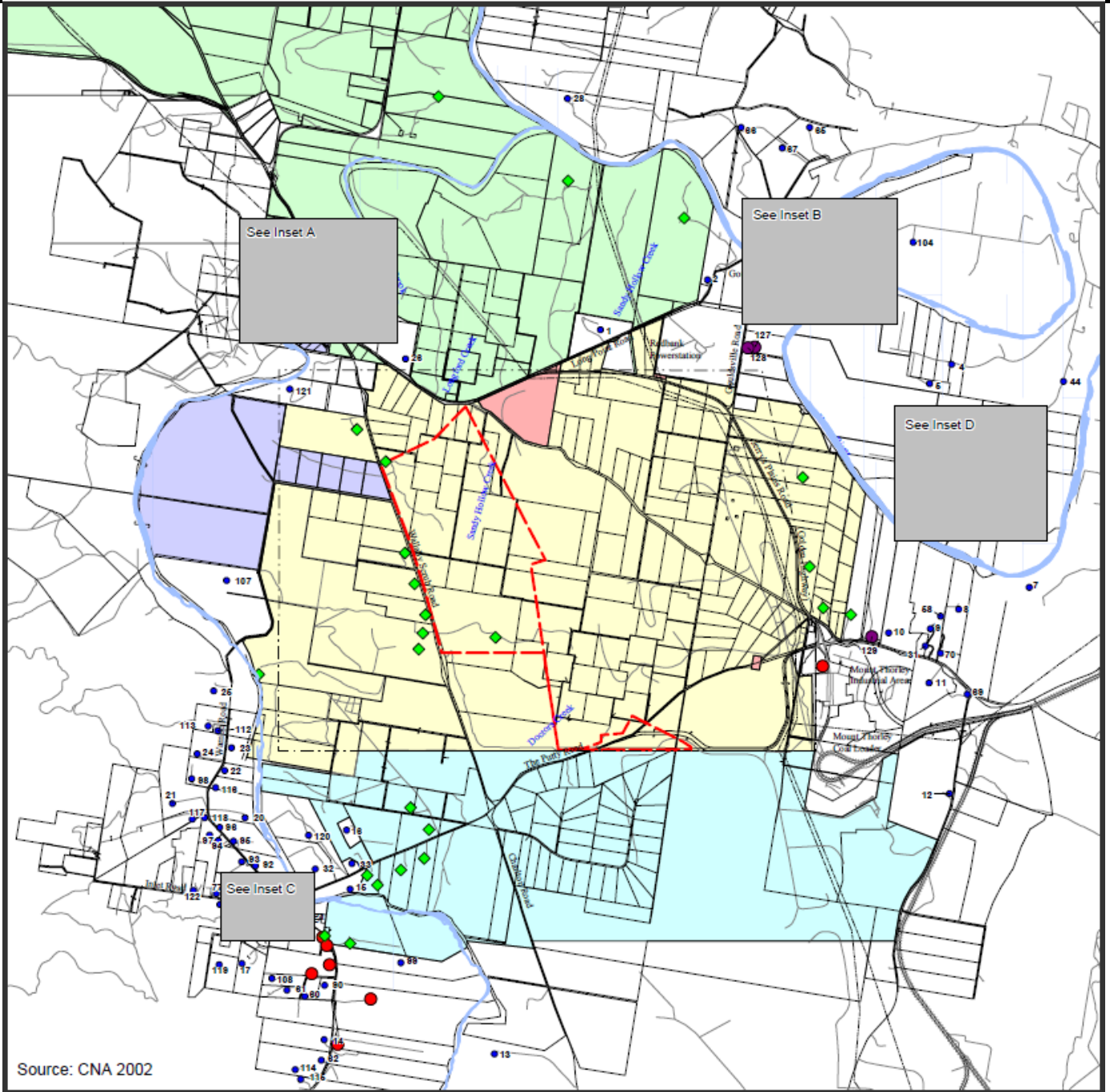
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35	All other residential or sensitive receptors, excluding: 10, 34, 36, 46, 127, 128, 129

Note: To interpret the land referred to in this table, see the applicable figure below.

Consent
Condition

Environmental Performance Conditions

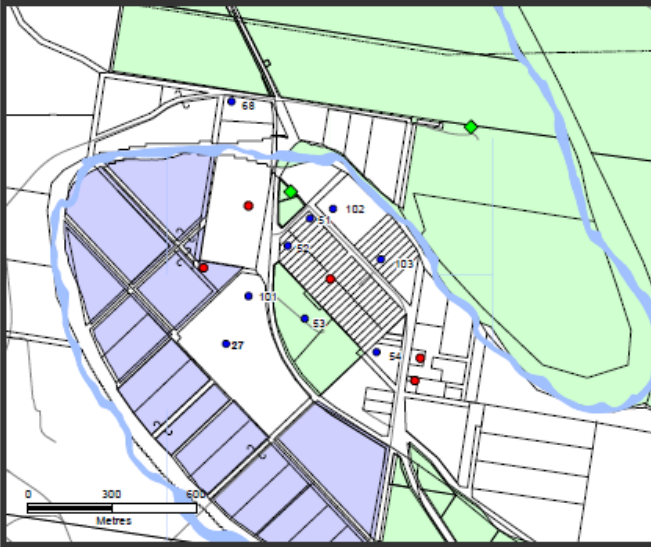
Section of
NMP which
addresses this
requirement



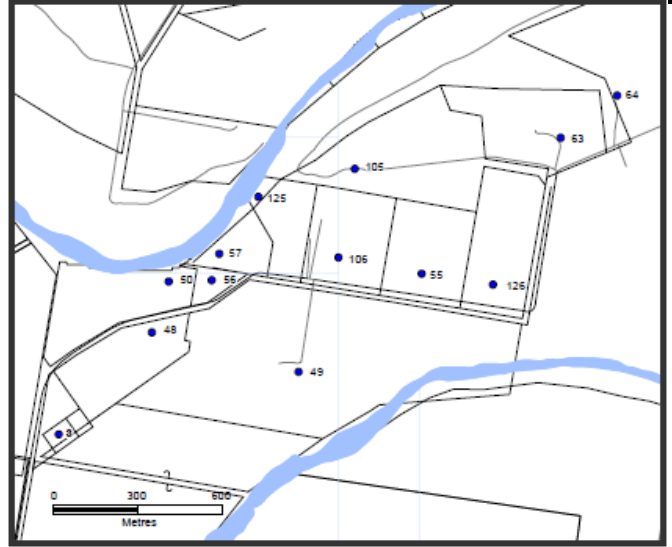
Consent
Condition

Environmental Performance Conditions

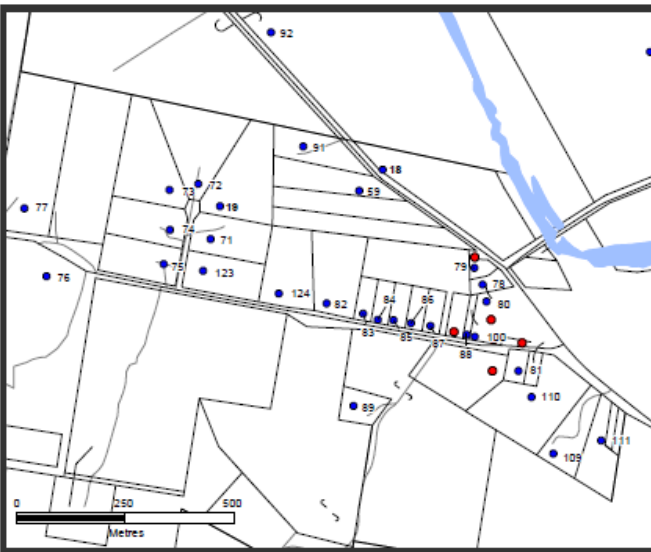
Section of
NMP which
addresses this
requirement



Inset A (Warkworth)



Inset B (Gouldsvile)



Inset C (Bulga)



Inset D (Hambleton Hill)

1.3 Objectives

The purpose of this NMP is to describe reasonable and feasible measures to address potential noise impacts of the Project as identified in the Approvals and satisfy the relevant conditions of the Approvals.

This NMP describes procedures required to ensure compliance with the Approval conditions relating to noise impacts including the measures that MTW will use to manage noise impacts. This Noise Management Plan details the management framework and mitigation actions to be taken in operating the Project. This NMP also provides a mechanism for assessing noise monitoring results against the relevant noise impact assessment criteria.

The key elements of the mitigation strategies will be,

- Continuation of the HME sound suppression regime;
- On-going noise monitoring to assess the performance of the mining operations against the predicted noise levels;
- Modification of operations where monitoring data indicates the need;
- Pro-active mine planning, such as the provision of alternative areas for overburden emplacement where practical or management and scheduling of mobile equipment, dependent on the prevailing meteorological conditions;
- Use of predictive meteorological forecasting to inform operational decision making; and
- Ongoing attended noise monitoring.

The objectives of this NMP are to:

- Set out the measures that will be used to minimise the noise impacts from MTW;

- Detail how MTW will ensure compliance with the conditions of Approval (**Table 1**);
- Describe how MTW intends to ensure that operational noise from MTW is effectively managed; and

Provide a program for monitoring performance, evaluating compliance and measuring the effectiveness of controls undertaken by site to effectively manage noise.

2 BACKGROUND

2.1 Background

This NMP has been prepared to fulfil the requirements of relevant legislation, the Approvals, EA commitments, Environment Protection Licence (EPL) conditions and relevant standards and guidelines.

2.1.1 Project Approval

The Approvals and subsequent amendments were assessed under the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act.). Development Consent for the Warkworth Continuation Project (SSD-6464) and Mount Thorley Operations 2014 Project (SSD-6465) was granted on 26th November 2015. A modification to the Warkworth Continuation Project (SSD-6464 MOD2) was granted on 27 May 2022.

The Approvals stipulate the noise criteria that operational activities at MTW must comply with. The noise criteria under the Approvals are reproduced in **Table 1**.

2.1.2 Environmental Protection Licence

The *Protection of the Environment Operations Act 1997* (NSW) (PoEO Act) is the principal piece of legislation regulating pollution (including noise pollution) emissions in NSW. At the time of submission of the NMP, EPL's 1376 for Warkworth Coal Mines (issued on 21 August 2000) and 1976 for Mount Thorley Operations (issued on 28 September 2000) do not stipulate Project Specific Noise Limits (PSNL's) for MTW. EPL 24 for Mount Thorley Coal Loading does not stipulate any conditions relating to noise at the time of submission of this NMP.

2.2 Relevant Standards and Guidelines

Guidelines and standards applying to noise at MTW include:

- Noise Policy For Industry (NSW EPA, 2017) and

- Australian Standard AS 1055 'Acoustics, Description and Measurement of Environmental Noise'.

3 CONSULTATION

Schedule 3, Condition 7 of the Warkworth Approval, and Schedule 3, Condition 5 of the Mount Thorley Approval requires the Noise Management Plan be prepared in consultation with the Environment Protection Authority. In a letter to the EPA dated 29 August 2023, MTW sought to clarify the EPA's position with regard to the review and input of Environmental Management Plans. In a letter dated 11 September 2023, the EPA advised "The EPA has not reviewed and has no comment on the Noise Management Plan. The EPA's role, as a regulatory authority, is to set environmental objectives rather than being involved in the development of strategies to achieve those objectives. The development of such plans by proponents and licensees is encourage by the EPA, to ensure they have determined how they will meet their statutory obligations and environmental objectives." (See **Appendix B**).

4 EXISTING CHARACTER

4.1 Existing Character

Mt Thorley Warkworth (MTW) is an integrated operation of two open cut mines, Warkworth Mining Limited (WML) and Mount Thorley Operations (MTO) which are located adjacent to each other and 15 km south west of Singleton in the Hunter Valley region of New South Wales. The operation supplies international and domestic markets with semi-soft coking coal and thermal coal.

MTW is partially bounded by public roads – the Golden Highway alongside the Northern and Eastern WML boundary, Charlton Roads to the West of MTO, and Wollombi Brook to the west of WML. The operation is bisected by Putty Road, WML to the North of the road, and MTO to the South.

MTO shares its southern boundary with the adjoining Bulga Open Cut Mine (BOC).

Surrounding land uses include Mining (nearby operations include Bulga Coal, Wambo Coal and Hunter Valley Operations), agriculture (to the east in the areas of Mount Thorley and Hambledon Hill), Industrial pursuits in the Mount Thorley Industrial Estate, and nearby residential communities of Bulga, Milbrodale, Warkworth and Long Point. The township of Singleton is located approximately 7km to the east of WML.

4.2 Infrastructure

MTW comprises the following major areas and infrastructure:

- WML open cut mine;
- MTO open cut mine;
- WML Run Of Mine pad (ROM) and Coal Handling Prep Plant (CHPP);
- MTO ROM and CHPP;
- MTCL rail load-out facility;

- Workshop and administration facilities; and
- Tailings Storage Facilities.

Figure 1 shows the layout of MTW.

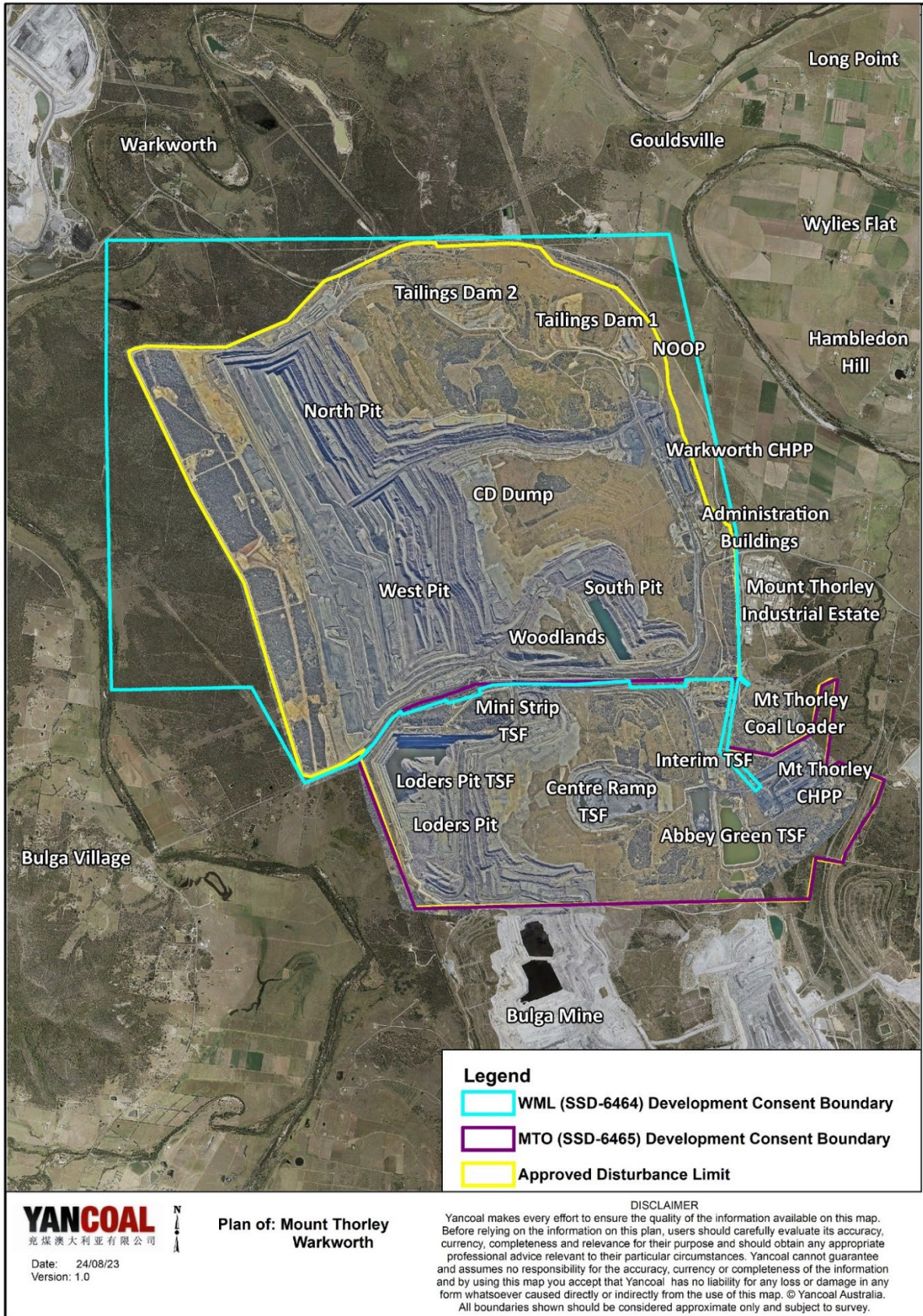


Figure 1 - Layout of MTW

4.3 Site Noise Emissions

MTW operates 24 hours per day, seven days per week. MTW aims to comply with the noise criteria stipulated in the Approvals.

