

Review of the Noise Conditions – Calga Sand Quarry

Including a review of a Specialist Report and a supplementary report by Wilkinson Murray and supplementary independent review by Renzo Tonin.

1 Background

Rocla Materials Pty Ltd (Rocla) is proposing to expand the existing Calga Sand Quarry located on Peats Ridge Road about 1.6 kilometres from the M1 Pacific Motorway (prior to August 2013 this was known by various names including the F3 Sydney – Newcastle Freeway) in the Gosford local government area.

The quarry has operated periodically since the late 1960's and more formally since the early 1990's, and currently operates under a Ministerial approval granted in 2005. It is recognised as a 'sand extraction area of regional significance' under the *Sydney Regional Environmental Plan No. 9 – Extractive Industry* and is located within a 'preferred location for extractive industries' under *Sydney Regional Environmental Plan No. 8 – Central Coast Plateau Areas*.

As a result of complaints the primary focus of this review is in respect to establishing appropriate noise criteria for the Walkabout Park.

2 Existing Noise Criteria for the Walkabout Park

The criteria for the residence on Walkabout Park in the existing consent for the quarry are based on the default criteria for 'all other receivers' (ie. 35dBA at all times). This is because the residence is not one of the closest residences to the existing quarry, and was subsequently not formally identified nor assessed in the 2005 application (as closer residences were used to assess and define noise impacts). The 35dBA criterion is based on the lowest default background noise level for the Walkabout Park residence of 30dB, rather than an actual background noise level.

Both the Wilkinson Murray and Renzo Tonin reports recognise that it is inappropriate to assign a rating background level (RBL) of 30 dB(A) to the Walkabout Park when the surrounding noise catchment is significantly impacted by road traffic noise from Peats Ridge Road, the M1 Pacific Motorway and the Calga Interchange all of which are located within 600m. The quarry is located approximately 1km from the residence on Walkabout Park.

Wilkinson Murray Noise Levels

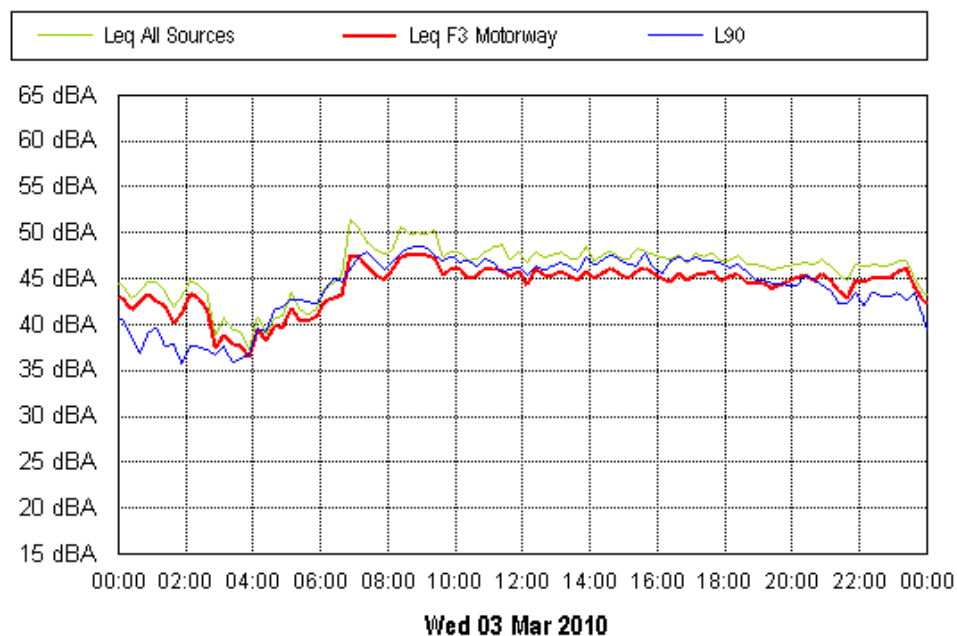
The following noise levels were established based on long term monitoring in the 2006 EA.

Table 1. 2006 EA PSNL's

Period	Leq (all sources)	RBL	PSNL (RBL + 5 dB)
Shoulder (5am – 7am)	51	37	42
Day (7am – 6pm)	57	41	46
Evening (6pm – 10pm)	56	40	45
Night (10pm – 7am)	46	33	38

Data collected by Wilkinson Murray in 2010 is presented in Table 2 below. In this 2010 exercise, a directional microphone array was used to better isolate the noise coming from the mine, against that from the surrounding roads. The results from this survey tend to show higher background noise levels were being experienced most periods of the day except for daytime, when a level 3 dB(A) lower was recorded.

The use of a directional microphone array also allowed the quantification of noise from the M1 Pacific Motorway. As shown in Figure 1 below, there is a strong correlation between noise from 'all sources' and that from the Motorway which supports the proposition that noise from the Motorway underpins the noise in the surrounding catchment.

