



Ground Floor, Suite 01, 20 Chandos Street  
St Leonards, NSW, 2065  
PO Box 21  
St Leonards, NSW, 1590

T +61 2 9493 9500

F +61 2 9493 9599

E [info@emmconsulting.com.au](mailto:info@emmconsulting.com.au)

[www.emmconsulting.com.au](http://www.emmconsulting.com.au)

23 January 2018

Ben Anderson  
Planning Approvals Manager  
Hume Coal Pty Limited  
Unit 7-8, Clarence House,  
9 Clarence Street  
Moss Vale, NSW 2577

Re: Hume Coal Project and Berrima Rail Project - Noise and Vibration Assessment, Response to Independent Noise Advice dated 4 December 2017

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Dear Ben,

Please see below further clarifications in response to the independent noise advice prepared by Renzo Tonin & Associates on behalf of the NSW Department of Planning and Environment (DPE) and dated 4 December 2017, relating to the Noise and Vibration Assessments (NVA) for the Hume Coal Project and Berrima Rail Project, and EMM's initial response of 5 October 2017. This letter responds to the key matters raised to allow DPE to make their final assessment.

#### **Rail noise source height used in modelling**

In relation to the source height used for modelling rail operations, adopting a noise 'centroid' height of 4m as suggested versus 2m (as adopted in the NVA), we confirm that remodelling shows this would result in no change or no material (<0.5dB) change to predicted noise levels with respect to the Berrima Rail Project operations along the rail spur. This is due to having no barriers proposed or no significant shielding offered by topography to residences along the rail spur. The top of the locomotive is agreed to be approximately 4m; however, it cannot be expected that all noise generated is to be from the top of the locomotive as there are a number of aspects that contribute to rail noise, being rail track/wheel interactions, engine and exhaust noise. Only exhaust sources can be said to be positioned near the top of the locomotive as a noise source. A paper by Deivasigaman and White (Proceedings of Acoustics 2016) titled 'Comparison of rail noise prediction methodologies for elevated rail designs' compares rail noise prediction algorithms and demonstrates that Nord 2000 allows split heights of 0.01m, 0.35m, 0.7m and 2.5m for source heights above the rail head. This paper goes on to adopt a source height of 2.5m for modelling of freight trains using both Kilde and Federal Transit Administration methods.

Furthermore, the NVA noise model includes a calibration of rail noise using measurements of existing operations. The calibration was described in the Berrima Rail Project NVA (Section 4.6.1) and subsequent correspondence (EMM's response dated 5 October 2017 to the initial independent noise review). This calibration accounts for the source height modelled.

The detailed design of rail barrier, as proposed for the loop, will require refinement of rail noise source heights to reflect the actual locomotives purchased for this project and the final alignment ground levels. The proposed noise barrier height will be refined at this later stage and, given the foregoing, is unlikely to change significantly from that shown in the NVA.

## Rail operation wheel squeal

Specific conditions of consent are proposed by Hume Coal, similar to those adopted on other major projects with rail operations, in relation to the management of rail squeal. These include:

- Locomotives that incorporate available best practice noise emission technologies. Prior to construction of the rail spur, Hume Coal will submit a report to the Secretary of DPE for consideration and approval that has been prepared in consultation with Transport for New South Wales and the NSW Environmental Protection Authority that justifies the technology proposed and how it meets the objectives of best practice noise and emission technologies.
- Wagons that incorporate available best practice noise technologies including as a minimum, permanently coupled 'multi-pack' steering wagons using Electronically Controlled Pneumatic (ECP) braking with a wire based distributed power system (or better practice technology). Prior to the commencement of operations, Hume Coal will submit a report to the Secretary for consideration and approval that has been prepared in consultation with TfNSW and the EPA that justifies the technology proposed and how it meets the objectives of best practice noise technologies.
- Implementing additional noise mitigation such as track lubrication and top-of-rail friction modifiers, if residual wheel squeal is experienced. This will adopt the use of automatic rail lubrication equipment in accordance with ASA Standard T HR TR 00111 ST Rail Lubrication and top of rail friction modifiers, where required.
- Implement measures to ensure the rail cross sectional profile is maintained in accordance with ETN-01-02 Rail Grinding Manual for Plain Track to ensure the correct wheel / rail contact position and hence to encourage proper rolling stock steering.
- Hume Coal will install and maintain a rail noise monitoring system on the rail spur and loop at the commencement of operation to continuously monitor the noise from rail operations. The system will capture the noise from each individual train passby noise generation event, and include information to identify:
  - time and date of coal train passbys;
  - imagery or video to enable identification of the rolling stock during day and night;
  - $L_{Aeq,15hour}$  and  $L_{Aeq,9hour}$  from rail operations; and
  - $L_{AFmax}$  and SEL of individual train passbys, measured in accordance with ISO3095; or
  - other alternative information as agreed with, or required by, the Secretary.

The results from the noise monitoring system will be publicly accessible via a website maintained by Hume Coal. The noise results from each train will be available on the website within 24 hours of it passing the monitor, unless unforeseen circumstances (ie a system malfunction) have occurred. The  $L_{Aeq,15hour}$  and  $L_{Aeq,9hour}$  from each day will be available on the website within 24 hours of the period ending.

Prior to the commencement of operation, Hume Coal will also submit for the approval of the Secretary, justification supporting the appropriateness of the location for rail noise monitoring, including details of any alternate options considered and reasons for these being used. The rail noise monitoring system will not operate until the Secretary has approved the proposed monitoring location(s).

Hume Coal will provide an annual report to the Secretary with the results of the monitoring for a period of five years, or as otherwise agreed, from the commencement of operation.

More broadly with respect to rail alignment and the radii of track curves, the design cannot be materially changed due to land ownership, topographical and infrastructure constraints (e.g. the Berrima Road Deviation proposed by Wingecarribee Shire Council and the Berrima Cement Works). The designs have tried to achieve the largest curve radii possible within the identified constraints. The track section with the smallest curve radii (i.e. the new rail entry to the Cement Works) looks unlikely due to the local Council's plans to proceed with the Berrima Road Deviation.

### **Construction noise management**

We agree that a comprehensive construction noise and vibration management plan needs to be developed and approved by the Secretary, and include the elements as listed under Recommendation 5 of the aforementioned advice.

### **Review of rail noise predictions for locations 28 and 29**

The assessment locations 28 and 29, referenced by the reviewer, are currently exposed to the rail operations of existing industrial facilities in this area of track. It is therefore important to note that the section of curved track nearby that leads to the Berrima junction with the main rail line will not be altered as part of the Berrima Rail Project. The reference to rail wheel squeal here, if present, is therefore not a consequence of the proposed project. Moreover, location 28 is located along a straight section of track while location 29 is arguably closer to the aforementioned existing curved section.

We trust that the above information meets your requirements and if you need anything further please contact our offices.

Yours sincerely



Najah Ishac (MEngSc, BE, MIEAust, MAAS, JP)  
Director, Acoustics technical leader  
[nishac@emmconsulting.com.au](mailto:nishac@emmconsulting.com.au)