Site noise can be emitted from mobile or fixed plant. These noise emissions have the potential to adversely affect the acoustic environment and surrounding residences.

Product coal is loaded onto trains at Mount Thorley Coal Loader, and then transported to the Port of Newcastle. Noise from trains on the loading loop is regulated through the Australian Rail Track Corporation's (ARTC's) EPL (No. 3142).

4.4 Meteorological Conditions

Meteorological conditions experienced at MTW are considered typical for the Upper Hunter. Wind patterns follow an annualised cycle predominantly blowing from the north-west during the cooler months, and from the south east during the warmer months.

Since 2007, average annual rainfall is 677mm. Records of wind speed, wind direction and sigma-theta (used to calculate Pasquill Stability Classes) has been analysed for the purposes of noise assessment during the environmental assessment phase of the Project. The combined occurrence of atmospheric stability class F and G indicates that temperature inversions are considered to be a feature of the region during Autumn nights, with potential to enhance noise propagation.

4.5 Detailed Baseline Data

Baseline noise data for MTW is provided in **Appendix C**.

4.6 Relevant Noise Criteria

Noise criteria as stipulated in the Approvals is reproduced in **Table 1**.

5 MANAGEMENT OPTIONS / MITIGATION OPTIONS

5.1 Principles and framework

- Noise management on-site is governed by a framework of- Plan, Do, measure, Review
- "Plan" component of framework:
 - undertake risk analysis of noise impacts;
- "Do" component of framework:-
 - Complaints management;
 - Dynamic improvement/evolution;
 - Reactive and proactive mitigation measures;
 - Co-ordination/cumulative impact management;
- "Check" component of framework:
 - regular monitoring; and
- "Review" component of framework:
 - Reporting and analysis;
 - Further risk analysis.

6 MITIGATION MEASURES / MANAGEMENT CONTROLS

6.1 Objectives

In order to mitigate any potential impacts from noise creating activities, MTW will implement a number of management controls throughout the life of MTW. The management controls / mitigation measures are derived from the principles outlined in Section 10.5 of

the Warkworth Continuation 2014 Environmental Impact Statement.

Measures to manage MTW noise emissions have been divided into three categories, namely:

- Standard mitigation measures;
- Proactive mitigation measures; and
- Reactive mitigation measures

Together, these three categories make up the MTW Noise Management System.

6.2 Standard Mitigation Measures

The following controls are implemented under standard conditions:

- plant, machinery and haul roads will be maintained in good condition according to manufacturer's specification and repaired as required to ensure that equipment remains in a serviceable operating condition;
- noise impacts will be considered during risk analysis and change management procedures for substantive changes to operating conditions;
- sound power level testing of equipment will be undertaken annually (see section 6.3.2);
- activities that generate complaints will be monitored and modified if supplementary monitoring results confirm that noise criteria are potentially being exceeded;
- environmental inductions will ensure that relevant employees are aware of potential impacts on sensitive receptors from equipment and its operation;

- all new trucks, dozers, drills and excavators purchased for use onsite will be commissioned as noise suppressed (attenuated) units;
- Coal haulage by rail or conveyor to minimise the road noise of the development;
- attended monitoring of noise will be undertaken on a monthly basis at representative sites, by a qualified acoustic consultant;
- Directional real-time monitoring with frequency filtering capabilities will be employed at sensitive receptor locations. Noise alarms will be generated, received and responded to in real time to effectively manage noise emissions; and
- Frequent reporting on the MTW website on the outcomes of real time and attended noise monitoring (see section 8.1).

6.3 Proactive Measures

6.3.1 Sound Suppressed Fleet

Extensive work has been undertaken since 2013 to sound attenuate 100% of MTW's Heavy Mobile Equipment (HME) fleet. All new equipment purchased by MTW will be sound attenuated before being used onsite.

6.3.2 Sound Power Level Testing

Sound power level testing (sound screening) will be undertaken on 33% of the attenuated HME fleet annually. In this way, 100% of attenuated equipment will be screened on a rolling three-year cycle. The results of sound screening will be used for the following:

- to inform MTW of equipment which is experiencing degradation in suppression equipment and requiring repair;

- to inform MTW of fleet types and units which can be preferentially deployed into or removed from noise risk areas; and
- to compare against the predicted noise levels in the environmental assessment, reported annually in the AR (model validation).

When one piece of equipment measures >3 dB(L) against operational specifications (126dB(lin)), MTW maintenance staff will inspect and assign the piece of equipment to the appropriate maintenance schedule.

6.3.3 Routine Maintenance Scheduling

Routine equipment inspections include assessment of the condition of the attenuation components. If, during the services and inspections, a major noise attenuation component is found to be absent, worn or broken to the point of being ineffective, that piece of equipment will be repaired or replaced. Routine maintenance is undertaken at a frequency of six weeks for Komatsu 830E haul units, and four weeks for all other haul units. Additional maintenance events can be scheduled within two weeks where required.

6.3.4 Daily pre-start inspections

Daily pre-start inspection is undertaken by the operators, which includes walking around equipment and undertaking a visual inspection of the vehicle, including any installed sound attenuation equipment. Vehicle operators will be trained to assess the attenuation components. Where potentially defective plant is identified (major noise attenuation component absent or broken), these will be noted and reported to the appropriate staff. Maintenance staff will assess the severity of the defect (with respect to the effectiveness of the sound attenuation equipment) and action accordingly. If the potential defect is confirmed (major noise attenuation component absent or broken), that piece of equipment will be assigned to the appropriate maintenance schedule for rectification. Where possible, maintenance will be accelerated to address more serious / severe defects.

6.3.5 Proactive Planning

An assessment of forecast information at the commencement of each night shift identifies likely direction of meteorological enhancement of noise (if any).

MTW has developed a simple noise enhancement prediction tool that uses WRF forecast data to predict source to receptor sonic gradients for the key noise propagation pathways from MTW to nearby sensitive receptors.

Handheld noise monitoring is undertaken on a proactive basis in neighbouring communities on a night-to-night basis, as well as in response to triggers and complaints.

6.4 Reactive Measures

The aforementioned pro-active management actions are supported by a system of reactive management measures. These measures utilise a combination of real time noise monitoring and operational surveillance of mining equipment and conditions to ensure noise limits are complied with at all times.

6.4.1 Real Time Noise monitoring network – BarnOwl monitors

The existing directional real time monitoring network includes three directional BarnOwl monitors. These units are located at:

- Bulga;
- Inlet Road West; and
- Long Point

The BarnOwl monitors are configured to trigger alarms, received by mine personnel in the event of elevated noise (<1000Hz) from the direction of MTW. Triggers are listed in **Table 2**.

Table 2 - BarnOwl alarm triggers

Monitoring Location	Consent Area	Amber Alert (dB(A))	Red Alert (dB(A))
BULGA	WML	36	38
	MTO	36	38
INLET ROAD WEST	MTW	N/A	35
LONG POINT	WML	33	35

The real time noise alarm process operates as follows:

- A noise alarm is generated following two consecutive 15min measurements at a monitor location from the directions of MTW operations (<1000Hz low pass data, from the direction of either of MTO, WML, or MTW combined) above the trigger threshold, detailed in **Table 2**;
- Real time noise data is compared against current meteorological conditions, and operate to a conservative wind threshold);
- Alerts are active between 8pm and 6am, seven days per week;
- Amber alerts are used as an indicator of noise level approaching the trigger for Red alert.
- Red alerts are followed up with an assessment of validity;
- Where handheld assessment supports the alarm (noise issue identified), remedial actions are implemented to reduce the noise level accordingly (see **section 6.4.3**), and.
- Where it is identified that BarnOwl Real Time Noise Monitors are not operating as intended, additional supplementary handheld noise

monitoring will be completed as required (see **section 6.4.3**).

6.4.2 Real Time Noise monitoring network – Environmental Noise Compass monitor

The existing directional real time monitoring network includes two Environmental Noise Compasses. These units are located at:

- Mt Leonard
- Wambo Road

Environmental Noise Compass Real-time noise alarm triggers are listed in **Table 3**.

Table 3 - Environmental Noise Compass alarm triggers

Monitoring Location	Consent Area	Amber Alert (dB(A))	Red Alert (dB(A))
MOUNT LEONARD (ENC)	WML	35	37
	MTO	36	38
WAMBO ROAD (ENC)	WML	36	38
	MTO	36	38

Noise alarms from the Environmental Noise Compass function as follows:

- A noise alarm is generated following two consecutive 15min measurements at a monitor location from the directions of MTW operations (<710Hz low pass data, from the direction of either of MTO or WML) above the trigger threshold, detailed in **Table 3**;
- Real time noise data is compared against current meteorological conditions, and operate to a conservative wind threshold);
- Alerts are active between 8pm and 6am, seven days per week;
- Amber alerts are used as an indicator of noise level approaching the trigger for Red alert.

- Red alerts are followed up with an assessment of validity;
- Where handheld assessment supports the alarm (noise issue identified), remedial actions are implemented to reduce the noise level accordingly (see section 6.4.3); and
- Where it is identified that Environmental Noise Compass Real Time Noise Monitors are not operating as intended, additional supplementary handheld noise monitoring will be completed as required (see **section 6.4.3**).

6.4.3 Supplementary handheld noise monitoring

A program of targeted supplementary attended noise monitoring is operated at MTW to support the real-time directional monitoring network and ensure the highest level of noise management is maintained.

The supplementary program is undertaken by MTW personnel and involves:

- Undertaking routine inspections from both inside and outside the mine boundary;
- Routine and as-required handheld noise assessments (undertaken in response to noise alarm and/or community complaint), comparing measured levels against consent noise limits; and
- Validation monitoring following operational modifications to assess the adequacy of the modifications.

6.4.4 Operational Modifications

Where noise assessment undertaken identifies noise emissions which are exceeding the consent noise limit for any particular residence, modifications will be made with the intention that the noise event is resolved within 75 minutes of identification by MTW

personnel. The actions taken are commensurate with the nature and severity of the noise event, but can include:

- Changing the haul route to a less noise sensitive haul;
- Changing dump locations (in-pit or less exposed dump option);
- Reducing equipment numbers;
- Shut down of task; or
- Site shut down.

When noise has been reduced to an acceptable level, supplementary handheld noise monitoring will be undertaken to confirm noise is maintained at this level. Any subsequent restart of equipment will be accompanied by an initial period of monitoring so as to prevent as far as practicable any return to previously elevated noise. Noting that this will not prevent a subsequent increase to the mine noise output if this is due to subsequent meteorological or operational changes which were not related to the initial noise event. In the event that alarms are received from other monitoring locations during this period of monitoring priority is given to these other locations.

In the event that subsequent instances of elevated noise are detected at the same monitoring location (which may occur from time to time due to changes in operating practice and location, or more commonly, changes in meteorological conditions), MTW will resolve these events within 75 minutes of detection.

6.4.5 Validation of Real Time monitoring locations

To ensure that the prescribed real time monitoring locations adequately represent all privately owned land surrounding MTW, validation surveys will be undertaken on an as required basis. The surveys will be conducted upon request by way of either attended or unattended monitoring at private residence(s) (subject to landowner agreement) for a nominal period to

enable comparison with measured levels at the corresponding real time monitoring location. Where monitoring data indicates that real time triggers are not ensuring noise levels below the relevant impact assessment criteria at a particular residence the triggers will be reviewed.

6.4.6 Sound Power Level Testing – ad-hoc

Where MTW staff identify equipment which is perceived to be experiencing degradation of sound attenuation, ad-hoc sound power level testing will be arranged as required to assess the equipment. MTW maintenance staff will inspect the equipment, and where a defect is identified, it shall be actioned accordingly.

6.5 Management of Unpredicted Impacts

In the event that unpredicted noise impacts are found to be occurring at nearby privately owned residences, MTW will consider management options on a case-by-case basis such as:

- Entering into an impact cooperation agreement with the landowner
- Review of management controls and monitoring systems specific to the affected residence
- Mitigation options (such as installation of double glazed windows and air conditioning units)
- Acquisition of the affected property

6.6 Continuous Improvement

MTW has demonstrated strong commitment to continuous improvement in the area of noise management in recent years.

MTW will continuously seek to further noise management by way of improving existing controls and investigating new and emerging technologies,

implementing new controls where required, and thoroughly investigating any exceedance and non-compliance events.

MTW will continue to develop action plans to reduce the risk of non-compliance with the relevant noise conditions of the Approvals. Identified actions will be documented will be documented in the action management system, and tracked to completion.

7 MONITORING PROGRAM

Appendix A sets out the MTW Noise Monitoring Programme, including a protocol for evaluating non-compliances, and contains information on the definitions and protocols regarding Noise Incidents.

7.1 Independent Review and Land Acquisition Process

In accordance with the relevant conditions of the approvals, landowners who consider the development(s) to be exceeding the noise criteria can request Independent Review of noise impacts at any time. Such requests must be made in writing, to the Planning Secretary.

The Planning Secretary will assess the request and, if satisfied that an Independent Review is warranted, will communicate same to MTW to commence the Review. Where Independent Review determines MTW to be exceeding the relevant criteria, MTW will work with the Department and the resident to implement appropriate measures to ensure compliance with the relevant conditions of consent.

8 IMPLEMENTATION OF THE NOISE MANAGEMENT PLAN

8.1 Reporting

8.1.1 Internal reporting

Determining exceedances of noise criteria will be undertaken in accordance with the protocol for

evaluating compliance (Noise Monitoring Programme), reproduced in **Appendix A**.

The Environment & Community Advisor will report any potential or confirmed exceedance / non-compliance to relevant site personnel, including the General Manager, Manager – Mining, and Manager Environment & Community.

Non-compliance events will be investigated. Where additional controls are identified for implementation to reduce the risk of repeated non-compliance, these will be assigned to the relevant accountable person. Actions are tracked to completion.

8.1.2 External Reporting

The Environment and Community Advisor will notify the Department of Planning and Environment (via the Department's Major Projects Website) any confirmed exceedance/non-compliance immediately. Within 7 days of becoming aware of a non-compliance, MTW will provide the Department with a detailed report on the incident via the Department's Major Projects Website. The report will identify the development (including the development application number and name), set out the condition of the consent that the development is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

As required by the Approvals, non-compliances will also be reported to other relevant agencies. At this time no further agencies are considered relevant, and thus do not require notification of noise non-compliance events.

Affected residences will be notified in writing in the event of a confirmed non-compliance with noise conditions.

Noise monitoring data, collected in accordance with this NMP will be made available on the MTW website ([https://www.yancoal.com.au/our-sites/mount-](https://www.yancoal.com.au/our-sites/mount-thorley-warkworth/)

[thorley-warkworth/](https://www.yancoal.com.au/our-sites/mount-thorley-warkworth/)) via the Monthly Environmental Monitoring Report, and Annual Review.

