

27 September 2012

610.02455 Reassessment 20120927

Hanson Construction Materials Pty Ltd
Level 5, 75 George Street
PARRAMATTA NSW 2150

Attention: Mr Andrew Driver

Dear Andrew

Noise Predictions for Quarry Entry Road Route East Guyong Quarry Project

1 BACKGROUND

In January 2011, development approval was granted by the NSW Department of Planning (DoP). The conditions of approval issued by the DoP required further investigations to map the extent of the Naturally Occurring Asbestos (NOA) within the project area. In March 2011, Rangoot Mineral Exploration Pty Ltd (RME) were commissioned to carry out the required NOA mapping. RME carried out extensive exploratory auger drilling across the project infrastructure area and approved entry road alignment.

During the marking out of the approved entry road it became evident that this alignment would result in quarry vehicles passing over a pronounced hill which would potentially expose nearby dwellings to the sight of these vehicles. An alternative entry road route was consequently identified that would provide a lesser visual impact by deviating the road further around to the western side of the subject hill.

The proposed modification to the entry road alignment is shown in **Figure 1**, in off-white colouring.

Figure 1 Proposed Re-Alignment of the Quarry Entry Road



Having identified the new entry road route, SLR Consulting Australia Pty Ltd (SLR Consulting) was commissioned by Hanson to undertake re-assessment of the noise impacts associated with the revised quarry design incorporating the proposed quarry entry road (as well as the revised processing plant location, as outlined in the Guyong Quarry - Preferred Project Report prepared by Hanson).

Apart from the location of the processing plant and the road trucks on the proposed quarry entry road, all items of the plant and equipment, their specifications and their location are as presented in the "Heggies Report" (now SLR Consulting) entitled Proposed Hard Rock Quarry, Guyong, NSW Operational and Transportation Noise (Report 10-2455-R1 Revision 1) dated 25 October 2007.

2 PREDICTION OF NOISE EMISSIONS - OPERATION

As with the Heggies Report, noise predictions have been calculated to four residential/rural receivers surrounding the proposed Guyong Quarry denoted in this assessment as Carina Vale, Fairview, Lilactime and Hartley Cottage, as shown in the Locality Map in **Appendix A**.

The Guyong Quarry computer model was prepared using RTA Technology's Environmental Noise Model (ENM for Windows, Version 3.06), a commercial software system developed in conjunction with the NSW EPA. The acoustical algorithms utilised by this software have been endorsed by the ANZEC and all State Environmental Authorities throughout Australia as representing one of the most appropriate predictive methodologies currently available.

Four operational scenarios for day/evening and night-time were assessed in order to represent the development stages throughout the quarry life and were based on a maximum output of 400,000 tpa. These scenarios have been referred to as:

- Stage 1: Start-up of initial work at a pit depth of RL 926 m.
- Stage 4: 50% of the quarry life at a pit depth of RL 926 m.
- Stage 7: Final stage of operation at a pit depth of RL 910 m.
- Stage 7+: Future Extraction Area - NW area of Lease RL 910 m.

Hanson has indicated that the majority of plant (mobile and fixed) used in the proposed Guyong Quarry will be obtained from the existing Bathurst Quarry plant. Consequently, noise measurements of this plant were conducted at the Bathurst Quarry. Where possible, the measurement included multiple plant items undertaking particular tasks during the fifteen minute sample period, such as trucks being loaded and departing and returning to be reloaded.

The four operational scenarios modelled for this assessment comprised the following concurrent operations:

Operational Scenarios - Stages 1, 4, 7 and 7+

- Dump trucks on the haul route between the pit and the hopper.
- Loaders loading haul trucks in the pit.
- Processing plant.
- Loaders loading bins at the processing plant.
- Water truck watering the haul road.
- Blasthole drilling in an elevated position on the top of the pit bench (daytime only).
- Hydraulic rockbreaker in pit.
- Road trucks leaving the site via the proposed access road to the Mitchell Highway.

Within the noise model, operations consisted of all plant items operating concurrently in order to simulate the overall maximum potential noise emission.

It should be noted that the sound power levels given for each item of mobile equipment do not include noise emissions which emanate from reversing alarms.

In the event that reversing alarm noise is considered to be a source of disturbance, the alarm noise level should be checked against the appropriate regulatory and health and safety requirements and the necessary mitigating action taken to achieve an acceptable noise reduction without compromising safety standards.

2.1 Meteorological Parameters for Noise Modelling

As discussed in Section 3.1 of the Heggies Report, the frequency analysis showed that no prevailing winds occurred for 30% or more during any period.

