

11 October 2019

Chris Nicholas
Environment and Community Coordinator
Delta Coal
Mannering Colliery
Ruttleys Road
Mannering Park NSW 2259

Re: Mannering Colliery - Modification 5 (MP06_0311) Request for additional information - Noise

Dear Chris,

1 Introduction

As per the letter received from the Department of Planning, Industry and Environment (DPIE) dated 20 August 2019 and email communication dated 25 September 2019, additional information has been requested in relation to noise.

The specific requests outlined in these communications and our responses are provided in Section 2; requests are provided in italics and EMM response is provided in plain text.

In addition, an informal request was made by Melissa Anderson of the Department of Planning, Industry and Environment (DPIE) in relation to existing ambient noise levels at the nearest residences and the appropriateness of current noise limits. This item has been addressed in Section 3 with reference to the Mannering Colliery Noise Compliance Report which is currently being reviewed by the DPIE.

2 Request for additional information

The following section lists the DPIE request along with a response.

2.1 Sleep disturbance

Delta Coal states in the RTS (section 4.3 Page 26) and in the SEE (section 5.3.5 Page 39) that: “the highest predicted LAmax noise level (being the operation of the conveyor belt alarms) at any assessment location was LAmax 47 dB at assessment location 8 under prevailing meteorological conditions and all results demonstrated that LAmax noise levels were compliant with the relevant sleep disturbance criteria”.

Delta Coal has concluded its compliance with sleep disturbance criteria based on a noise assessment conducted in 2015 for MC Mod 3. However, explanation of the calculation and comparison with criteria has not been well-explained in the MC Mod 5 SEE or RTS. The applicable noise policy to assess noise impacts is the Industrial Noise Policy (INP), however, the RTS in at least one place references the Noise Policy for Industry’s sleep disturbance criteria (section 4.3 Page 26).

In the SEE and RTS, Delta Coal has assessed sleep disturbance impacts purely from a technical perspective. Several submissions from residents at Macquarie Shores home village raised the issue of mental health impacts caused by sleep disturbance. The RTS does not satisfactorily address these residents’ concerns.

Delta Coal is requested to:

- a) ***Please explain how sleep disturbance criteria applicable under the INP have been applied to the Mannering Mod 5 noise modelling.***

The noise report prepared to accompany the application for Modification 5 compared existing maximum noise events to current $L_{A1,1min}$ night-time noise limits. The current $L_{A1,1min}$ night-time noise limit at the nearest residential locations is 47 dB. This is consistent with the strictest sleep disturbance screening criteria that was determined as part of the noise impact assessment prepared for Modification 3 (refer Mannering Colliery Modification 5 Noise Mitigation Study prepared by EMM dated April 2019) in accordance with the methodology provided in the NSW Industrial Noise Policy (INP).

All noise modelling and compliance monitoring referenced here has utilised the L_{Amax} noise parameter as a conservative estimate of the $L_{A1,1minute}$. The INP application notes state that the EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics (EPA 2013), with the L_{Amax} resulting in a more conservative assessment of site noise emissions.

- b) ***Sleep disturbance complaints from Macquarie Shores home village residents identify the 12 pm to 6 am period as being particularly sensitive. Please explain how Delta Coal proposes to mitigate and manage noise within this time period and reduce the frequency of intensive noise events which may disturb sleep.***

Previous modelling and regular noise compliance surveys have demonstrated that maximum noise events from Mannering Colliery during the night-time period generally comply with the noise limit applicable at each neighbouring residential locations. There have been two recent exceptions as follows:

1. **Exceedance of night $L_{A1,1minute}$ by 7dB at RA3 on 11 June 2019** – this was reported by Delta Coal to the Department of Planning and Environment – Compliance Division and NSW EPA on 18 June 2019. This exceedance was the result of an emergency alarm test that should not have occurred during the night-time period. Delta Coal have consequently counselled the technician that was involved and implemented further controls to avoid this occurrence in the future. In addition, a review of all alarms across the site has been undertaken. This is described in more detail below.
2. **Exceedance of night $L_{A1,1minute}$ by 4 dB and 1 dB at RA2 on 13 August 2019** – this was reported by Delta Coal to the Department of Planning and Environment – Compliance Division and NSW EPA on 20 August 2019. This exceedance was determined to be as a result of a significant mechanical failure of the bearings within the rotary breaker chain tensioner. The equipment has since been repaired and subsequent noise monitoring has demonstrated compliance with the relevant night-time noise limits.