At the time of submission of this NMP, MTW does not have any noise monitoring requirements listed in EPL's 1376, 1976 or 24.

8.1.3 Keeping the local community informed

Schedule 3, Condition 7(d) (WML) and Schedule 3, Condition 5(d) (MTO) of the Approvals requires that the NMP *"include provisions for keeping the local community informed about the operation of the noise management system and monitoring programs (including any correction factors under the NSW Industrial Noise Policy), including regular briefings and a public information session within 6 months of the granting of this development consent."*

MTW publishes a range of information relating to noise management on a monthly basis via the Monthly Environmental Report, available via the MTW website (<https://www.yancoal.com.au/our-sites/mount-thorley-warkworth/>). This report includes:

- Results from attended compliance monitoring for the previous month, including measurements which attract the Noise Policy for Industry (NPfI) Low Frequency Noise (LFN) modification factor penalty;
- A summary of supplementary noise measurements undertaken in the previous month (including the number of measurements which exceed the triggers, and the number of nights on which trigger exceedances occur); and
- A summary of equipment downtime logged in response to environmental events such as noise, for the previous month.

In addition to the Monthly Report, MTW is committed to providing up-to-date information on matters of environmental management to near-neighbours. To facilitate this, MTW launched "InSite" on April 1, 2016.

An interactive website, InSite displays noise and meteorological data, as well as any operational changes made during shift. Accessible at <https://insite.yancoal.com.au/> (and via <https://www.yancoal.com.au/our-sites/mount-thorley-warkworth/>).

To address the addition to Schedule 5, Condition 11 (both approvals), which requires MTW to make available on the website *“the results of real time noise monitoring, updated daily (unless otherwise agreed by the Planning Secretary), the following information is published to “InSite” each weekday:*

- Results of supplementary attended monitoring collected by MTW personnel, for the previous night, including descriptions of audible noise sources noted during these measurements; and
- Details of any operational changes made in response to triggers, managed in accordance with Section 6.4 of this management plan.

The MTW Community Consultative Committee is kept informed regarding the performance of the noise management system.

8.2 Comparison of Attended and real-time monitoring data

Schedule 3, Condition 5(d) (MTO) and Schedule 3, Condition 7(d) (MTO) requires that the Noise Monitoring Programme *“includes a program to calibrate and validate real-time noise monitoring results with attended monitoring results over time (so the real time program can be used as a better indicator of compliance with the noise criteria and as a trigger for additional attended monitoring”*.

The supplementary handheld noise monitoring regime is structured to allow for additional attended noise monitoring on nights where noise enhancement is witnessed. This includes identification of increased

noise through both proactive handheld monitoring and the receipt and validation of real-time alarms.

Triggers and processes for increased frequency of attended monitoring per the Department guidance note is described in the Protocol for determining compliance (see **Appendix A**).

8.3 Annual Assessment and model validation

The Annual Review prepared each year for MTW will include all noise monitoring results for the corresponding year. The Annual Review will also include a comparison of monitoring results against the predictions from the noise model. This will be done by directly comparing the measured results against the predictions for INP weather conditions in the closest operating scenario to the actual operating conditions for the given year.

8.4 Complaints Management

Community Complaints are lodged via the Community Complaints line, 1800 656 892. The hotline number prominently displayed on the MTW website. The Complaints Hotline operates 24 hours per day, seven days a week. Complaints will be recorded and investigated by MTW staff. Complaints lodged via other means (letter, in person, fax etc) will also be recorded and investigated by the Environmental Advisor.

Where the investigation identifies potential non-compliance with a consent or licence condition, action to mitigate the cause of the complaint will be taken.

The details of all noise complaints, and any mitigating actions taken, will be circulated to senior management and other key personnel. Where requested, follow-up correspondence with the complainant will be provided. It is a condition of EPL’s 1376, 1976 and 24 that MTW maintain a register of pollution complaints. MTW

maintains a register of all complaints, recording the following information (at minimum):

- Date and time of the complaint
- Method by which the complaint was made
- Any personal details of the complainant which were provided
- The nature of complaint
- Any action taken in relation to the complaint
- If no action, the reason why no action was taken

A record of each complaint will be kept for a minimum of four years, and will be produced on request to any authorised officer of the EPA.

8.5 Review of this Management Plan

This NMP will be reviewed within three months of the submission of the Annual Review and updated to the

satisfaction of the Planning Secretary of the Department of Planning, Housing and Infrastructure (DPHI) where necessary.

This NMP will also be reviewed, and revised if necessary, within three months of the completion of an Independent Environmental Audit, any non-compliance of the Approvals' noise criteria or any modification to the conditions of the Approvals.

The NMP may also be reviewed/revised at any time (e.g. other than at triggered events described above), to ensure it is updated on a regular basis.

Any amendments to this NMP that affect its application will be undertaken in consultation with the appropriate regulatory authorities specified in the Approvals, and to the satisfaction of the Planning Secretary.

8.7 Roles and Responsibilities

Table 4- Roles and Responsibilities

Manager – Environment & Community
<ul style="list-style-type: none">• Implementation of Management Plan• Regulator liaison and technical oversight
Manager – Mining
<ul style="list-style-type: none">• Direction and operational oversight of management practices
Manager – Mine Planning
<ul style="list-style-type: none">• Allocation of contingency mine plan options in consideration of noise impacts
Manager – Maintenance
<ul style="list-style-type: none">• Administer Sound Power Level Testing regime• Co-ordination of sound attenuation program• Direction and oversight of processes used in identifying and repairing defective equipment
Community Response Officer
<ul style="list-style-type: none">• Implementation of real time surveillance program• Community liaison• Complaints administration management
Environment and Community Advisor
<ul style="list-style-type: none">• Complaints administration management• Administer noise monitoring programme• Non-compliance reporting• Co-ordination of Management Plan review• Systems development and implementation• Co-ordination of exceedance investigation• Community and regulator liaison• Technical oversight• Routine and Ad-hoc reporting
Shift Co-ordinator
<ul style="list-style-type: none">• Implementation of operational modifications in response to triggers• Infrequent community liaison
Mine Monitoring and Control (Dispatch)
<ul style="list-style-type: none">• Support to Shift Co-ordinator and Community Response Officer (access to real time tools)
Consultants
<ul style="list-style-type: none">• Attended compliance monitoring and Technical oversight

REFERENCES

- Warkworth Mining Limited Continuation Project Development Consent (SSD-6464)
- Mount Thorley Operations 2014 Project Development Consent (SSD-6465)
- The Environmental Impact Statement '*Warkworth Continuation 2014*' – EMGA Mitchell McLennan, June 2014
- The Environmental Impact Statement '*Mount Thorley Operations 2014*' – EMGA Mitchell McLennan, June 2014
- The document titled '*Warkworth Continuation 2014 Response to Submissions*', dated November 2014 and prepared by EMGA Mitchell McLennan
- The document titled '*Mount Thorley Operations 2014 Response to Submissions*', dated November 2014 and prepared by EMGA Mitchell McLennan
- Environment Protection Licence 1376 (WML)
- Environment Protection Licence 1976 (MTO)
- Noise Policy For Industry (NSW EPA, 2017). (Superseding NSW Industrial Noise Policy (EPA, 2000))
- DRAFT NSW Department of Planning and Infrastructure Guideline – Noise Monitoring Application Note (DP&I, 2013)
- Australian Standard 1055 (Standards Australia, 1997)
- Mobile Plant Sound Power Specification (Global Acoustics, March 2012)

Appendix A– Noise Monitoring Programme

Mt Thorley Warkworth Noise Monitoring Programme

1 PURPOSE

This document provides a summary of the noise monitoring programme for Mt Thorley Warkworth, the monitoring locations are subject to change and will be updated periodically to align with management and compliance needs and to accommodate progression of mining and changes to local landholdings.

2 PROGRAMME

Noise monitoring is undertaken at locations shown on **Figure 2** at the frequency defined in **Table A1** below.

Table A1: Noise Monitoring Programme

Parameter	Frequency	Monitor Location	Sampling Method
Attended Noise L_{A1} (1min) L_{Aeq}	Minimum of twelve (12) monitoring events (nominally once per month, at least two weeks apart) ¹	Bulga Village Bulga RFS Gouldsville Road Inlet Road Inlet Road – West Long Point South Bulga Wambo Road	Noise Policy for Industry (NSW EPA, 2017) AS1055.1997
Real Time Noise L_{Aeq} L_{A90}	Continuous	Directional Monitors Long Point Bulga Wambo Road (Environmental Noise Compass) Inlet Road Mt Leonard (Environmental Noise Compass)	Directional monitors used AS1055.1997
Meteorological Monitoring	Continuous	Charlton Ridge Meteorological Station	AS3580.14:2014
Notes: ¹ Additional monitoring events undertaken following non-compliance are required to occur within two weeks of the previous measurement.			

3 NOISE LIMITS FOR ASSESSMENT

Table A2 describes the noise limits which will be applied at each representative attended monitoring location (**Table A1**). The noise criteria listed reflect the lowest common noise criteria for all residences represented by the monitoring location **Figure 2**.

Noise criteria applicable to nearby privately owned residences are set out in Schedule 3 of the approvals.

Table A2: Noise Limits

Monitoring Location	Consent Area	L _{Aeq} Impact Assessment Criteria (dB)	L _{A1 (1min)} Criteria (dB)
Bulga Village	WML	38	48
	MTO	38	48
Bulga RFS (Wollemei Peak Road)	WML	37	47
	MTO	37	47
Gouldsville Road	WML	38	48
	MTO	35	45
Inlet Road	WML	37	47
	MTO	37	47
Inlet Road West	WML	35	45
	MTO	35	45
Long Point	WML	35	45
	MTO	35	45
South Bulga	WML	35	45
	MTO	36	46
Wambo Road	WML	38	48
	MTO	38	48

4 APPLICABLE METEOROLOGICAL CONDITIONS

In addition to the meteorological exclusions described in the Noise Policy for Industry, the noise criteria in **Table A2** apply under all meteorological conditions except the following:

- Wind speeds greater than 3m/s at 10m above ground level; or
- Stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or
- Stability category G temperature inversion conditions.

Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the MTW Charlton Ridge meteorological station.

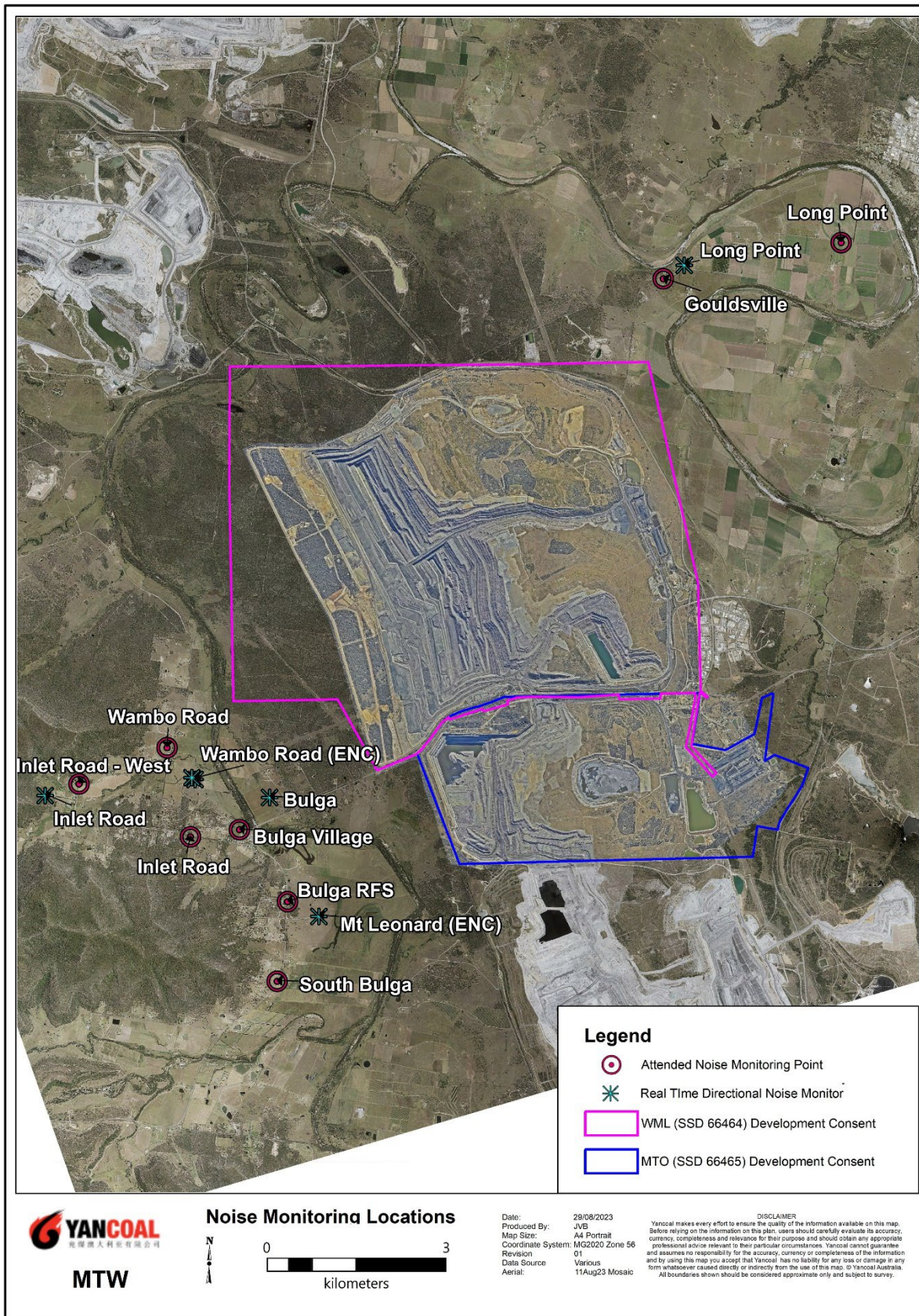


Figure 2: MTW Noise Monitoring Locations

Protocol for Determining Non Compliances

1 PURPOSE

This document outlines the key considerations in evaluating compliance with the relevant noise criteria in the approvals.

2 MINING NOISE

As a preface to discussion of affectation and compliance it is appropriate to consider some specific characteristics of mining noise in the Hunter Valley. These are:

- Most receptors are located a considerable distance from mine sites with regard to noise propagation (greater than 1000 metres);
- Mining noise is typically inaudible during the day period;
- Received levels of mining noise usually vary greatly from one night to the next at any receptor location. Different meteorological conditions from one night to the next are the primary cause of different received levels at receptors.
- Mining noise from a large open cut operation, received at a receptor, is typically a continuum with minor event noises that are usually not very emergent;
- The received mining noise spectrum generally does not have any significant content (if any) above 1000 Hertz; and
- Other noise sources at a receptor location can often be considerably louder than received mining noise. This is particularly true for noise events (dogs, cows, cars etc.), which influence the total L_{Aeq} .

3 NOISE AFFECTATION / SUSTAINED NON-COMPLIANCE

The Approvals stipulate noise criteria which must be met during the life of the development(s). Assessment of compliance with these noise criteria is undertaken as per the noise monitoring described in this document.

The approvals however do not stipulate requirements or give guidance on noise affectation, or the frequency or duration of any non-compliance which would constitute noise affectation.

Primarily, determination of noise affectation is a comparison of measured noise levels against consent conditions under a governing set of meteorological conditions, with the results either meeting the criteria on the consent condition or not.

