



3 September, 2015

Karen Jones  
Director  
Infrastructure Projects  
Department of Planning & Environment  
GPO Box 39 Sydney NSW 2001

Dear Ms Jones

**Re: Hornsby Quarry Road Construction Spoil Management Project (SSI 7066)**

Thank you for the opportunity to comment on the Environmental Impact Statement (EIS) for the above proposal.

Northern Sydney Public Health Unit would like to make the following comments on the EIS in regard to noise and vibration and air quality.

**Noise and Vibration**

It is noted that the proposed project is expected to produce construction noise over a prolonged period of time (33 months) and includes five different construction phases (site establishment, establishment of conveyor, spoil haulage and stockpile maintenance, spoil emplacement, and site demobilisation and rehabilitation). The project area is surrounded by a number of noise sensitive receivers including an educational facility and hospital. The existing sound environment is characterised by low background sound levels with noise amenity typically expected in a quiet suburban setting. Areas surrounding the proposed site will be subjected to elevated noise levels from construction work, heavy vehicle movements, and related activities for an extended period of time.

The Noise and Vibration assessment predicts that construction activities will generate maximum sound levels of 48 to 72 dB  $L_{Aeq}(15 \text{ min})$  at affected properties, which exceeds NSW EPA Interim Construction Noise Guideline (ICNG) Noise Management Levels (NML) by 4 to 23 dB  $L_{Aeq}$ . ICNG indicates that there will be some community reaction to noise at the NMLs (Noise affected RBL + 10 dB), and community reaction will escalate with increasing noise levels. The Assessment indicates that a total of 316 residential properties and other sensitive land uses have been identified as being noise affected by the proposed project.

The assessment provides predicted average  $L_{Aeq(15 \text{ min})}$  and defines these as: “the typical noise level throughout the NCA while the maximum noise level shows the highest noise level that could be experienced at the most affected noise sensitive receiver in that NCA.” It would be prudent to base the assessment on the maximum levels expected with an acknowledgement that this may overestimate exposure levels to some degree.

The Air Quality Assessment for the project has assumed utilisation rate for the equipment of 80% and, assuming this is correct then you would expect the predicted  $L_{Aeq(15 \text{ min})}$  to be indicative of the expected  $L_{Aeq}$  measured over the period 7am to 6 pm. The World Health Organization (WHO) Guidelines for Community Noise 1999 indicate that sound levels of 55 dB  $L_{Aeq(16hr)}$  will cause serious annoyance and levels of 50 dB  $L_{Aeq(16hr)}$  will cause moderate annoyance in outdoor living areas (refer to WHO table in attachment 1). The Assessment predicts that the maximum  $L_{Aeq(15 \text{ min})}$  from the site will exceed WHO’s serious annoyance sound level of 55 dB  $L_{Aeq(16hr)}$  in 17 of the 20 noise catchment areas. It also predicts that the “average”  $L_{Aeq(15 \text{ min})}$  from the site will exceed WHO’s moderate annoyance sound level of 50 dB  $L_{Aeq(16hr)}$  in 12 of 20 noise catchment areas. Consequently, the predicted noise levels are likely to cause moderate to severe annoyance for sensitive receptors around the site.

Hornsby TAFE and Mt Wilga Private hospital have been identified as sensitive land uses requiring a greater level of noise amenity. The Assessment indicates that these facilities will be exposed to outdoor construction noise of up to 74 (p 29) and 60 dB  $L_{Aeq(15 \text{ min})}$  (Appendix D Fig 1) respectively at times during the project. ICNG allows for a 10 decibel difference between external and internal noise levels (with windows open for adequate ventilation) resulting in corrected internal sound levels of up to 64 and 50 dB  $L_{Aeq(15 \text{ min})}$  respectively. These internal noise levels exceed ICNG internal NMLs of 45 dB  $L_{Aeq(15 \text{ min})}$  and substantially exceed WHO internal sound levels of 35 dB  $L_{Aeq}$  for school class rooms, and 30 dB  $L_{Aeq(16 \text{ hr})}$  for hospital ward rooms indoors. In view of these noise level exceedances both Hornsby TAFE and Mt Wilga Private hospital are significantly impacted by the project.

Considering the predicted noise levels, exceedances of NMLs, and significant number of properties that will be adversely impacted by the project over an extended timeframe, the following measures require further consideration;

1. further noise mitigation measures and improved operating practices are required to effectively address adverse noise impacts. This is particularly relevant for the TAFE.
2. any proposed noise monitoring program should incorporate ongoing monitoring at noise affected properties that identifies and addresses adverse noise impacts and allows the effectiveness of additional mitigation measures to be evaluated.
3. the noise management plan should include provision for cessation of operations causing adverse noise disturbances and require modification of operations to achieve acceptable noise levels.

Given the predicted noise levels any activity outside of 7am to 6pm weekdays and 8am to 1pm Saturdays should be strictly controlled to avoid potential impacts upon sensitive receivers.

## Air Quality

The proposed project has the potential to generate significant fugitive emissions with potential health impacts. Due to the nature of the material being transported specific assessment of silica emissions is necessary.

NSW Health has no specific expertise in air modelling and determining the emission assumptions that are used by such modelling. As such, the validity of the modelling presented should be reviewed by an expert in this field. The following comments assume the exposure levels reported by Technical Working Paper: Air Quality are valid.

