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Re: J200173 - Lidsdale Siding Modification 3 - Response to additional EPA submission re: noise

Dear James,

The NSW Environment Protection Authority (EPA) provided comments on the *Lidsdale Siding MOD 3 – Submissions Report* (the report) for the proposed modification to development consent 08_0223 (Mod 3) for Lidsdale Siding (the facility). This letter provides a summary of the EPA's comments relating to noise and EMM Consulting Pty Limited's (EMM's) response to those comments.

The EPA has provided comment in relation to the following items:

- requirement to consider mitigation;
- sound power levels; and
- noise modelling.

The EPA confirmed they are satisfied that all reasonable and feasible mitigation measures have been applied at the current time and have requested no further information in relation to sound power levels.

With regard to noise modelling the EPA provide the following comment:

> The proponent has confirmed that they have combined two standard calculation methods in their predictions: ISO9613-2 with additional corrections for adverse meteorology from CONCAWE. The EPA has concerns regarding the combining of two different calculation standards, especially as the proponent has not demonstrated that this is an appropriate approach. ISO9613-2 calculates noise levels under downwind conditions, therefore the noise levels calculated using it would be higher than under neutral meteorological conditions. Using corrections from CONCAWE as well for adverse meteorological conditions adds an additional adverse meteorological correction factor, essentially double counting corrections for adverse meteorology.
>
> In this scenario, because the meteorology correction has been double counted, the noise levels presented in the Report are unlikely to represent the best achievable level and could be around 1-3 dB higher than if the meteorological correction was not double counted.
>
> *Recommendation*
>
> While the EPA generally supports the modification of the consent to remove the Trigger Action Response Plan (TARP) established 08_0223-Mod 1 (Mod 1) consideration is required of the appropriateness of using the noise levels in the Report, as they currently stand, to form part of any approval. It is the EPA's preference that the noise levels in any approval granted for Mod 3 (and therefore the Environment Protection Licence) present an accurate representation of noise emissions.

If the noise levels in the report are to be used, further information to support their appropriateness should be requested. Additional information to support the predictions could include validation measurements at a distance where meteorological conditions have an effect. The validation mentioned in the Report measured at 25m from the end of the track under neutral meteorological conditions and it is not possible to determine if meteorological effects have been sufficiently accounted for in the validation.

Given the ambiguity surrounding the application of the meteorological correction when the ISO9613-2 and Concawe algorithms are combined within the noise modelling package adopted, we have provided a comparison of the noise modelling results under different meteorological approaches (Table 1).

The approaches utilised are summarised as follows (noting that modelling has been undertaken to represent the daytime period only):

1. Concawe - Standard conditions: 20°C, 70% relative humidity, D Stability Class, 0 m/s winds.

2. Concawe - Noise enhancing: 20°C, 70% relative humidity, D Stability Class, 3 m/s winds in all directions.

3. ISO9613-2: no meteorology correction.

Table 1 Calculated noise levels

Assessment location	Description	Calculated daytime noise levels $L_{Aeq,15\ minute}$, dB			Consent/EPL daytime limits $L_{Aeq,15\ minute}$, dB	PNTL $L_{Aeq,15\ minute}$, dB
		Concawe Standard	Concawe Noise-enhancing	ISO9613-2 (no met correction)		
R1	Lot 2 Main Street, Wallerawang	50	52	50	50	68
R2	Black Gold Cabins Main Street, Wallerawang	48	50	48	46	58
R3	"Killarney", Brays Lane, Wallerawang	49	51	48	47	40
R4	"Fairview", Brays Lane, Wallerawang	43	45	42	43	40
R5	Duncan Street, Lidsdale	39	42	39	46	40
R6	Old Castlereagh Highway, Lidsdale	<30	<30	<30	43	40
R7	Royal Hotel Main Street, Wallerawang	44	47	44	41	58
R8	Cnr Heel Street & Cripps Avenue, Wallerawang	43	46	43	40	40
R9	Cnr Cripps Avenue & Pindari Place, Wallerawang	40	43	40	39	40
R10	Brays Lane South, Wallerawang	43	45	43	45	40
R11	"Tara", Brays Lane, Wallerawang	41	44	41	45	40
R12	Brays Lane Corner, Wallerawang	40	43	40	43	40
R13	St John the Evangelist Church 140 Main Street, Wallerawang	51	52	51	n/a	48
Validation point	Approx. 25 m from rail line.	60	60	60	n/a	n/a

Note: Calculated noise levels rounded to the nearest whole number.

EMM conducted limited noise validation measurements for the facility. As expected, given the relatively short distance between the validation point and the rail line at Lidsdale, the effect of meteorology is negligible at this location.

Table 1 shows that the results using Concawe standard conditions and ISO9613-2 without a meteorology correction are essentially the same with differences of <0.5 dB between the two approaches. Results using Concawe noise-enhancing conditions are the same or 1–3 dB higher than the other two calculation methods, as anticipated by the EPA.

We are currently undertaking noise modelling for several other Centennial sites (eg Angus Place Colliery, Myuna Colliery and Cooranbong Entry Site). This work has provided the opportunity to compare noise modelling results to the results of historical noise compliance monitoring conducted for each site over several years. Results of noise modelling for these sites using Concawe with noise-enhancing conditions have generally shown good correlation with the upper end of noise levels measured at the sites over time. This finding therefore supports the Concawe noise enhancing modelling approach that EMM has adopted.

The noise modelling tools available to practitioners are relatively limited and provide only an estimate of likely received noise levels at off-site locations. Each software developer concedes that there is an element of uncertainty with each product and algorithm used. The differences displayed above of 1–3 dB are within the accepted modelling differences of all algorithms available in the commercial software market. Therefore, any of the results displayed in Table 1 are considered equally representative as the other of what may occur in reality. Hence it is up to the acoustician to interpret and use these modelling tools to inform operators and using field measurements to validate predictions, as EMM has done at other sites, is best practice.

It is our opinion that noise modelling should represent a likely upper-end operational and meteorological scenario thereby predicting the typically worst-case noise emissions from sites at nearby noise-sensitive receptors. Doing anything to the contrary risks setting regulatory noise limits that sites could struggle to achieve.

It is therefore important to consider each project or site on a case by case basis. For this facility, adopting the higher of the predicted ISO 9613 or the existing EPL limits for each location is considered the minimum that should be adopted. Consideration should also be given to the PNTL at each assessment location and, hence, the likelihood of disturbance from site noise emissions. This approach would reduce some of the risk of establishing limits that may not be achieved at some locations as indicated by the Concawe enhanced met results in Table 1.

Centennial will also continue to undertake noise monitoring in order to determine compliance with the established noise limits and to assist in validating any future noise modelling exercise for the site.

We trust the preceding meets your current requirements. If you have any questions or require any further information please contact the undersigned on 0447 715 900 or via email.

Yours sincerely

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Review: Najah Ishac 19/06/2020