MTW will assess noise in line with the DRAFT NSW Department of Planning and Environment Guideline – Noise Monitoring Application Note. Sections 2.5 and 4.2 (Period monitoring requirements) are of particular relevance in the context of noise affectation:

2.5 Monitoring Periods

Extensive experience has shown that daytime or evening criteria is rarely, if ever exceeded and that night time criteria is the limiting criterion. Furthermore, where the day or evening criteria are being approached, it is found that the noise enhancing conditions that are more likely to occur at night which will have the greatest potential to cause exceedances. It is the Department's desire that resources be focused on monitoring the periods of the day which are the most sensitive and those where generated levels or noise are likely to be the most annoying.

Consequently, unless there are compelling reasons to require monitoring during the day or evening periods at a specific location, any requirement to measure during these periods is suspended and this monitoring effort is to be directed towards fulfilling the additional night time monitoring requirements.

4.2 Period Monitoring Requirements

Requirements for Day and Evening monitoring shall be suspended, but the requirement can be reactivated by the Department at any time following valid complaints or concerns.

Night time noise monitoring can commence from 9 pm onwards but must be assessed against the night time criteria.

In line with the above, MTW will not focus resources on compliance assessment or management of daytime or evening noise (in the current context considered to cease at 9pm, not 10pm), unless there is a compelling reason to do so. It is noted that the Department can reactivate these requirements at any time.

4 MONITORING

Attended monitoring will be undertaken at a frequency of once per calendar month at each of eight monitoring locations (**Table A1** and **Figure 2**). The duration of each night measurement will be 15 minutes. Monitoring will be undertaken in accordance with the EPA NPMI guidelines and the Australian Standard AS 1055 'Acoustics, Description and Measurement of Environmental Noise'.

MTW will be considered to be in non-compliance with an applicable Impact assessment criteria (L_{Aeq} and $L_{A1,1min}$) when a measured exceedance (MTW contribution to the noise environment exceeds the development's noise criteria), exceeds the relevant criterion under relevant meteorological conditions. In this instance the monitoring consultant is to advise MTW that a noise measurement has exceeded the criteria immediately after the completion of monitoring at all sites, such that MTW may implement operational modifications per section 6.4.4.

5 LOW FREQUENCY NOISE MODIFICATION FACTOR

Corrections for low-frequency noise characteristics will be applied in accordance with *Fact Sheet C: Corrections for annoying noise characteristics* of the Noise Policy for Industry (NSW EPA, 2017).

6 SLEEP DISTURBANCE (LA1,1MIN) CRITERIA

Management of noise sources which have the potential to cause exceedances of the sleep disturbance ($L_{A1,1min}$) criteria are generally one-off, emergence type events (such as loud bangs associated with dropping material into a truck, or a short term engine surge), which are difficult to control through engineered means. As a result, these events are not easily managed in real-time through the use of real-time monitoring systems in the manner described in section 6.4 of the MTW Noise Management Plan. As a result, it is more difficult to ensure compliance with these criteria at all times than it is the 15 minute average L_{Aeq} parameter, typically characterised by a consistent mine noise continuum.

In considering an appropriate level of response to any measured exceedances of the $L_{A1,1min}$ sleep disturbance criteria, there is literature on the subject that is worthy of consideration:

- World Health Organisation – “Night Noise Guidelines for Europe” (2009); and
- NSW EPA – Noise Policy for Industry – 2017

With consideration of the above, MTW employs the following methodology to ensure alignment to the project approval $L_{A1,1min}$ criteria and the relevant literature:

- Any measured exceedance of the stipulated $L_{A1,1min}$ criteria for the monitoring location (**Table A2**) identified through the monthly compliance monitoring regime shall be communicated to MTW personnel and rectified;
- Where the result exceeds the relevant criterion, but is less than 52dB(A):
 - Re-measure involves collection of five (5) $L_{A1,1min}$ samples commencing approximately five (5) minutes after detection of the exceedance;
 - The result is reported to DPE along with details of action taken in response to the measurement, and the outcomes of the five (5) additional measurements;
 - Result **is not** considered non-compliant with the $L_{A1,1min}$ criteria
- Where the result exceeds the relevant criterion, and is equal to or greater than 52dB(A):
 - Re-measure involves collection of five (5) $L_{A1,1min}$ samples commencing approximately five (5) minutes after detection of the exceedance;
 - If any of the re-measured results remain elevated above the criteria, non-compliance is recorded;
 - The result is reported to DPE along with details of action taken in response to the measurement, and the outcomes of the five (5) additional measurements;
 - Follow-up measurement is conducted within 1 week.

7 REPORTING

Outcomes of Attended Monitoring will be reported as follows:

- Regular reporting (Monthly Environmental Monitoring Report (MEMR))
- By the end of March each year, in the Annual Review;
- To relevant residents, by exception, in the event of non-compliance; and
- To the Department of Planning and Environment, in the event of a non-compliance and as referred to in section 8 of this document.

8 REVIEW

This Noise Monitoring Programme shall be reviewed on an as required basis, at a frequency not exceeding three years.

9 REPRESENTATION OF PRIVATE RESIDENCES

Attended noise monitoring results from each monitoring location will be assessed against the relevant criteria as listed in **Table A2**

A review of represented receivers along with property ownership status will be undertaken on an annual basis. Environmental Services will maintain a register of property ownership. The attended monitoring location and the receptors that it represents are shown in **Figure 3**

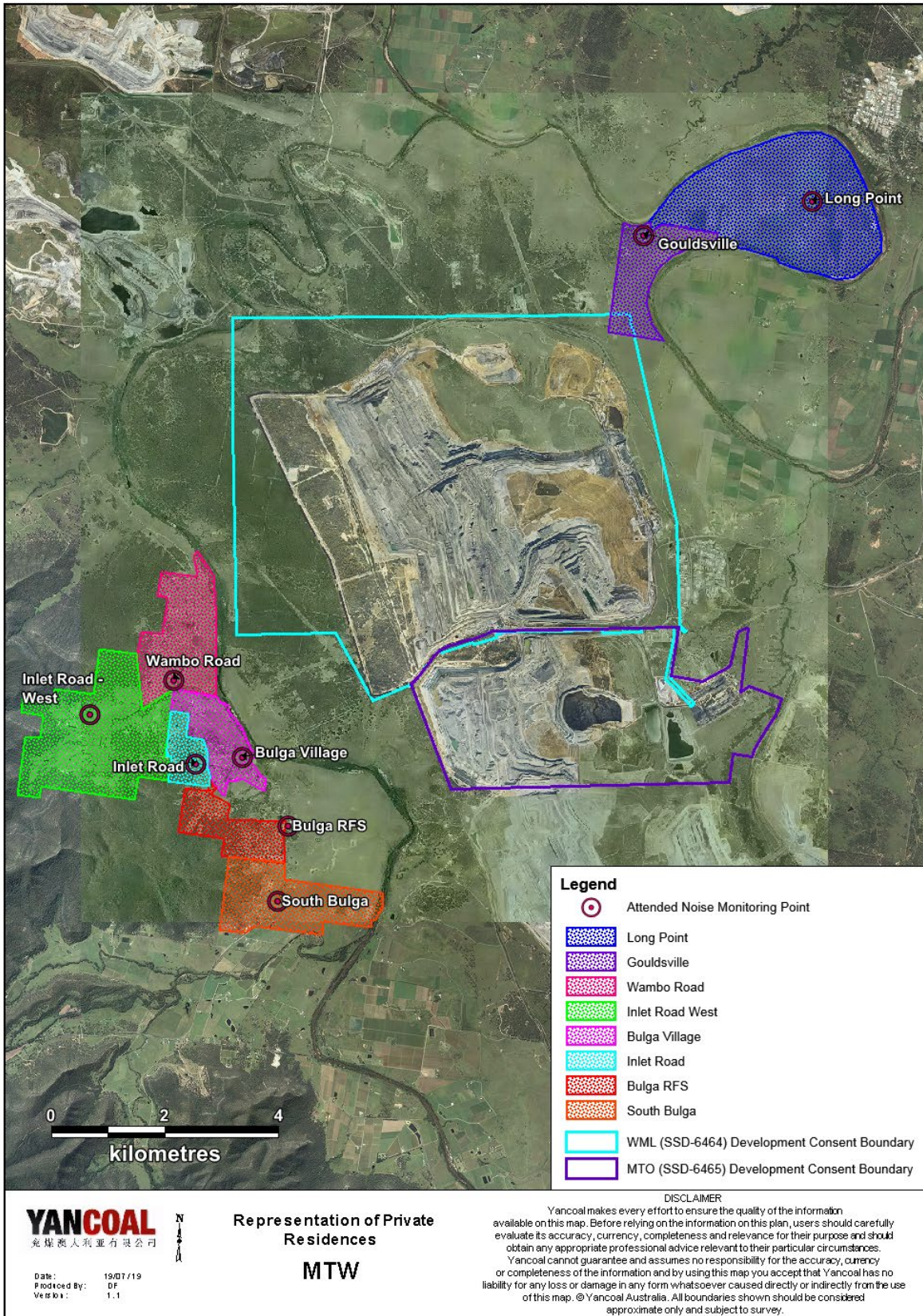


Figure 3: Representation of private receptors

Appendix B – Consultation with the EPA



DOC23/768310-4

NSW Department of Planning and Environment
Returned by Major Projects Portal

No Comment – Warkworth Coal Mine Continuation – Mount Thorley Noise Management Plan

I refer to your request of 29 August 2023 regarding input from the NSW Environment Protection Authority (EPA) on the Post Approval for the Warkworth Coal Mine Continuation – Mount Thorley Noise Management Plan.

The EPA has not reviewed and has no comment on the Noise Management Plan. The EPA's role, as a regulatory authority, is to set environmental objectives rather than being involved in the development of strategies to achieve those objectives.

The development of such plans by proponents and licensees is encourage by the EPA, to ensure they have determined how they will meet their statutory obligations and environmental objectives.

If you have any further questions about this issue, please contact David Wells on (02) 4908 6849.

Yours sincerely

A handwritten signature in black ink, appearing to read 'J Lange', is written over a light blue horizontal line.

Jenny Lange
Unit Head
Regulatory Operations
11 September 2023

Phone 131 555
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Appendix C– Detailed Baseline Data

Mount Thorley Warkworth Attended Noise Monitoring Results 2015 / 2016

Warkworth $L_{Aeq}(15\text{minute})$ Impact Assessment Criteria - DA 300-9-2002-i

Location	Start Date and Time	Wind Speed m/s^3	VTG $^{\circ}C/100m^3$	Criterion dB	Criterion Applies ²	WML $L_{Aeq,15min}$ $dB^3,4$	Exceedance ¹	Total $L_{Ceq} - L_{Aeq}$	Revised WML $L_{Aeq}^{5,6}$
Long Point	21/01/2015 22:07	4.1	-1.0	37	N	IA	NA	22	IA
Gouldsville Rd	21/01/2015 22:28	3.7	-1.0	NA	N	IA	NA	12	IA
Inlet Road West	21/01/2015 23:02	3.7	-1.0	35	N	29	NA	8	29
South Bulga	21/01/2015 23:35	3.5	-1.0	35	N	IA	NA	5	IA
Wollemi Peak Rd	21/01/2015 23:57	3.4	-1.0	35	N	NM	NA	5	NM
Bulga Village	22/01/2015 0:20	3.9	-1.0	38	N	IA	NA	8	IA
MTIE	22/01/2015 0:52	4.1	-1.0	NA	N	IA	NA	14	IA
Long Point	25/02/2015 22:00	2.9	0.5	37	Yes	IA	Nil	2	IA
Gouldsville Rd	25/02/2015 22:25	2.9	0.5	NA	No	25	NA	10	25
Inlet Road West	26/02/2015 0:18	3.4	-1.0	35	No	35	NA	15	35
South Bulga	26/02/2015 0:51	3.6	-1.0	35	No	IA	NA	8	IA
Wollemi Peak Rd	26/02/2015 1:16	3.0	-1.0	35	Yes	IA	Nil	15	IA
Bulga Village	25/02/2015 23:22	2.8	0.5	38	Yes	23	Nil	13	23
MTIE	25/02/2015 22:52	3.4	-1.0	NA	No	NM	NA	14	NM
Wambo Road	25/02/2015 23:46	3.1	-1.0	38	No	<25	NA	3	<25
Long Point	19/03/2015 22:29	1.6	3.0	37	Yes	IA	Nil	18	IA
Gouldsville Road	19/03/2015 22:31	1.6	3.0	NA	Yes	NM	Nil	17	NM
Inlet Road	20/03/2015 0:31	0.3	3.0	35	Yes	NM	Nil	18	NM
South Bulga	20/03/2015 1:02	1.5	0.5	35	Yes	31	Nil	18	31
Wollemi Peak Road	20/03/2015 1:28	1.3	0.5	35	Yes	31	Nil	18	31
Bulga Village	19/03/2015 23:28	0.1	0.5	38	Yes	29	Nil	19	34
MTIE	19/03/2015 22:58	1.8	0.5	NA	Yes	35	Nil	11	40
Wambo Road	19/03/2015 23:57	1.4	0.5	38	Yes	27	Nil	19	27
Long Point	14/04/2015 22:00	1.4	3.0	37	Yes	IA	Nil	19	IA
Gouldsville Road	14/04/2015 22:25	1.7	0.5	NA	No	30	NA	26	30
Inlet Road	14/04/2015 23:08	1.5	0.5	35	Yes	32	Nil	22	37
South Bulga	14/04/2015 23:15	1.5	-1.0	35	Yes	<30	Nil	20	<30
Wollemi Peak Road	14/04/2015 23:28	2.0	-1.0	35	Yes	31	Nil	21	31
Bulga Village	14/04/2015 23:56	2.5	-1.0	38	Yes	27	Nil	22	27
MTIE	14/04/2015 22:55	1.5	0.5	NA	No	IA	NA	10	IA
Wambo Road	15/04/2015 0:23	2.8	-1.0	38	Yes	33	Nil	23	38
Long Point	24/05/2015 22:00	1.8	-1.0	37	Yes	IA	Nil	17	IA
Gouldsville Road	24/05/2015 22:26	2.1	-1.0	NA	No	<30	NA	26	<35
Inlet Road	25/05/2015 0:22	2.8	-1.0	35	Yes	32	Nil	23	37
South Bulga	25/05/2015 1:24	2.6	-1.0	35	Yes	IA	Nil	20	IA
Wollemi Peak Road	25/05/2015 1:48	2.7	0.5	35	Yes	IA	Nil	19	IA
Bulga Village	24/05/2015 23:23	1.1	3.0	38	Yes	33	Nil	21	38
MTIE	24/05/2015 22:52	1.7	-1.0	NA	No	41	NA	15	41
Wambo Road	24/05/2015 23:52	2.0	-1.0	38	Yes	36	Nil	21	41
Long Point	11/06/2015 22:00	2.4	-1.0	37	Yes	<25	Nil	22	<30
Gouldsville Road	11/06/2015 22:31	2.2	0.5	NA	NA	33	NA	25	38
Inlet Road	12/06/2015 0:42	1.9	0.5	35	Yes	32	Nil	23	37
South Bulga	12/06/2015 1:42	2.3	0.5	35	Yes	IA	Nil	18	IA
Wollemi Peak Road	12/06/2015 1:20	2.1	0.5	35	Yes	IA	Nil	19	IA
Bulga Village	11/06/2015 23:40	2.0	0.5	38	Yes	IA	Nil	18	IA
MTIE	11/06/2015 23:01	2.0	-1.0	NA	NA	42	NA	13	42
Wambo Road	12/06/2015 0:10	1.8	-1.0	38	Yes	35	Nil	19	40
Long Point	23/07/2015 22:12	0.4	3.0	37	Yes	IA	Nil	20	IA
Gouldsville Road	23/07/2015 22:39	1.1	-1.0	NA	NA	IA	NA	23	IA
Inlet Road	24/07/2015 0:44	1.7	0.5	35	Yes	<25	Nil	19	<25
South Bulga	24/07/2015 1:13	1.7	-1.0	35	Yes	IA	Nil	23	IA
Wollemi Peak Road	24/07/2015 1:37	1.6	-1.0	35	Yes	<30	Nil	19	<30
Bulga Village	23/07/2015 23:40	1.1	0.5	38	Yes	NM	Nil	18	NM
MTIE	23/07/2015 23:09	0.9	3.0	NA	NA	33	NA	11	33
Wambo Road	24/07/2015 0:08	1.2	-1.0	38	Yes	34	Nil	20	39
Long Point	11/08/2015 22:04	2.9	0.5	37	Yes	32	Nil	21	37
Gouldsville Road	11/08/2015 22:27	3.3	-1.0	NA	NA	36	NA	22	41
MTIE	11/08/2015 22:55	2.2	3.0	NA	NA	43	NA	15	48
Bulga Village	11/08/2015 23:26	2	-1.0	38	Yes	<25	Nil	18	<25
Wambo Road	11/08/2015 23:51	2	3.0	38	Yes	<25	Nil	24	<30
Inlet Road West	12/08/2015 0:18	1.5	3.0	35	Yes	20	Nil	23	25
Wollemi Peak Road	12/08/2015 1:09	2.4	-1.0	35	Yes	33	Nil	21	38
South Bulga	12/08/2015 0:45	1.4	3.0	35	Yes	30	Nil	19	35
Long Point	7/09/2015 22:46	4.4	-1.0	37	No	31	NA	23	31
Gouldsville Road	7/09/2015 23:13	3.3	-1.0	NA	No	34	NA	25	34
MTIE	7/09/2015 22:12	5.2	-1.0	NA	No	42	NA	17	42
Bulga Village	8/09/2015 0:18	3.2	-1.0	38	No	IA	NA	22	IA
Wambo Road	7/09/2015 23:55	3.5	-1.0	38	No	IA	NA	24	IA
Inlet Road	8/09/2015 0:44	4.1	-1.0	35	No	IA	NA	18	IA
Wollemi Peak Road	8/09/2015 1:44	3.1	-1.0	35	No	IA	NA	8	IA
South Bulga	8/09/2015 1:15	2.9	0.5	35	Yes	IA	Nil	11	IA
MTIE	8/10/2015 22:04	2.3	3.0	NA	NA	IA	NA	14	IA
Bulga Village	8/10/2015 22:35	2.1	3.0	38	Yes	28	Nil	21	33
Gouldsville Road	9/10/2015 0:44	2.2	3.0	NA	NA	NM	NA	25	NM
Inlet Road West	8/10/2015 23:53	2.4	-1.0	35	Yes	<25	Nil	23	<30
Long Point	8/10/2015 23:53	2.4	-1.0	37	Yes	NM	Nil	21	NM
Wollemi Peak Road	9/10/2015 0:47	2.2	3.0	35	Yes	IA	Nil	20	IA
South Bulga	9/10/2015 0:23	2.1	3.0	35	Yes	IA	Nil	14	IA
Wambo Road	8/10/2015 22:59	2.6	0.5	38	Yes	29	Nil	21	34
Long Point	8/11/2015 22:48	2.7	-1.0	37	Yes	NM	Nil	22	NM
Gouldsville Road	8/11/2015 22:19	1.9	3.0	NA	No	33	NA	25	38
MTIE	9/11/2015 1:38	2.3	0.5	NA	No	IA	NA	19	IA
Bulga Village	8/11/2015 23:23	1.5	3.0	38	Yes	IA	Nil	19	IA
Wambo Road	8/11/2015 23:48	2	0.5	38	Yes	IA	Nil	22	IA
Inlet Road West	9/11/2015 1:05	2.7	-1.0	35	Yes	<25	Nil	22	<25
Wollemi Peak Road	9/11/2015 0:40	3	-1.0	35	Yes	IA	Nil	20	IA
South Bulga	9/11/2015 0:18	2.2	0.5	35	Yes	IA	Nil	18	IA
MTIE	11/12/2015 1:13	0.7	3.0	NA	NA	38	NA	21	43
Bulga Village	11/12/2015 0:14	0.6	3.0	38	Yes	32	Nil	18	37
Gouldsville Road	11/12/2015 2:27	0.5	3.0	NA	NA	NM	NA	22	NM
Inlet Road West	10/12/2015 23:50	1.8	-1.0	35	Yes	25	Nil	15	25
Long Point	11/12/2015 2:01	0.4	3.0	37	Yes	IA	Nil	19	IA
Wollemi Peak Road	10/12/2015 22:55	2	0.5	35	Yes	IA	Nil	13	IA
South Bulga	10/12/2015 22:27	2	-1.0	35	Yes	IA	Nil	12	IA
Wambo Road	11/12/2015 0:42	1.2	3.0	38	Yes	<20	Nil	17	<25
MTIE	24/01/2016 22:00	2.7	0.5	NA	NA	IA	NA	11	IA