**Table 2. 2010 PSNL's**

Period	RBL	PSNL (RBL + 5 dB)
Shoulder (5am – 7am)	42	47
Day (7am – 6pm)	38	43
Evening (6pm – 10pm)	43	48
Night (10pm – 7am)	37	42

The 2010 Wilkinson Murray report suggests that project specific noise levels (PSNL's) should be set at the lower of which ever background noise level was calculated in the 2006 and 2010 studies. This approach is considered conservatively acceptable provided that it does not result in criteria for the evening that are lower than the night, nor criteria for the day that are lower than either the evening or the morning (this would then be consistent

with the EPA approach and community expectations to give the same or greater protection to the more sensitive periods of the 24 day).

Table 3. Conservatively combined 2006 and 2010 PSNL's

Period	PSNL 2006	PSNL 2010	Combined PSNL
Shoulder (5am – 7am)	42	47	42
Day (7am – 6pm)	46	43	45*
Evening (6pm – 10pm)	45	48	45
Night (10pm – 5am)	38	42	NA

* Reduced from the 2006 report, but not less than the lowest evening level.

Renzo Tonin Noise Levels

The Renzo Tonin report reports slightly lower background noise levels in its 2013 report, however it is noted that the data was collected under almost continuous northerly winds which are not only non-typical (generally occur less than 5% of the time and would not be considered valid typical monitoring conditions under the Industrial Noise Policy), but also would tend to attenuate road traffic noise, particularly that from the M1 Pacific Motorway. The background noise results contained in the Renzo Tonin report are not consistent with other projects adjacent to the M1 Motorway, which tend to demonstrate that traffic noise underpins the background noise levels throughout the night, and increases significantly from 5am.

Most importantly however, is the collection period only covered 5 mornings including a Sunday on which no work is undertaken, yet was included in the average RBL data set.

Table 4. Renzo Tonin RBL's

Period	Leq (all sources)	RBL
Shoulder (5am – 7am)	~ 44	33
Day (7am – 6pm)	~ 48	38
Evening (6pm – 10pm)		33
Night (10pm – 7am)		30

Whilst the Renzo Tonin graphs show that the background noise levels recorded during 'working mornings' range from around Leq(15 min) of 30 dB(A) to over 40 dB(A) with an average of around 37 dB(A), the morning shoulder is only a two hour period making it statistically difficult to determine a representative RBL even if a typical range of meteorological conditions are experienced.

Despite data for the Renzo Tonin report being collected under a worst possible scenario, it was concluded that:

Between 5am and 7am, whilst some engine and machine noise was audible, it was not clearly from the quarry and considering that only one loader was operating, it was more likely from trucks on Peats Ridge Road. Since the quarry was effectively inaudible its emissions are not considered intrusive or offensive during this period.

The data in the Renzo Tonin report is suitable for assessing the noise impact of the quarry under worst case scenario, however because of the non-typical meteorological conditions and the limited duration of monitoring, it is not suitable for use in determining a RBL. Only the Wilkinson Murray data is considered suitable for the purpose of determining an RBL.

Predicted Noise Levels

Wilkinson Murray made predictions of operational noise in the 2006 EA, although attended monitoring by both Renzo Tonin and Wilkinson Murray indicates that these predictions may have been slightly optimistic. However when extraneous noise from road traffic and other sources is removed from the measured data, the quarry noise under the worst case scenario's appears to equate well with the conservatively calculated PSNL's established in Table 3.

3 Summary and Recommendations

Both the Wilkinson Murray and Renzo Tonin reports support the proposition that the noise catchment around the Calga Sand Quarry and the Walkabout Park is underpinned by road traffic noise from the high volume M1 Pacific Motorway and Peats Ridge Road under normal conditions. Whilst, meteorological conditions will sometimes mean that road traffic noise is less pervasive than at other times, it is always present. During these times of attenuated road traffic noise, the quarry may appear noisier although only normal activities are being undertaken.

However, it should be clearly understood that audibility is not the criteria for this landuse. The proximity of the quarry to the M1 Pacific Motorway is ideal as it minimises truck transport through residential areas and quickly integrates the trucks onto a network designed for high volumes of transport and related road traffic noise.

The PSNL's developed from the lowest background levels of the two Wilkinson Murray studies as presented in Table 3 should be adopted as the criteria as they are based on a satisfactory quantity of data and reflect both acceptable noise levels and achievable levels even under actual worst case scenario's when the INP allows excursions above the PSNL's without resulting in a breach of noise conditions.

Best practice and continuous improvement by the quarry should be demonstrated and driven through a noise management plan prepared in consultation with the EPA and to be approved by the DG.

Reviewed by:

Jeff Parnell

12 Sept 2013.