Additional measures to mitigate and manage noise during the night-time period and reduce the frequency of maximum noise events with the potential to disturb sleep have been implemented or are under further investigation by Delta Coal; these are summarised as follows:

- Work orders for alarm testing have been reviewed to prevent this activity from happening during the night-time period.
- A review of all on-site alarms has been undertaken. As a result of on-site investigations Delta Coal determined that the noise levels associated with the alarms located on the coal bin and the CHPP could be reduced without compromising the safety of on-site personnel. These alarms were adjusted resulting in a reduction of alarm noise level of 23 dB and 24 dB, respectively.
- Delta Coal has committed to decommissioning the rotary breaker on the surface by 30 June 2020. This can be achieved once new coal crushing equipment has been installed underground.

- Additional engineered noise mitigation measures are being installed and/or considered for installation in various locations throughout the Mannering plant; noise absorbent blanket at inlet end of rotary-breaker, alterations to scrap chute from magnet, conveyor belt to acoustically shield the rotary-breaker outlet, conveyor belt installed to line the rotary-breaker reject hopper, removal of the redundant bypass chute and alterations to the screen-house building.

c) Please include a more detailed and considered discussion on the impacts of sleep disturbance on mental health and how Delta Coal will manage any potential impacts associated with predicted or actual sleep disturbance noise impacts.

With regard to impacts of sleep disturbance on health, the current night-time noise limits at the assessment locations ($L_{Aeq,15min}$ and $L_{A1,1min}$) are consistent with screening noise levels outlined in the Noise Policy for Industry (NPI) (EPA, 2017). The NPI screening levels are based on recommendations provided in the World Health Organization (WHO) Night Noise Guidelines for Europe (NNG). The WHO NNG recommended criteria represent health-based limits relating to the lowest observed adverse effect level for sleep disturbance which provides a conservative approach.

Further, the previous answers demonstrate that Delta Coal is committed to ongoing compliance with the INP and site-specific approval conditions and has acknowledged that improvements can be made to reduce noise emissions from site. Mitigation measures have already been implemented and it is expected that decommissioning the rotary breaker by 30 June 2020 will mitigate the potential for future sleep disturbance impacts from the mine. The technical requirements for noise that apply to the site have been outlined and demonstrate compliance with Government policy and site-specific approval conditions. Further data analysis and discussion regarding the potential for sleep disturbance will be provided in the Mannering Colliery Noise Compliance Report which is to be submitted to the DPIE by 30 September 2019.

2.2 “Worst case” meteorological conditions

In the SEE and its Noise Impact Assessment (NIA), reference is made to modelling and noise predictions being undertaken under (eg) “worst-case wind scenario which considered the highest potential noise levels at each assessment location” (Section 5.3.1 Page 35) or that noise emissions are predicted to comply with the relevant long-term noise criteria “at all assessment locations under worst case meteorological conditions” (page 38).

Please provide clarification on the matters below:

- a) Please provide a clear definition for “worst case” meteorological conditions, as described in the SEE and NIA.**
- b) Are the quoted “worst-case” meteorological conditions equivalent to the meteorological conditions set out in the Industrial Noise Policy and reflected in conditions of consent (Appendix 4A) and may therefore be described as “Applicable Meteorological Conditions” under Appendix 4A?**
- c) Are noise emissions predicted to comply with relevant criteria under G class inversions?**

The ‘worst case’ meteorological conditions used for the purpose of noise predictions are those that have the potential to be the most noise-enhancing at nearby assessment locations whilst noise limits are applicable i.e. 3m/s source-to-receiver winds during the day and evening periods and temperature inversion and drainage winds (where applicable) during the night period.

Hence, the quoted ‘worst-case’ meteorological conditions are equivalent to those set out in the Industrial Noise Policy and consistent with those in the conditions of consent (MP 06_0311 Appendix 4A) and could be described as ‘applicable meteorological conditions’.

The presence of a G-class inversion would represent a situation where noise limits are not applicable in accordance with MP 06_0311 Appendix 4A. Hence, Delta Coal is not required to predict compliance with noise limits under such conditions.

2.3 Reasonable and feasible noise mitigation measures

The RTS states (Table 3.1 Page 22 and section 4.3 Page 26), that Delta Coal would only implement further reasonable and feasible noise management and mitigation measures to address noise emissions if the Noise Compliance Report (NCR) identifies issues with the operation of coal handling equipment at Mannering Colliery.

The NCR is a separate requirement outside the direct scope of the modification assessment. However, Planning & Assessment understands that Delta Coal has recently been informed of non-compliance noise exceedances during attended noise monitoring undertaken for the NCR.