Bulga Village	25/01/2016 0:34	2.7	-1.0	38	Yes	IA	Nil	5	IA
Gouldsville Road	18/01/2016 23:56	1.6	3.0	NA	NA	IA	NA	19	IA
Inlet Road West	24/01/2016 23:07	3	-1.0	35	Yes	<27	Nil	9	27
Long Point	18/01/2016 23:31	1.2	3.0	37	Yes	IA	Nil	16	IA
Wollemi Peak Road	25/01/2016 0:07	2.9	0.5	35	Yes	IA	Nil	1	IA
South Bulga	24/01/2016 23:40	2.8	0.5	35	Yes	IA	Nil	8	IA
Wambo Road	24/01/2016 22:37	3.1	-1.0	38	No	31	Nil	11	31
MTIE	9/02/2016 1:27	2.6	-1.0	NA	NA	<30	NA	18	<30
Bulga Village	8/02/2016 23:34	1.7	-1.0	38	Yes	IA	Nil	10	IA
Gouldsville Road	9/02/2016 1:00	2.1	0.5	NA	NA	30	NA	20	35
Inlet Road West	8/02/2016 23:10	1.6	0.5	35	Yes	26	Nil	13	26
Long Point	9/02/2016 0:36	2.2	-1.0	37	Yes	IA	Nil	10	IA
Wollemi Peak Road	8/02/2016 22:46	1.4	0.5	35	Yes	IA	Nil	7	IA
South Bulga	8/02/2016 22:24	1.6	0.5	35	Yes	IA	Nil	14	IA
Wambo Road	8/02/2016 23:56	1.9	-1.0	38	Yes	31	Nil	13	31
MTIE	17/03/2016 22:47	2.2	3.0	NA	No	<30	NA	11	<30
Bulga Village	17/03/2016 23:39	2.1	0.5	38	Yes	IA	Nil	18	IA
Gouldsville Road	17/03/2016 22:23	2.6	0.5	NA	No	IA	NA	10	IA
Inlet Road West	18/03/2016 0:04	1.9	0.5	35	Yes	28	Nil	10	28
Long Point	17/03/2016 22:00	2.4	-1.0	37	Yes	IA	Nil	8	IA
Wollemi Peak Road	18/03/2016 0:37	2.1	3.0	35	Yes	32	Nil	7	32
South Bulga	18/03/2016 0:59	0.3	-1.0	35	Yes	<30	Nil	20	<30
Wambo Road	17/03/2016 23:18	2.0	0.5	38	Yes	30	Nil	13	30

Mount Thorley Warkworth Attended Noise Monitoring Results 2016
Warkworth L_{Aeq} (15minute) Impact Assessment Criteria - SSD-6464 (2016 noise criteria)

Location	Start Date and Time	Wind Speed m/s ²	Atmospheric Stability Class	Criterion (dB(A))	Criterion Applies? ^{2,14}	WML L _{Aeq,15min} dB ^{2,4}	Exceedance ³	Total L _{eq} - L _{Aeq}	Revised WML L _{eq} 5,6
Bulga RFS	7/04/2016 22:49	2.5	F	35	No	IA	NA	20	IA
Bulga Village	8/04/2016 0:14	2.2	F	38	No	25	NA	17	30
Gouldsville Road	8/04/2016 1:06	2.8	E	37	Yes	NM	Nil	18	NM
Inlet Road	7/04/2016 23:29	2.3	F	38	No	IA	NA	10	IA
Inlet Road West	7/04/2016 23:50	2.5	E	35	Yes	IA	Nil	8	IA
Long Point	8/04/2016 1:05	2.8	E	36	Yes	IA	Nil	23	IA
South Bulga	7/04/2016 22:00	1.8	F	35	Yes	IA	Nil	16	IA
Wambo Road	8/04/2016 0:35	2.4	D	38	Yes	26	Nil	13	26

Mount Thorley Warkworth Attended Noise Monitoring Results 2015 / 2016

Warkworth L_{Aeq}(15minute) Land Acquisition Criteria - DA 300-9-2002-i

Location	Start Date and Time	Wind Speed m/s ⁵	VTG °C/100m ⁵	Criterion dB	Criterion Applies? ¹	WML L _{90,15min} dB ^{2,4}	Exceedance ³	Total L ₅₀ - L ₉₀	Revised WML L ₅₀ ^{5,6}
Long Point	21/01/2015 22:07	4.1	-1	40	N	IA	NA	22	IA
Gouldsvile Rd	21/01/2015 22:28	3.7	-1	43	N	IA	NA	12	IA
Inlet Road West	21/01/2015 23:02	3.7	-1	40	N	29	NA	8	29
South Bulga	21/01/2015 23:35	3.5	-1	40	N	IA	NA	5	IA
Wollemi Peak Rd	21/01/2015 23:57	3.4	-1	40	N	NM	NA	5	NM
Bulga Village	22/01/2015 0:20	3.9	-1	43	N	IA	NA	8	IA
MTIE	22/01/2015 0:52	4.1	-1	44	N	IA	NA	14	IA
Long Point	25/02/2015 22:00	2.9	0.5	40	Yes	IA	Nil	2	IA
Gouldsvile Rd	25/02/2015 22:25	2.9	0.5	43	Yes	25	Nil	10	25
Inlet Road West	26/02/2015 0:18	3.4	-1	40	No	35	NA	15	35
South Bulga	26/02/2015 0:51	3.6	-1	40	No	IA	NA	8	IA
Wollemi Peak Rd	26/02/2015 1:16	3	-1	40	Yes	IA	Nil	15	IA
Bulga Village	25/02/2015 23:22	2.8	0.5	43	Yes	23	Nil	13	23
MTIE	25/02/2015 22:52	3.4	-1	44	No	NM	NA	14	NM
Wambo Road	25/02/2015 23:46	3.1	-1	40	No	<25	NA	3	<25
Long Point	19/03/2015 22:29	1.6	3	40	Yes	IA	Nil	18	IA
Gouldsvile Road	19/03/2015 22:31	1.6	3	NA	Yes	NM	Nil	17	NM
Inlet Road	20/03/2015 0:31	0.3	3	40	Yes	NM	Nil	18	NM
South Bulga	20/03/2015 1:02	1.5	0.5	40	Yes	31	Nil	18	31
Wollemi Peak Road	20/03/2015 1:28	1.3	0.5	40	Yes	31	Nil	18	31
Bulga Village	19/03/2015 23:28	0.1	0.5	43	Yes	29	Nil	19	34
MTIE	19/03/2015 22:58	1.8	0.5	44	Yes	35	Nil	11	40
Wambo Road	19/03/2015 23:57	1.4	0.5	40	Yes	27	Nil	19	27
Long Point	14/04/2015 22:00	1.4	3	40	Yes	IA	Nil	19	IA
Gouldsvile Road	14/04/2015 22:25	1.7	0.5	NA	No	30	NA	26	30
Inlet Road	14/04/2015 23:08	1.5	0.5	40	Yes	32	Nil	22	37
South Bulga	14/04/2015 23:15	1.5	-1	40	Yes	<30	Nil	20	<30
Wollemi Peak Road	14/04/2015 23:28	2	-1	40	Yes	31	Nil	21	31
Bulga Village	14/04/2015 23:56	2.5	-1	43	Yes	27	Nil	22	27
MTIE	14/04/2015 22:55	1.5	0.5	44	Yes	IA	Nil	10	IA
Wambo Road	15/04/2015 0:23	2.8	-1	40	Yes	33	Nil	23	38
Long Point	24/05/2015 22:00	1.8	-1	40	Yes	IA	Nil	17	IA
Gouldsvile Road	24/05/2015 22:26	2.1	-1	NA	No	<30	NA	26	<35
Inlet Road	25/05/2015 0:22	2.8	-1	40	Yes	32	Nil	23	37
South Bulga	25/05/2015 1:24	2.6	-1	40	Yes	IA	Nil	20	IA
Wollemi Peak Road	25/05/2015 1:48	2.7	0.5	40	Yes	IA	Nil	19	IA
Bulga Village	24/05/2015 23:23	1.1	3	43	Yes	33	Nil	21	38
MTIE	24/05/2015 22:52	1.7	-1	44	Yes	41	Nil	15	41
Wambo Road	24/05/2015 23:52	2	-1	40	Yes	36	Nil	21	41
Long Point	11/06/2015 22:00	2.4	-1	40	Yes	<25	Nil	22	<30
Gouldsvile Road	11/06/2015 22:31	2.2	0.5	43	Yes	33	Nil	25	38
Inlet Road	12/06/2015 0:42	1.9	0.5	40	Yes	32	Nil	23	37
South Bulga	12/06/2015 1:42	2.3	0.5	40	Yes	IA	Nil	18	IA
Wollemi Peak Road	12/06/2015 1:20	2.1	0.5	40	Yes	IA	Nil	19	IA
Bulga Village	11/06/2015 23:40	2	0.5	43	Yes	IA	Nil	18	IA
MTIE	11/06/2015 23:01	2	-1	44	Yes	42	Nil	13	42
Wambo Road	12/06/2015 0:10	1.8	-1	40	Yes	35	Nil	19	40
Long Point	23/07/2015 22:12	0.4	3	40	Yes	IA	Nil	20	IA
Gouldsvile Road	23/07/2015 22:39	1.1	-1	43	Yes	IA	Nil	23	IA
Inlet Road	24/07/2015 0:44	1.7	0.5	40	Yes	<25	Nil	19	<25
South Bulga	24/07/2015 1:13	1.7	-1	40	Yes	IA	Nil	23	IA
Wollemi Peak Road	24/07/2015 1:37	1.6	-1	40	Yes	<30	Nil	19	<30
Bulga Village	23/07/2015 23:40	1.1	0.5	43	Yes	NM	Nil	18	NM
MTIE	23/07/2015 23:09	0.9	3	44	Yes	33	Nil	11	33
Wambo Road	24/07/2015 0:08	1.2	-1	40	Yes	34	Nil	20	39
Long Point	11/08/2015 22:04	2.9	0.5	40	Yes	32	Nil	21	37
Gouldsvile Road	11/08/2015 22:27	3.3	-1.0	43	NA	36	NA	22	41
MTIE	11/08/2015 22:55	2.2	3.0	44	NA	43	NA	15	48
Bulga Village	11/08/2015 23:26	2	-1.0	43	Yes	<25	Nil	18	<25
Wambo Road	11/08/2015 23:51	2	3.0	40	Yes	<25	Nil	24	<30
Inlet Road West	12/08/2015 0:18	1.5	3.0	40	Yes	20	Nil	23	25
Wollemi Peak Road	12/08/2015 1:09	2.4	-1.0	40	Yes	33	Nil	21	38
South Bulga	12/08/2015 0:45	1.4	3.0	40	Yes	30	Nil	19	35
Long Point	7/09/2015 22:46	4.4	-1.0	40	No	31	NA	23	31
Gouldsvile Road	7/09/2015 23:13	3.3	-1.0	43	No	34	NA	25	34
MTIE	7/09/2015 22:12	5.2	-1.0	44	No	42	NA	17	42
Bulga Village	8/09/2015 0:18	3.2	-1.0	43	No	IA	NA	22	IA
Wambo Road	7/09/2015 23:55	3.5	-1.0	40	No	IA	NA	24	IA
Inlet Road	8/09/2015 0:44	4.1	-1.0	40	No	IA	NA	18	IA
Wollemi Peak Road	8/09/2015 1:44	3.1	-1.0	40	No	IA	NA	8	IA
South Bulga	8/09/2015 1:15	2.9	0.5	40	Yes	IA	Nil	11	IA
MTIE	8/10/2015 22:04	2.3	3.0	44	Yes	IA	Nil	14	IA
Bulga Village	8/10/2015 22:35	2.1	3.0	43	Yes	28	Nil	21	33
Gouldsvile Road	9/10/2015 0:44	2.2	3.0	43	Yes	NM	Nil	25	NM
Inlet Road West	8/10/2015 23:53	2.4	-1.0	40	Yes	<25	Nil	23	<30
Long Point	8/10/2015 23:53	2.4	-1.0	40	Yes	NM	Nil	21	NM
Wollemi Peak Road	9/10/2015 0:47	2.2	3.0	40	Yes	IA	Nil	20	IA
South Bulga	9/10/2015 0:23	2.1	3.0	40	Yes	IA	Nil	14	IA
Wambo Road	8/10/2015 22:59	2.6	0.5	40	Yes	29	Nil	21	34
Long Point	8/11/2015 22:48	2.7	-1.0	40	Yes	NM	Nil	22	NM
Gouldsvile Road	8/11/2015 22:19	1.9	3.0	43	Yes	33	Nil	25	38
MTIE	9/11/2015 1:38	2.3	0.5	44	Yes	IA	Nil	19	IA
Bulga Village	8/11/2015 23:23	1.5	3.0	43	Yes	IA	Nil	19	IA
Wambo Road	8/11/2015 23:48	2	0.5	40	Yes	IA	Nil	22	IA
Inlet Road West	9/11/2015 1:05	2.7	-1.0	40	Yes	<25	Nil	22	<25
Wollemi Peak Road	9/11/2015 0:40	3	-1.0	40	Yes	IA	Nil	20	IA
South Bulga	9/11/2015 0:18	2.2	0.5	40	Yes	IA	Nil	18	IA
MTIE	11/12/2015 1:13	0.7	3.0	44	Yes	38	Nil	21	43
Bulga Village	11/12/2015 0:14	0.6	3.0	43	Yes	32	Nil	18	37
Gouldsvile Road	11/12/2015 2:27	0.5	3.0	43	Yes	NM	Nil	22	NM
Inlet Road West	10/12/2015 23:50	1.8	-1.0	40	Yes	25	Nil	15	25
Long Point	11/12/2015 2:01	0.4	3.0	40	Yes	IA	Nil	19	IA
Wollemi Peak Road	10/12/2015 22:55	2	0.5	40	Yes	IA	Nil	13	IA
South Bulga	10/12/2015 22:27	2	-1.0	40	Yes	IA	Nil	12	IA
Wambo Road	11/12/2015 0:42	1.2	3.0	40	Yes	<20	Nil	17	<25