The Health Risk Assessment (HRA) document authored by EnRisks has been reviewed and the following comments are provided to assist the Department of Planning in the assessment of the proposal;

- Generally the HRA has been conducted in accordance with the approach described by the document “EnHealth Environmental Health Risk Assessment: Guidelines for Assessing Human Health Risks from Environmental Hazards: 2012 (enHealth 2012a)”.
- It is noted that the exposure assessments have been estimated assuming dust suppression and control mitigations measures are in place.
- The assessment of volatile organic compounds appears sound and does not identify a significant health risk.
- The incremental risk posed by the exposure to Particulate Matter (PM) generated by the project has been quantitatively assessed. Specific comments include;
  - the risk equations used appear appropriate although the use of an exposure duration adjustment factor for mortality risk (>30years) is not supported. It is recommended that an annual risk figure without this adjustment be calculated and interpreted in the assessment.
  - the baseline incidence of cardiovascular and respiratory hospitalisations (>65 years) in Table 3.3 appears to be in the order of 2 to 2.5 times higher than expected. Consequently the incremental risk for cardiovascular hospitalisations is likely to have been over estimated by a similar factor and this should be reviewed.
- The assessment of silica risk has generally been done in an acceptable manner. However, the estimation of the percentage silica content in PM2.5 and PM10 may be overly conservative. NSW Health is aware of some work reported by an expert air quality panel for the assessment of the Somersby Sand mine proposal in 2012<sup>1</sup>. This situation is somewhat comparable to the current proposal and the panel estimated that the percentage of silica in fugitive PM10 emissions from the site in Somersby was in the order of 16%. This is a substantially lower proportion than that assumed by EnRisks for the current proposal (70%). Consequently the current assessment is likely to be overly conservative. Nonetheless given that the project is expected to be conducted over an approximate 3 year period the conclusion that there is no significant risk of silicosis to residents living around the quarry is reasonable.

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<sup>1</sup> Report of the Independent Hearing and Assessment Panel Somersby Fields Project, Department of Planning New South Wales 2008.

- EnRisks has stated “Where risks are determined to be tolerable, it is expected that mitigation measures be implemented to minimise exposures associated with the project. For this project, air impacts and hence health risks are proposed to be further minimised through the implementation of best industry practice dust management and mitigation measures, to be outlined in a comprehensive dust management plan for the project.” Risks from dust emissions in the form of PM2.5 pose a risk at this level and hence the requirement for a comprehensive dust management plan is supported.
- Sections 7.1 and 7.2 in the Technical Working Paper: Air Quality outline proposed management and mitigation measures for the site. It is noted that these sections include a list of best industry practice mitigation measures, a proposed “formal dust observation program” and additional mitigation measures that could be implemented during unfavourable weather conditions. The level of risk identified by the HRA warrants a more comprehensive monitoring program than that proposed and the routine use of the additional mitigation measures identified irrespective of weather conditions. A monitoring program involving the measurement of Total Suspended Particulates (TSP) and Particulate Matter (PM) at the boundaries of the site (to both verify the estimates made by the Air Quality assessment and inform the effectiveness of mitigation) should be an integral part of any comprehensive dust management plan for the project.

Please contact Geoffrey Prendergast on 9477 9400 or email

[Geoffrey.Prendergast@health.nsw.gov.au](mailto:Geoffrey.Prendergast@health.nsw.gov.au) should you wish to discuss the issues raised.

Yours sincerely,



Dr Michael Staff  
Director

## Attachment 1

**Table 4.1: Guideline values for community noise in specific environments.**

Specific environment	Critical health effect(s)	LAeq [dB]	Time base [hours]	LAmaz, fast [dB]
Outdoor living area	Serious annoyance, daytime and evening	55	16	-
	Moderate annoyance, daytime and evening	50	16	-
Dwelling, indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	
Inside bedrooms	Sleep disturbance, night-time	30	8	45
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60
School class rooms and pre-schools, indoors	Speech intelligibility, disturbance of information extraction, message communication	35	during class	-
Pre-school bedrooms, indoors	Sleep disturbance	30	sleeping-time	45
School, playground outdoor	Annoyance (external source)	55	during play	-
Hospital, ward rooms, indoors	Sleep disturbance, night-time	30	8	40
	Sleep disturbance, daytime and evenings	30	16	-
Hospitals, treatment rooms, indoors	Interference with rest and recovery	#1		
Industrial, commercial shopping and traffic areas, indoors and outdoors	Hearing impairment	70	24	110
Ceremonies, festivals and entertainment events	Hearing impairment (patrons:<5 times/year)	100	4	110
Public addresses, indoors and outdoors	Hearing impairment	85	1	110
Music through headphones/earphones	Hearing impairment (free-field value)	85 #4	1	110
Impulse sounds from toys, fireworks and firearms	Hearing impairment (adults)	-	-	140 #2
	Hearing impairment (children)	-	-	120 #2
Outdoors in parkland and conservation areas	Disruption of tranquillity	#3		

#1: as low as possible;

#2: peak sound pressure (not LAmaz, fast), measured 100 mm from the ear;

#3: existing quiet outdoor areas should be preserved and the ratio of intruding noise to natural background sound should be kept low;

#4: under headphones, adapted to free-field values