- a) Please provide more detailed information on what reasonable and feasible noise mitigation measures are under consideration to reduce noise from the Colliery at the closest sensitive receivers, particularly Macquarie Shores home village.***

As described in Section 2.1 the recent exceedance of the sleep disturbance criteria was as a result of an equipment failure which has since been repaired. Compliance with the relevant noise limits has been determined through operator-attended noise compliance monitoring since the equipment repair.

Notwithstanding the preceding, Delta Coal is implementing additional mitigation measures in the future as described in Section 2.1 of this report.

2.4 Predicted noise impacts without breaker

In reference to Delta Coal's commitment to decommission the rotary breaker by June 2020, we request the following further information:

- 1. Please provide an assessment of the predicted noise impacts of the Mannering pit top operations following the proposed surface infrastructure changes to occur in June 2020.***

Predicted noise emission levels from MC at all assessment locations are provided in Table 2.1 excluding the breaker but including all other acoustically significant plant and equipment. Predicted noise emissions have been compared to those previously presented in the noise report prepared to accompany the application for Modification 5. Noise levels have been predicted based on the worst-case, applicable meteorological conditions consistent with those presented in the Modification 5 noise report. The benefits of relocating the breaker are highlighted in bold and apply to all assessment locations.

Table 2.1 Predicted operational noise levels - $L_{Aeq,15 \text{ minute}}$

Assessment location	Period	Predicted (dB)			Noise Criteria (dB) Table 2, Appendix 4B MP 06_0311
		Mod 3 (pre-mitigation)	Mod 5 (post mitigation)	Mod 5 (post mitigation excluding Breaker)	
4	Day	39	35	35	40
	Evening	39	36	35	40
	Night	40	36	36	40
5	Day	42	38	38	41
	Evening	42	39	38	41
	Night	43	39	39	41
6	Day	41	36	36	41
	Evening	41	37	36	41
	Night	42	37	36	41
7	Day	38	34	32	39
	Evening	38	35	32	39
	Night	39	35	33	39
8	Day	45	41	39	45
	Evening	45	42	39	45
	Night	46	42	39	43
9	Day	40	36	35	41
	Evening	40	37	35	41
	Night	41	37	36	41
11	Day	38	35	34	39
	Evening	38	36	34	39
	Night	39	36	35	39
18	Day	38	35	34	39
	Evening	38	36	34	39
	Night	39	36	35	39
20	Day	39	35	34	40
	Evening	39	36	34	40
	Night	40	36	35	40

Noise emissions from MC excluding the breaker are predicted to reduce by up to 2 dB compared to those including operation of the breaker and remain below the relevant long-term noise criteria outlined in MP 06_0311.

3 Ambient noise levels

As will be reported in detail in the Mannering Colliery Noise Compliance Report, an unattended environmental noise logger was deployed at the Macquarie Shores Village from 24 July to 1 September 2019. Noise data from this unit was analysed to determine ambient noise levels at the Macquarie Shores monitoring location. Based on operational data provided by Delta Coal, periods when Mannering Colliery plant was operational were excluded from the data analysis. A summary of measured ambient noise levels is provided in Table 3.1.

Table 3.1 Summary of measured, existing background and ambient noise

Monitoring location	Period ¹	RBL ² , dB	Measured $L_{Aeq, period}$ noise level ³ , dB
Macquarie Shores Village	Day	36	52
	Evening	38	46
	Night	37	48

Notes: 1. Day: 7 am to 6 pm Monday to Saturday; 8 am to 6 pm Sundays and public holidays; Evening: 6 pm to 10 pm; Night: 10 pm to 7 am.
2. The RBL is an INP term and is used represent the background noise level.
3. The energy averaged noise level over the measurement period and representative of general ambient noise.

If the measured existing noise levels, as presented in Table 3.1, were to be used in determining a project noise trigger level in accordance with current NSW noise policy this would result in night-time noise limits of $L_{Aeq,15min}$ 41 dB and $L_{A1,1 minute}$ (or L_{Amax}) 52 dB. The current noise limits outlined in Mannering Colliery's Project Approval (MP06_0311) for Macquarie Shores are $L_{Aeq,15min}$ 43 dB and $L_{A1,1 minute}$ 47 dB. Based on the recent ambient noise monitoring results the existing night-time $L_{Aeq,15min}$ noise limit is appropriate and the existing $L_{A1,1 minute}$ noise limit is conservative.

4 Closure

We trust the preceding meets your current requirements. If you have any questions or require anything further please don't hesitate to contact me on (02) 4907 4800 / 0447 715 900 or email.

Yours sincerely



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Associate

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Review: Najah Ishac 3/10/2019