MTIE	24/01/2016 22:00	2.7	0.5	44	NA	IA	NA	11	IA
Bulga Village	25/01/2016 0:34	2.7	-1.0	43	Yes	IA	Nil	5	IA
Gouldsville Road	18/01/2016 23:56	1.6	3.0	43	NA	IA	NA	19	IA
Inlet Road West	24/01/2016 23:07	3	-1.0	40	Yes	27	Nil	9	27
Long Point	18/01/2016 23:31	1.2	3.0	40	Yes	IA	Nil	16	IA
Wollemi Peak Road	25/01/2016 0:07	2.9	0.5	40	Yes	IA	Nil	1	IA
South Bulga	24/01/2016 23:40	2.8	0.5	40	Yes	IA	Nil	8	IA
Wambo Road	24/01/2016 22:37	3.1	-1.0	40	No	31	Nil	11	31
MTIE	9/02/2016 1:27	2.6	-1.0	44	NA	<30	NA	18	<30
Bulga Village	8/02/2016 23:34	1.7	-1.0	43	Yes	IA	Nil	10	IA
Gouldsville Road	9/02/2016 1:00	2.1	0.5	43	NA	30	NA	20	35
Inlet Road West	8/02/2016 23:10	1.6	0.5	40	Yes	26	Nil	13	26
Long Point	9/02/2016 0:36	2.2	-1.0	40	Yes	IA	Nil	10	IA
Wollemi Peak Road	8/02/2016 22:46	1.4	0.5	40	Yes	IA	Nil	7	IA
South Bulga	8/02/2016 22:24	1.6	0.5	40	Yes	IA	Nil	14	IA
Wambo Road	8/02/2016 23:56	1.9	-1.0	40	Yes	31	Nil	13	31
MTIE	17/03/2016 22:47	2.2	3.0	44	No	<30	NA	11	<30
Bulga Village	17/03/2016 23:39	2.1	0.5	43	Yes	IA	Nil	18	IA
Gouldsville Road	17/03/2016 22:23	2.6	0.5	43	No	IA	NA	10	IA
Inlet Road West	18/03/2016 0:04	1.9	0.5	40	Yes	28	Nil	10	28
Long Point	17/03/2016 22:00	2.4	-1.0	40	Yes	IA	Nil	8	IA
Wollemi Peak Road	18/03/2016 0:37	2.1	3.0	40	Yes	32	Nil	7	32
South Bulga	18/03/2016 0:59	0.3	-1.0	40	Yes	<30	Nil	20	<30
Wambo Road	17/03/2016 23:18	2.0	0.5	40	Yes	30	Nil	13	30

Mount Thorley Warkworth Attended Noise Monitoring Results 2016
Warkworth L_{Aeq} (15minute) Land Acquisition Criteria - SSD-6465 (2016 noise criteria)

Location	Start Date and Time	Wind Speed m/s^2	Atmospheric Stability Class	Criterion (dB(A))	Criterion Applies? ^{1,6}	WML $L_{Aeq,15min}$ $dB^{1,4}$	Exceedance ²	Total $L_{Aeq} - L_{Aeq}$	Revised WML L_{Aeq} ^{5,6}
Bulga RFS	7/04/2016 22:49	2.5	F	40	No	IA	NA	20	IA
Bulga Village	8/04/2016 0:14	2.2	F	43	No	25	NA	17	30
Gouldsville Road	8/04/2016 1:06	2.8	E	43	Yes	NM	Nil	18	NM
Inlet Road	7/04/2016 23:29	2.3	F	43	No	IA	NA	10	IA
Inlet Road West	7/04/2016 23:50	2.5	E	40	Yes	IA	Nil	8	IA
Long Point	8/04/2016 1:05	2.8	E	40	Yes	IA	Nil	23	IA
South Bulga	7/04/2016 22:00	1.8	F	40	Yes	IA	Nil	16	IA
Wambo Road	8/04/2016 0:35	2.4	D	40	Yes	26	Nil	13	26

Mount Thorley Warkworth Attended Noise Monitoring Results 2015 / 2016
Mount Thorley Operations L_{req} (15minute) Impact Assessment Criteria - DA34/95

Location	Start Date and Time	Wind Speed m/s ⁵	VTG °C/100m ⁵	Criterion dB	Criterion Applies?1	MTO LA _{eq,15min} dB2,4	Exceedance ³	Total L _{CN} - L _{req} ⁷	Revised MTO L _{req} ^{4,6}
Long Point	21/01/2015 22:07	4.1	-1	39	N	IA	NA	22	IA
Gouldsville Rd	21/01/2015 22:28	3.7	-1	44	N	IA	NA	12	IA
Inlet Road West	21/01/2015 23:02	3.7	-1	35	N	NM	NA	8	29
South Bulga	21/01/2015 23:35	3.5	-1	37	N	34	NA	5	IA
Wollemi Peak Rd	21/01/2015 23:57	3.4	-1	38	N	36	NA	5	NM
Bulga Village	22/01/2015 0:20	3.9	-1	40	N	33	NA	8	IA
MTIE	22/01/2015 0:52	4.1	-1	NA	N	IA	N	14	IA
Long Point	25/02/2015 22:00	2.9	0.5	39	Yes	IA	Nil	2	IA
Gouldsville Rd	25/02/2015 22:25	2.9	0.5	44	Yes	IA	Nil	10	IA
Inlet Road West	26/02/2015 0:18	3.4	-1	35	No	IA	NA	15	IA
South Bulga	26/02/2015 0:51	3.6	-1	37	No	29	NA	8	29
Wollemi Peak Rd	26/02/2015 1:16	3	-1	38	Yes	<25	Nil	15	<25
Bulga Village	25/02/2015 23:22	2.8	0.5	40	Yes	IA	Nil	13	IA
MTIE	25/02/2015 22:52	3.4	-1	NA	No	33	NA	14	33
Wambo Road	25/02/2015 23:46	3.1	-1	40	No	IA	NA	3	IA
Long Point	19/03/2015 22:29	1.6	3	39	Yes	IA	Nil	18	IA
Gouldsville Road	19/03/2015 22:31	1.6	3	NA	Yes	IA	Nil	17	IA
Inlet Road	20/03/2015 0:31	0.3	3	35	Yes	<25	Nil	18	<30
South Bulga	20/03/2015 1:02	1.5	0.5	37	Yes	32	Nil	18	37
Wollemi Peak Road	20/03/2015 1:28	1.3	0.5	38	Yes	37	Nil	18	42
Bulga Village	19/03/2015 23:28	0.1	0.5	40	Yes	35	Nil	19	40
MTIE	19/03/2015 22:58	1.8	0.5	NA	Yes	IA	Nil	11	IA
Wambo Road	19/03/2015 23:57	1.4	0.5	40	Yes	30	Nil	19	35
Long Point	14/04/2015 22:00	1.4	3	39	Yes	IA	Nil	19	IA
Gouldsville Road	14/04/2015 22:25	1.7	0.5	NA	No	IA	NA	26	IA
Inlet Road	14/04/2015 23:08	1.5	0.5	35	Yes	NM	Nil	22	NM
South Bulga	14/04/2015 23:15	1.5	-1	37	Yes	34	Nil	20	39
Wollemi Peak Road	14/04/2015 23:28	2	-1	38	Yes	35	Nil	21	40
Bulga Village	14/04/2015 23:56	2.5	-1	40	Yes	31	Nil	22	36
MTIE	14/04/2015 22:55	1.5	0.5	NA	No	35	NA	10	35
Wambo Road	15/04/2015 0:23	2.8	-1	40	Yes	IA	Nil	23	IA
Long Point	24/05/2015 22:00	1.8	-1	39	Yes	IA	Nil	17	IA
Gouldsville Road	24/05/2015 22:26	2.1	-1	NA	No	IA	NA	26	IA
Inlet Road	25/05/2015 0:22	2.8	-1	35	Yes	IA	Nil	23	IA
South Bulga	25/05/2015 1:24	2.6	-1	37	Yes	36	Nil	20	36
Wollemi Peak Road	25/05/2015 1:48	2.7	0.5	38	Yes	36	Nil	19	36
Bulga Village	24/05/2015 23:23	1.1	3	40	Yes	31	Nil	21	31
MTIE	24/05/2015 22:52	1.7	-1	NA	No	43	NA	15	43
Wambo Road	24/05/2015 23:52	2	-1	40	Yes	IA	Nil	21	IA
Long Point	11/06/2015 22:00	2.4	-1	39	Yes	IA	Nil	22	IA
Gouldsville Road	11/06/2015 22:31	2.2	0.5	44	Yes	IA	Nil	25	IA
Inlet Road	12/06/2015 0:42	1.9	0.5	35	Yes	NM	Nil	23	NM
South Bulga	12/06/2015 1:42	2.3	0.5	37	Yes	35	Nil	18	40
Wollemi Peak Road	12/06/2015 1:20	2.1	0.5	38	Yes	37	Nil	19	42
Bulga Village	11/06/2015 23:40	2	0.5	40	Yes	34	Nil	18	39
MTIE	11/06/2015 23:01	2	-1	NA	NA	IA	NA	13	IA
Wambo Road	12/06/2015 0:10	1.8	-1	40	Yes	IA	Nil	19	IA
Long Point	23/07/2015 22:12	0.4	3	39	Yes	IA	Nil	20	IA
Gouldsville Road	23/07/2015 22:39	1.1	-1	44	Yes	IA	Nil	23	IA
Inlet Road	24/07/2015 0:44	1.7	0.5	35	Yes	IA	Nil	19	IA
South Bulga	24/07/2015 1:13	1.7	-1	37	Yes	IA	Nil	23	IA
Wollemi Peak Road	24/07/2015 1:37	1.6	-1	38	Yes	34	Nil	19	39
Bulga Village	23/07/2015 23:40	1.1	0.5	40	Yes	34	Nil	18	34
MTIE	23/07/2015 23:09	0.9	3	NA	NA	IA	NA	11	IA
Wambo Road	24/07/2015 0:08	1.2	-1	40	Yes	IA	Nil	20	IA
Long Point	11/08/2015 22:04	2.9	0.5	39	Yes	IA	Nil	21	IA
Gouldsville Road	11/08/2015 22:27	3.3	-1.0	44	No	IA	NA	22	IA
MTIE	11/08/2015 22:55	2.2	3.0	NA	NA	<35	NA	15	<35
Bulga Village	11/08/2015 23:26	2	-1.0	40	Yes	29	Nil	18	34
Wambo Road	11/08/2015 23:51	2	3.0	40	Yes	24	Nil	24	24
Inlet Road West	12/08/2015 0:18	1.5	3.0	35	Yes	<20	Nil	23	<20
Wollemi Peak Road	12/08/2015 1:09	2.4	-1.0	38	Yes	33	Nil	21	38
South Bulga	12/08/2015 0:45	1.4	3.0	37	Yes	30	Nil	19	35
Long Point	7/09/2015 22:46	4.4	-1.0	39	No	IA	NA	23	IA
Gouldsville Road	7/09/2015 23:13	3.3	-1.0	44	No	IA	NA	25	IA
MTIE	7/09/2015 22:12	5.2	-1.0	NA	No	NM	NA	17	NM
Bulga Village	8/09/2015 0:18	3.2	-1.0	40	No	IA	NA	22	IA
Wambo Road	7/09/2015 23:55	3.5	-1.0	40	No	IA	NA	24	IA
Inlet Road	8/09/2015 0:44	4.1	-1.0	35	No	IA	NA	18	IA
Wollemi Peak Road	8/09/2015 1:44	3.1	-1.0	38	No	IA	NA	8	IA
South Bulga	8/09/2015 1:15	2.9	0.5	37	Yes	IA	Nil	11	IA
MTIE	8/10/2015 22:04	2.3	3.0	NA	NA	<30	NA	14	<30
Bulga Village	8/10/2015 22:35	2.1	3.0	40	Yes	28	Nil	21	33
Gouldsville Road	9/10/2015 0:44	2.2	3.0	44	Yes	IA	Nil	25	IA
Inlet Road West	8/10/2015 23:53	2.4	-1.0	35	Yes	<25	Nil	23	<30
Long Point	8/10/2015 23:53	2.4	-1.0	39	Yes	IA	Nil	21	IA
Wollemi Peak Road	9/10/2015 0:47	2.2	3.0	38	Yes	32	Nil	20	37
South Bulga	9/10/2015 0:23	2.1	3.0	37	Yes	28	Nil	14	33
Wambo Road	8/10/2015 22:59	2.6	0.5	40	Yes	IA	Nil	21	IA
Long Point	8/11/2015 22:48	2.7	-1.0	39	Yes	NM	Nil	22	NM
Gouldsville Road	8/11/2015 22:19	1.9	3.0	44	Yes	IA	Nil	25	IA
MTIE	9/11/2015 1:38	2.3	0.5	NA	No	40	NA	19	45
Bulga Village	8/11/2015 23:23	1.5	3.0	40	Yes	29	Nil	19	34
Wambo Road	8/11/2015 23:48	2	0.5	40	Yes	29	Nil	22	34
Inlet Road West	9/11/2015 1:05	2.7	-1.0	35	Yes	33	Nil	22	38
Wollemi Peak Road	9/11/2015 0:40	3	-1.0	38	Yes	NM	Nil	20	NM
South Bulga	9/11/2015 0:18	2.2	0.5	37	Yes	NM	Nil	18	NM
MTIE	11/12/2015 1:13	0.7	3.0	NA	NA	IA	NA	21	IA
Bulga Village	11/12/2015 0:14	0.6	3.0	40	Yes	27	Nil	18	27
Gouldsville Road	11/12/2015 2:27	0.5	3.0	44	Yes	IA	Nil	22	IA
Inlet Road West	10/12/2015 23:50	1.8	-1.0	35	Yes	IA	Nil	15	IA
Long Point	11/12/2015 2:01	0.4	3.0	39	Yes	IA	Nil	19	IA
Wollemi Peak Road	10/12/2015 22:55	2	0.5	38	Yes	37	Nil	13	37
South Bulga	10/12/2015 22:27	2	-1.0	37	Yes	36	Nil	12	36
Wambo Road	11/12/2015 0:42	1.2	3.0	40	Yes	IA	Nil	17	IA
MTIE	24/01/2016 22:00	2.7	0.5	NA	No	IA	NA	11	IA