The INP states that temperature inversions need only be considered for the night-time noise assessment period ie 2200 hours to 0700 hours.

At the subject quarry, fixed plant such as crushers, screens and conveyors may occasionally be required to operate during the evening and/or night-time periods. Consequently, in accordance with the INP, the night-time operations are required to be assessed under prevailing temperature inversion conditions.

ENM Noise Modelling Meteorology

The contributed noise emissions for the proposed operational scenarios at the nearest potentially affected residential properties have been calculated with the following meteorological parameters (refer to Section 3.1 of the Heggies Report):

Daytime Operations (0700 hours to 1800 hours)

Calm

During "calm" conditions (ie 20°C air temperature, 60% Relative Humidity, 0 m/s wind speed and 0°C/100 m temperature gradient).

Evening Operations (1800 to 2200 hours)

Calm

Calm - (ie 15°C air temperature, 70% Relative Humidity, 0 m/s wind speed and 0°C/100 m temperature gradient).

Night-time Operations (2200 hours to 0700 hours)

Calm

Calm - (ie 5°C air temperature, 90% relative humidity, 0 m/s wind speed and 0°C/100 m temperature gradient).

Temperature Inversion and Calm Wind

Prevailing moderate temperature inversion (ie 5°C air temperature, 90% relative humidity, 3°C/100 m temperature inversion and calm winds, as there are no winds prevailing above 30% occurrence during winter).

3 OPERATIONAL NOISE IMPACT ASSESSMENT

Table 1 presents the predicted LAeq(15minute) noise level contributions from the proposed quarry operations together with the respective Development Consent criteria. These predicted noise levels have been modelled assuming the noise management recommendations described in Section 12 of the Heggies Report have been implemented. Blasthole drilling will not occur and was therefore not modelled during the evening and night-time hours.

Table 1 Noise Level Impact Assessment – dBA re 20 µPa

Receiver	Daytime (0700-1800 hours) Calm		Evening (1800-2200 hours) Calm		Night-time (2200-0700 hours) Calm		Night-time (2200-0700 hours) 3°C/100m Inversion	
	Predicted LAeq (15minute) Noise Level	Approved LAeq (15minute) Intrusive Criterion	Predicted LAeq (15minute) Noise Level	Approved LAeq (15minute) Intrusive Criterion	Predicted LAeq (15minute) Noise Level	Approved LAeq (15minute) Intrusive Criterion	Predicted LAeq (15minute) Noise Level	Approved LAeq (15minute) Intrusive Criterion
Stage 1 Scenario								
"Carina Vale"	23	35	21	35	21	35	26	35
"Fairview"	26	36	24	35	25	35	30	35
"Lilactime"	24	35	23	35	23	35	27	35
"Hartley Cottage"	30	35	31	35	31	35	34	35
Stage 4 Scenario								
"Carina Vale"	29	35	22	35	22	35	25	35
"Fairview"	36	36	23	35	24	35	29	35
"Lilactime"	21	35	21	35	21	35	24	35
"Hartley Cottage"	29	35	28	35	29	35	33	35
Stage 7 Scenario								
"Carina Vale"	28	35	24	35	24	35	27	35
"Fairview"	31	36	26	35	26	35	31	35
"Lilactime"	23	35	22	35	22	35	25	35
"Hartley Cottage"	30	35	29	35	29	35	33	35
Stage 7+ Scenario								
"Carina Vale"	33	35	32	35	32	35	35	35
"Fairview"	24	36	25	35	25	35	32	35
"Lilactime"	21	35	21	35	21	35	24	35
"Hartley Cottage"	29	35	29	35	29	35	33	35

4 SUMMARY OF RESULTS AND FINDINGS

This report presents the results and findings of an assessment of the potential impacts of the operation of the proposed Guyong Quarry, located 22 km east of Orange, NSW including the proposed quarry entry road and the revised processing plant location.

Review of the data presented in **Table 1** indicates that the predicted day, evening and night-time noise levels comply with the Development Consent noise criteria at all nearby receivers, assuming the noise management recommendations described in Section 12 of the Heggies Report are adopted.

Based on the sleep disturbance criteria nominated in Section 1.1 of the Heggies Report there is no potential for sleep disturbance at any nearby noise sensitive receiver from the proposed Guyong Quarry.

We trust the above information satisfies your immediate requirements however, should you have any queries or require further information, please contact me.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Dick Godson', with a stylized, cursive script.

DICK GODSON
Technical Director

(Call at any time on 0411 056 024)

LOCALITY MAP