Bulga Village	25/01/2016 0:34	2.7	-1.0	40	Yes	24	Nil	5	24
Gouldsville Road	18/01/2016 23:56	1.6	3.0	44	Yes	IA	Nil	19	IA
Inlet Road West	24/01/2016 23:07	3	-1.0	35	Yes	24	Nil	9	24
Long Point	18/01/2016 23:31	1.2	3.0	39	Yes	IA	Nil	16	IA
Wollemi Peak Road	25/01/2016 0:07	2.9	0.5	38	Yes	27	Nil	1	27
South Bulga	24/01/2016 23:40	2.8	0.5	37	Yes	<25	Nil	8	<25
Wambo Road	24/01/2016 22:37	3.1	-1.0	40	No	29	NA	11	29
MTIE	9/02/2016 1:27	2.6	-1.0	NA	NA	31	NA	18	36
Bulga Village	8/02/2016 23:34	1.7	-1	40	Yes	31	Nil	10	31
Gouldsville Road	9/02/2016 1:00	2.1	0.5	44	Yes	IA	Nil	20	IA
Inlet Road West	8/02/2016 23:10	1.6	0.5	35	Yes	26	Nil	13	26
Long Point	9/02/2016 0:36	2.2	-1	39	Yes	IA	Nil	10	IA
Wollemi Peak Road	8/02/2016 22:46	1.4	0.5	38	Yes	NM	Nil	7	NM
South Bulga	8/02/2016 22:24	1.6	0.5	37	Yes	NM	Nil	14	NM
Wambo Road	8/02/2016 23:56	1.9	-1	40	Yes	31	Nil	13	31
MTIE	17/03/2016 22:47	2.2	3	NA	No	IA	NA	11	IA
Bulga Village	17/03/2016 23:39	2.1	0.5	40	Yes	36	Nil	18	41
Gouldsville Road	17/03/2016 22:23	2.6	0.5	44	Yes	IA	Nil	10	IA
Inlet Road West	18/03/2016 0:04	1.9	0.5	35	Yes	28	Nil	10	28
Long Point	17/03/2016 22:00	2.4	-1.0	39	Yes	IA	Nil	8	IA
Wollemi Peak Road	18/03/2016 0:37	2.1	3.0	38	Yes	30	Nil	7	30
South Bulga	18/03/2016 0:59	0.3	-1.0	37	Yes	32	Nil	20	37
Wambo Road	17/03/2016 23:18	2.0	0.5	40	Yes	32	Nil	13	32

Mount Thorley Warkworth Attended Noise Monitoring Results 2016
Mount Thorley Operations $L_{Aeq}(15\text{minute})$ Impact Assessment Criteria - SSD-6465

Location	Start Date and Time	Wind Speed m/s ⁵	Atmospheric Stability Class	Criterion (dB(A))	Criterion Applies? ^{1,6}	MTO $L_{Aeq,15min}$ dB ^{2,4}	Exceedance ³	Total $L_{Ceq} - L_{Aeq}$ ⁷	Revised MTO L_{Aeq} ^{4,8}
Bulga RFS	7/04/2016 22:49	2.5	F	37	No	<20	NA	20	<25
Bulga Village	8/04/2016 0:14	2.2	F	38	No	IA	NA	17	IA
Gouldsville Road	8/04/2016 1:06	2.8	E	35	Yes	IA	Nil	18	IA
Inlet Road	7/04/2016 23:29	2.3	F	37	No	26	NA	10	26
Inlet Road West	7/04/2016 23:50	2.5	E	35	Yes	25	Nil	8	25
Long Point	8/04/2016 1:05	2.8	E	35	Yes	IA	Nil	23	IA
South Bulga	7/04/2016 22:00	1.8	F	36	Yes	IA	Nil	16	IA
Wambo Road	8/04/2016 0:35	2.4	D	38	Yes	IA	Nil	13	IA

Mount Thorley Warkworth Attended Noise Monitoring Results 2015 / 2016
Mount Thorley Operations L_{4,1}, L_{min}, Impact Assessment Criteria - DA34/95

Location	Start Date and Time	Wind Speed m/s ³	VTG °C/100m ³	Criterion dB	Criterion Applies? ¹	MTO L _{4,1} , L _{min} dB ^{2,4}	Exceedance ³
Long Point	21/01/2015 22:07	4.1	-1	47	N	IA	NA
Gouldsville Rd	21/01/2015 22:28	3.7	-1	47	N	IA	NA
Inlet Road West	21/01/2015 23:02	3.7	-1	48	N	NM	NA
South Bulga	21/01/2015 23:35	3.5	-1	48	N	44	NA
Wollemi Peak Rd	21/01/2015 23:57	3.4	-1	48	N	39	NA
Bulga Village	22/01/2015 0:20	3.9	-1	48	N	35	NA
MTIE	22/01/2015 0:52	4.1	-1	NA	N	IA	NA
Long Point	25/02/2015 22:00	2.9	0.5	47	Yes	IA	Nil
Gouldsville Rd	25/02/2015 22:25	2.9	0.5	47	Yes	IA	Nil
Inlet Road West	26/02/2015 0:18	3.4	-1	48	No	IA	NA
South Bulga	26/02/2015 0:51	3.6	-1	48	No	34	NA
Wollemi Peak Rd	26/02/2015 1:16	3	-1	48	Yes	<25	Nil
Bulga Village	25/02/2015 23:22	2.8	0.5	48	Yes	IA	Nil
MTIE	25/02/2015 22:52	3.4	-1	NA	No	36	NA
Wambo Road	25/02/2015 23:46	3.1	-1	48	No	IA	NA
Long Point	19/03/2015 22:29	1.6	3	47	Yes	IA	Nil
Gouldsville Road	19/03/2015 22:31	1.6	3	NA	Yes	IA	Nil
Inlet Road	20/03/2015 0:31	0.3	3	48	Yes	28	Nil
South Bulga	20/03/2015 1:02	1.5	0.5	48	Yes	36	Nil
Wollemi Peak Road	20/03/2015 1:28	1.3	0.5	48	Yes	40	Nil
Bulga Village	19/03/2015 23:28	0.1	0.5	48	Yes	41	Nil
MTIE	19/03/2015 22:58	1.8	0.5	NA	Yes	IA	Nil
Wambo Road	19/03/2015 23:57	1.4	0.5	48	Yes	39	Nil
Long Point	14/04/2015 22:00	1.4	3	47	Yes	IA	Nil
Gouldsville Road	14/04/2015 22:25	1.7	0.5	NA	No	IA	NA
Inlet Road	14/04/2015 23:08	1.5	0.5	48	Yes	38	Nil
South Bulga	14/04/2015 23:15	1.5	-1	48	Yes	40	Nil
Wollemi Peak Road	14/04/2015 23:28	2	-1	48	Yes	40	Nil
Bulga Village	14/04/2015 23:56	2.5	-1	48	Yes	39	Nil
MTIE	14/04/2015 22:55	1.5	0.5	NA	No	36	NA
Wambo Road	15/04/2015 0:23	2.8	-1	48	Yes	IA	Nil
Long Point	24/05/2015 22:00	1.8	-1	47	Yes	IA	Nil
Gouldsville Road	24/05/2015 22:26	2.1	-1	NA	No	IA	NA
Inlet Road	25/05/2015 0:22	2.8	-1	48	Yes	IA	Nil
South Bulga	25/05/2015 1:24	2.6	-1	48	Yes	46	Nil
Wollemi Peak Road	25/05/2015 1:48	2.7	0.5	48	Yes	44	Nil
Bulga Village	24/05/2015 23:23	1.1	3	48	Yes	34	Nil
MTIE	24/05/2015 22:52	1.7	-1	NA	No	47	NA
Wambo Road	24/05/2015 23:52	2	-1	48	Yes	IA	Nil
Long Point	11/06/2015 22:00	2.4	-1	47	Yes	IA	Nil
Gouldsville Road	11/06/2015 22:31	2.2	0.5	47	Yes	IA	Nil
Inlet Road	12/06/2015 0:42	1.9	0.5	48	Yes	NM	Nil
South Bulga	12/06/2015 1:42	2.3	0.5	48	Yes	43	Nil
Wollemi Peak Road	12/06/2015 1:20	2.1	0.5	48	Yes	40	Nil
Bulga Village	11/06/2015 23:40	2	0.5	48	Yes	38	Nil
MTIE	11/06/2015 23:01	2	-1	NA	NA	IA	NA
Wambo Road	12/06/2015 0:10	1.8	-1	48	Yes	IA	Nil
Long Point	23/07/2015 22:12	0.4	3	47	Yes	IA	Nil
Gouldsville Road	23/07/2015 22:39	1.1	-1	47	Yes	IA	Nil
Inlet Road	24/07/2015 0:44	1.7	0.5	48	Yes	IA	Nil
South Bulga	24/07/2015 1:13	1.7	-1	48	Yes	IA	Nil
Wollemi Peak Road	24/07/2015 1:37	1.6	-1	48	Yes	38	Nil
Bulga Village	23/07/2015 23:40	1.1	0.5	48	Yes	38	Nil
MTIE	23/07/2015 23:09	0.9	3	NA	NA	IA	NA
Wambo Road	24/07/2015 0:08	1.2	-1	48	Yes	IA	Nil
Long Point	11/08/2015 22:04	2.9	0.5	47	Yes	IA	Nil
Gouldsville Road	11/08/2015 22:27	3.3	-1.0	47	No	IA	NA
MTIE	11/08/2015 22:55	2.2	3.0	NA	NA	40	NA
Bulga Village	11/08/2015 23:26	2	-1.0	48	Yes	34	Nil
Wambo Road	11/08/2015 23:51	2	3.0	48	Yes	28	Nil
Inlet Road West	12/08/2015 0:18	1.5	3.0	48	Yes	37	Nil
Wollemi Peak Road	12/08/2015 1:09	2.4	-1.0	48	Yes	46	Nil
South Bulga	12/08/2015 0:45	1.4	3.0	48	Yes	35	Nil
Long Point	7/09/2015 22:46	4.4	-1.0	47	No	IA	NA
Gouldsville Road	7/09/2015 23:13	3.3	-1.0	47	No	IA	NA
MTIE	7/09/2015 22:12	5.2	-1.0	NA	No	NM	NA
Bulga Village	8/09/2015 0:18	3.2	-1.0	48	No	IA	NA
Wambo Road	7/09/2015 23:55	3.5	-1.0	48	No	IA	NA
Inlet Road	8/09/2015 0:44	4.1	-1.0	48	No	IA	NA
Wollemi Peak Road	8/09/2015 1:44	3.1	-1.0	48	No	IA	NA
South Bulga	8/09/2015 1:15	2.9	0.5	48	Yes	IA	Nil
MTIE	8/10/2015 22:04	2.3	3.0	NA	NA	30	NA
Bulga Village	8/10/2015 22:35	2.1	3.0	48	Yes	32	Nil
Gouldsville Road	9/10/2015 0:44	2.2	3.0	47	Yes	IA	Nil
Inlet Road West	8/10/2015 23:53	2.4	-1.0	48	Yes	<25	Nil
Long Point	8/10/2015 23:53	2.4	-1.0	47	Yes	IA	Nil
Wollemi Peak Road	9/10/2015 0:47	2.2	3.0	48	Yes	38	Nil
South Bulga	9/10/2015 0:23	2.1	3.0	48	Yes	31	Nil
Wambo Road	8/10/2015 22:59	2.6	0.5	48	Yes	IA	Nil
Long Point	8/11/2015 22:48	2.7	-1.0	47	Yes	NM	Nil
Gouldsville Road	8/11/2015 22:19	1.9	3.0	47	Yes	IA	Nil
MTIE	9/11/2015 1:38	2.3	0.5	NA	No	46	NA
Bulga Village	8/11/2015 23:23	1.5	3.0	48	Yes	30	Nil
Wambo Road	8/11/2015 23:48	2	0.5	48	Yes	34	Nil
Inlet Road West	9/11/2015 1:05	2.7	-1.0	48	Yes	42	Nil
Wollemi Peak Road	9/11/2015 0:40	3	-1.0	48	Yes	NM	Nil
South Bulga	9/11/2015 0:18	2.2	0.5	48	Yes	NM	Nil
MTIE	11/12/2015 1:13	0.7	3.0	NA	NA	IA	NA
Bulga Village	11/12/2015 0:14	0.6	3.0	48	Yes	33	Nil
Gouldsville Road	11/12/2015 2:27	0.5	3.0	47	Yes	IA	Nil
Inlet Road West	10/12/2015 23:50	1.8	-1.0	48	Yes	IA	Nil
Long Point	11/12/2015 2:01	0.4	3.0	47	Yes	IA	Nil
Wollemi Peak Road	10/12/2015 22:55	2	0.5	48	Yes	42	Nil
South Bulga	10/12/2015 22:27	2	-1.0	48	Yes	41	Nil
Wambo Road	11/12/2015 0:42	1.2	3.0	48	Yes	IA	Nil
MTIE	24/01/2016 22:00	2.7	0.5	NA	No	IA	NA
Bulga Village	25/01/2016 0:34	2.7	-1.0	48	Yes	30	Nil
Gouldsville Road	18/01/2016 23:56	1.6	3.0	47	Yes	IA	Nil
Inlet Road West	24/01/2016 23:07	3	-1.0	48	Yes	27	Nil

Long Point	18/01/2016 23:31	1.2	3.0	47	Yes	IA	Nil
Wollemi Peak Road	25/01/2016 0:07	2.9	0.5	48	Yes	29	Nil
South Bulga	24/01/2016 23:40	2.8	0.5	48	Yes	<25	Nil
Wambo Road	24/01/2016 22:37	3.1	-1.0	48	No	33	NA
MTIE	9/02/2016 1:27	2.6	-1.0	NA	Yes	37	NA
Bulga Village	8/02/2016 23:34	1.7	-1.0	48	Yes	36	Nil
Gouldsville Road	9/02/2016 1:00	2.1	0.5	47	Yes	IA	Nil
Inlet Road West	8/02/2016 23:10	1.6	0.5	48	Yes	NM	Nil
Long Point	9/02/2016 0:36	2.2	-1.0	47	Yes	IA	Nil
Wollemi Peak Road	8/02/2016 22:46	1.4	0.5	48	Yes	NM	Nil
South Bulga	8/02/2016 22:24	1.6	0.5	48	Yes	NM	Nil
Wambo Road	8/02/2016 23:56	1.9	-1.0	48	Yes	NM	Nil
MTIE	17/03/2016 22:47	2.2	3.0	NA	No	IA	NA
Bulga Village	17/03/2016 23:39	2.1	0.5	48	Yes	43	Nil
Gouldsville Road	17/03/2016 22:23	2.6	0.5	47	Yes	IA	Nil
Inlet Road West	18/03/2016 0:04	1.9	0.5	48	Yes	35	Nil
Long Point	17/03/2016 22:00	2.4	-1.0	47	Yes	IA	Nil
Wollemi Peak Road	18/03/2016 0:37	2.1	3.0	48	Yes	35	Nil
South Bulga	18/03/2016 0:59	0.3	-1.0	48	Yes	38	Nil
Wambo Road	17/03/2016 23:18	2	0.5	48	Yes	35	Nil

Mount Thorley Warkworth Attended Noise Monitoring Results 2016
Mount Thorley Operations $L_{A1, 1min}$ Impact Assessment Criteria - SSD-6465

Location	Start Date and Time	Wind Speed m/s^3	VTG $^{\circ}C/100m^3$	Criterion dB	Criterion Applies? ²	MTO $L_{A1, 1min}$ $dB^{2,4}$	Exceedance ³
Bulga RFS	7/04/2016 22:49	2.5	F	47	No	<20	NA
Bulga Village	8/04/2016 0:14	2.2	F	48	No	IA	NA
Gouldsville Road	8/04/2016 1:06	2.8	E	45	Yes	IA	Nil
Inlet Road	7/04/2016 23:29	2.3	F	47	No	30	NA
Inlet Road West	7/04/2016 23:50	2.5	E	45	Yes	29	Nil
Long Point	8/04/2016 1:05	2.8	E	45	Yes	IA	Nil
South Bulga	7/04/2016 22:00	1.8	F	46	Yes	IA	Nil
Wambo Road	8/04/2016 0:35	2.4	D	48	Yes	IA	Nil

Mount Thorley Warkworth Attended Noise Monitoring Results 2015 / 2016
Mount Thorley Operations L_{Aeq}(15minutes) Land Acquisition Criteria - DA34/95

Location	Start Date and Time	Wind Speed m/s ⁵	VTG °C/100m ⁵	Criterion dB	Criterion Applies?1	MTO LA _{90,15min} dB2,4	Exceedance ³	Total L _{CN} - L _{site} ⁷	Revised MTO L _{site} ^{4,6}
Long Point	21/01/2015 22:07	4.1	-1	43	N	IA	NA	22	IA
Gouldsville Rd	21/01/2015 22:28	3.7	-1	45	N	IA	NA	12	IA
Inlet Road West	21/01/2015 23:02	3.7	-1	43	N	NM	NA	8	29
South Bulga	21/01/2015 23:35	3.5	-1	43	N	34	NA	5	IA
Wollemi Peak Rd	21/01/2015 23:57	3.4	-1	43	N	36	NA	5	NM
Bulga Village	22/01/2015 0:20	3.9	-1	43	N	33	NA	8	IA
MTIE	22/01/2015 0:52	4.1	-1	NA	N	IA	NA	14	IA
Long Point	25/02/2015 22:00	2.9	0.5	43	Yes	IA	Nil	2	IA
Gouldsville Rd	25/02/2015 22:25	2.9	0.5	45	Yes	IA	Nil	10	IA
Inlet Road West	26/02/2015 0:18	3.4	-1	43	No	IA	NA	15	IA
South Bulga	26/02/2015 0:51	3.6	-1	43	No	29	NA	8	29
Wollemi Peak Rd	26/02/2015 1:16	3	-1	43	Yes	<25	Nil	15	<25
Bulga Village	25/02/2015 23:22	2.8	0.5	43	Yes	IA	Nil	13	IA
MTIE	25/02/2015 22:52	3.4	-1	NA	No	33	NA	14	33
Wambo Road	25/02/2015 23:46	3.1	-1	43	No	IA	NA	3	IA
Long Point	19/03/2015 22:29	1.6	3	43	Yes	IA	Nil	18	IA
Gouldsville Road	19/03/2015 22:31	1.6	3	NA	Yes	IA	Nil	17	IA
Inlet Road	20/03/2015 0:31	0.3	3	43	Yes	<25	Nil	18	<30
South Bulga	20/03/2015 1:02	1.5	0.5	43	Yes	32	Nil	18	37
Wollemi Peak Road	20/03/2015 1:28	1.3	0.5	43	Yes	37	Nil	18	42
Bulga Village	19/03/2015 23:28	0.1	0.5	43	Yes	35	Nil	19	40
MTIE	19/03/2015 22:58	1.8	0.5	NA	Yes	IA	Nil	11	IA
Wambo Road	19/03/2015 23:57	1.4	0.5	43	Yes	30	Nil	19	35
Long Point	14/04/2015 22:00	1.4	3	43	Yes	IA	Nil	19	IA
Gouldsville Road	14/04/2015 22:25	1.7	0.5	NA	No	IA	NA	26	IA
Inlet Road	14/04/2015 23:08	1.5	0.5	43	Yes	NM	Nil	22	NM
South Bulga	14/04/2015 23:15	1.5	-1	43	Yes	34	Nil	20	39
Wollemi Peak Road	14/04/2015 23:28	2	-1	43	Yes	35	Nil	21	40
Bulga Village	14/04/2015 23:56	2.5	-1	43	Yes	31	Nil	22	36
MTIE	14/04/2015 22:55	1.5	0.5	NA	No	35	NA	10	35
Wambo Road	15/04/2015 0:23	2.8	-1	43	Yes	IA	Nil	23	IA
Long Point	24/05/2015 22:00	1.8	-1	43	Yes	IA	Nil	17	IA
Gouldsville Road	24/05/2015 22:26	2.1	-1	NA	No	IA	NA	26	IA
Inlet Road	25/05/2015 0:22	2.8	-1	43	Yes	IA	Nil	23	IA
South Bulga	25/05/2015 1:24	2.6	-1	43	Yes	36	Nil	20	36
Wollemi Peak Road	25/05/2015 1:48	2.7	0.5	43	Yes	36	Nil	19	36
Bulga Village	24/05/2015 23:23	1.1	3	43	Yes	31	Nil	21	31
MTIE	24/05/2015 22:52	1.7	-1	NA	No	43	NA	15	43
Wambo Road	24/05/2015 23:52	2	-1	43	Yes	IA	Nil	21	IA
Long Point	11/06/2015 22:00	2.4	-1	43	Yes	IA	Nil	22	IA
Gouldsville Road	11/06/2015 22:31	2.2	0.5	45	Yes	IA	Nil	25	IA
Inlet Road	12/06/2015 0:42	1.9	0.5	43	Yes	NM	Nil	23	NM
South Bulga	12/06/2015 1:42	2.3	0.5	43	Yes	35	Nil	18	40
Wollemi Peak Road	12/06/2015 1:20	2.1	0.5	43	Yes	37	Nil	19	42
Bulga Village	11/06/2015 23:40	2	0.5	43	Yes	34	Nil	18	39
MTIE	11/06/2015 23:01	2	-1	NA	NA	IA	NA	13	IA
Wambo Road	12/06/2015 0:10	1.8	-1	43	Yes	IA	Nil	19	IA
Long Point	23/07/2015 22:12	0.4	3	43	Yes	IA	Nil	20	IA
Gouldsville Road	23/07/2015 22:39	1.1	-1	45	Yes	IA	Nil	23	IA
Inlet Road	24/07/2015 0:44	1.7	0.5	43	Yes	IA	Nil	19	IA
South Bulga	24/07/2015 1:13	1.7	-1	43	Yes	IA	Nil	23	IA
Wollemi Peak Road	24/07/2015 1:37	1.6	-1	43	Yes	34	Nil	19	39
Bulga Village	23/07/2015 23:40	1.1	0.5	43	Yes	34	Nil	18	34
MTIE	23/07/2015 23:09	0.9	3	NA	NA	IA	NA	11	IA
Wambo Road	24/07/2015 0:08	1.2	-1	43	Yes	IA	Nil	20	IA
Long Point	11/08/2015 22:04	2.9	0.5	43	Yes	IA	Nil	21	IA
Gouldsville Road	11/08/2015 22:27	3.3	-1.0	45	No	IA	NA	22	IA
MTIE	11/08/2015 22:55	2.2	3.0	NA	NA	<35	NA	15	<35
Bulga Village	11/08/2015 23:26	2	-1.0	43	Yes	29	Nil	18	34
Wambo Road	11/08/2015 23:51	2	3.0	43	Yes	24	Nil	24	24
Inlet Road West	12/08/2015 0:18	1.5	3.0	43	Yes	<20	Nil	23	<20
Wollemi Peak Road	12/08/2015 1:09	2.4	-1.0	43	Yes	33	Nil	21	38
South Bulga	12/08/2015 0:45	1.4	3.0	43	Yes	30	Nil	19	35
Long Point	7/09/2015 22:46	4.4	-1.0	43	No	IA	NA	23	IA
Gouldsville Road	7/09/2015 23:13	3.3	-1.0	45	No	IA	NA	25	IA
MTIE	7/09/2015 22:12	5.2	-1.0	NA	No	NM	NA	17	NM
Bulga Village	8/09/2015 0:18	3.2	-1.0	43	No	IA	NA	22	IA
Wambo Road	7/09/2015 23:55	3.5	-1.0	43	No	IA	NA	24	IA
Inlet Road	8/09/2015 0:44	4.1	-1.0	43	No	IA	NA	18	IA
Wollemi Peak Road	8/09/2015 1:44	3.1	-1.0	43	No	IA	NA	8	IA
South Bulga	8/09/2015 1:15	2.9	0.5	43	Yes	IA	Nil	11	IA
MTIE	8/10/2015 22:04	2.3	3.0	NA	NA	<30	NA	14	<30
Bulga Village	8/10/2015 22:35	2.1	3.0	43	Yes	28	Nil	21	33
Gouldsville Road	9/10/2015 0:44	2.2	3.0	45	Yes	IA	Nil	25	IA
Inlet Road West	8/10/2015 23:53	2.4	-1.0	43	Yes	<25	Nil	23	<30
Long Point	8/10/2015 23:53	2.4	-1.0	43	Yes	IA	Nil	21	IA
Wollemi Peak Road	9/10/2015 0:47	2.2	3.0	43	Yes	32	Nil	20	37
South Bulga	9/10/2015 0:23	2.1	3.0	43	Yes	28	Nil	14	33
Wambo Road	8/10/2015 22:59	2.6	0.5	43	Yes	IA	Nil	21	IA
Long Point	8/11/2015 22:48	2.7	-1.0	43	Yes	NM	Nil	22	NM
Gouldsville Road	8/11/2015 22:19	1.9	3.0	45	Yes	IA	Nil	25	IA
MTIE	9/11/2015 1:38	2.3	0.5	NA	No	40	NA	19	45
Bulga Village	8/11/2015 23:23	1.5	3.0	43	Yes	29	Nil	19	34
Wambo Road	8/11/2015 23:48	2	0.5	43	Yes	29	Nil	22	34
Inlet Road West	9/11/2015 1:05	2.7	-1.0	43	Yes	33	Nil	22	38
Wollemi Peak Road	9/11/2015 0:40	3	-1.0	43	Yes	NM	Nil	20	NM
South Bulga	9/11/2015 0:18	2.2	0.5	43	Yes	NM	Nil	18	NM
MTIE	11/12/2015 1:13	0.7	3.0	NA	NA	IA	NA	21	IA
Bulga Village	11/12/2015 0:14	0.6	3.0	43	Yes	27	Nil	18	27
Gouldsville Road	11/12/2015 2:27	0.5	3.0	45	Yes	IA	Nil	22	IA
Inlet Road West	10/12/2015 23:50	1.8	-1.0	43	Yes	IA	Nil	15	IA
Long Point	11/12/2015 2:01	0.4	3.0	43	Yes	IA	Nil	19	IA
Wollemi Peak Road	10/12/2015 22:55	2	0.5	43	Yes	37	Nil	13	37
South Bulga	10/12/2015 22:27	2	-1.0	43	Yes	36	Nil	12	36
Wambo Road	11/12/2015 0:42	1.2	3.0	43	Yes	IA	Nil	17	IA
MTIE	24/01/2016 22:00	2.7	0.5	NA	No	IA	NA	11	IA
Bulga Village	25/01/2016 0:34	2.7	-1.0	43	Yes	24	Nil	5	24
Gouldsville Road	18/01/2016 23:56	1.6	3.0	45	Yes	IA	Nil	19	IA
Inlet Road West	24/01/2016 23:07	3	-1.0	43	Yes	24	Nil	9	24

Long Point	18/01/2016 23:31	1.2	3.0	43	Yes	IA	Nil	16	IA
Wollemi Peak Road	25/01/2016 0:07	2.9	0.5	43	Yes	27	Nil	1	27
South Bulga	24/01/2016 23:40	2.8	0.5	43	Yes	<25	Nil	8	<25
Wambo Road	24/01/2016 22:37	3.1	-1.0	43	No	29	NA	11	29
MTIE	9/02/2016 1:27	2.6	-1.0	NA	NA	31	NA	18	36
Bulga Village	8/02/2016 23:34	1.7	-1	43	Yes	31	Nil	10	31
Gouldsville Road	9/02/2016 1:00	2.1	0.5	45	Yes	IA	Nil	20	IA
Inlet Road West	8/02/2016 23:10	1.6	0.5	43	Yes	26	Nil	13	26
Long Point	9/02/2016 0:36	2.2	-1	43	Yes	IA	Nil	10	IA
Wollemi Peak Road	8/02/2016 22:46	1.4	0.5	43	Yes	NM	Nil	7	NM
South Bulga	8/02/2016 22:24	1.6	0.5	43	Yes	NM	Nil	14	NM
Wambo Road	8/02/2016 23:56	1.9	-1	43	Yes	31	Nil	13	31
MTIE	17/03/2016 22:47	2.2	3	NA	No	IA	NA	11	IA
Bulga Village	17/03/2016 23:39	2.1	0.5	43	Yes	36	Nil	18	41
Gouldsville Road	17/03/2016 22:23	2.6	0.5	45	Yes	IA	Nil	10	IA
Inlet Road West	18/03/2016 0:04	1.9	0.5	43	Yes	28	Nil	10	28
Long Point	17/03/2016 22:00	2.4	-1.0	43	Yes	IA	Nil	8	IA
Wollemi Peak Road	18/03/2016 0:37	2.1	3.0	43	Yes	30	Nil	7	30
South Bulga	18/03/2016 0:59	0.3	-1.0	43	Yes	32	Nil	20	37
Wambo Road	17/03/2016 23:18	2.0	0.5	43	Yes	32	Nil	13	32

Notes:

1. Noise emission limits apply up to and including 3 metres per second (at a height of 10 metres), or temperature inversion conditions of up to 4 °C/100m (at a height of 10 metres);
2. Estimated or measured LAeq,15minute attributed to Mt Thorley Operations (MTO);
3. NA in exceedance column means atmospheric conditions outside conditions specified in project approval and so criterion is not applicable;
4. Bolded results in red are possible exceedances of relevant criteria; and
5. Criterion may or may not apply due to rounding of meteorological data values.

Appendix D – Approval of Management Plan

