

THREE KINGS QUARRY
Noise Compliance Assessment
Rp001 2011528A

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Project: **THREE KINGS QUARRY
Noise Compliance Assessment**

Prepared for: **Winstone Aggregates
PO Box 17195
Greenlane
Auckland 1546**

Attention: **Elyse LaFace**

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1.0 INTRODUCTION

Marshall Day Acoustics (MDA) has carried out a noise survey at two monitoring positions adjacent to Three Kings Quarry, Mt Eden on 22 December 2011. Winstone Aggregates is required to undertake two noise surveys per year, at two identified monitoring positions, as part of the Environmental Management Plan for the Quarry, in order to determine compliance with the noise rules for the site.

2.0 NOISE PERFORMANCE STANDARDS

The quarry is zoned *Business 7* in the City of Auckland District Plan Isthmus Section – Operative 1999. The closest dwellings are located immediately to the west of the quarry in Fyvie Avenue. The noise rule that relates to quarry operations is:

“Noise Control at the Residential Interface

The L_{10} noise level and maximum level (L_{max}) arising from any activity measured at or within the boundary of any residential zoned property shall not exceed the following limits:

<i>Monday to Saturday</i>	<i>7.00 am – 10.00 pm</i>	<i>L_{10} 55 dBA</i>
<i>Sunday and Public Holidays</i>	<i>9.00 am – 6.00 pm</i>	
<i>At all other times</i>		<i>L_{10} 45 dBA</i>
		<i>L_{max} 75 dBA, or background (L_{95}), plus 30 dBA whichever is the lower</i>

The above noise levels shall be measured and assessed in accordance with the requirements of the NZS 6801:1991 “Measurement of Sound” and NZS 6802:1991 “Assessment of Environmental Sound” or their replacement.”

3.0 MEASUREMENTS

3.1 General

Measurements were completed at each of the two measurement positions on 21 December 2011. The first was at the Grahame Breed Drive position between 10:46 am and 11:15 am and the second was at the Fyvie Avenue position between 11:26 am and 11:50 am. These positions are the same as in all previous compliance measurements of this type and are shown on Figure 1 attached.

Noise measurements were carried out using a Brüel & Kjaer 2250 sound level meter, which satisfies the requirements for a Type 1 sound level meter according to IEC 651. Measurements were carried out and assessed generally in accordance with the relevant New Zealand Standards.

The weather was fine with 1 - 2 octa cloud cover and a light ESE breeze (approximately <1.5 m/s).

3.2 Operations and Equipment

The following equipment was observed as operating on the site during the measurement of noise levels. Details were confirmed by the quarry operators following completion of the noise survey.

- 1 x Komatsu WA480-6 wheel loader, moving crushed aggregate from the mobile crusher to the stockpile areas and loading trucks
- 1 x excavator (*Hyundai 210*) extracting rock from the quarry face and loading it into the mobile crusher
- 1 x Terex Pegson 4242SR Mobile Crusher

The excavator and crushing plant were operating at the northern end of the quarry. The quarry has since confirmed that all operations were as per normal during the measurement period.

3.3 Results

The measured noise levels are presented in Table 1 below.

Table 1 – Measured Noise Levels

Measurement Position	Duration	dB L _{A10}	Noise Sources ⁽¹⁾
Fyvie Avenue	20 minutes	49	<u>Pegson 4242SR Crusher</u> , Komatsu WA480-6 wheel loader' <u>Hyundai excavator</u> , bird and insect (cricket) sounds.
Grahame Breed Drive	20 minutes	49	<u>Pegson 4242SR Crusher</u> , Komatsu WA480-6 wheel loader, <u>Hyundai excavator</u> , bird and insect (cricket/cicada) sounds, distant traffic Mt Albert Rd, occasional voices from ACC Depot.

Notes to Table 1:

- (1) Dominant noise source(s) underlined.

3.4 Discussion

3.4.1 Grahame Breed Drive

In terms of activity from the quarry, the most audible noise sources at this position were the crushing plant and the excavator loading the crushing plant.

The measurement position was slightly obscured from the quarry by foliage however this would not have had any acoustic effect. The excavator was partially screened by terrain on the pit floor whereas the crusher had direct line-of-sight (Refer Photo 1 overleaf).

Ambient noise sources (i.e. not associated with the quarry activity) included distant traffic noise from the surrounding road network, activity inside the Auckland Council Depot and occasional bird and insect sounds. These events, where practicable, were paused out to minimise their impact on the quarry measurements, and are considered to have no significant effect on the survey result.

The measured noise level of 49 dB L_{A10} complies with the relevant noise criterion of 55 dB L_{A10} .

3.4.2 Fyvie Avenue

Noise from the quarry, in particular the crushing plant and excavator loading the crushing plant, was clearly audible at the Fyvie Avenue measurement position.

The Pegson Crusher and excavator were operating approximately 160 metres away from the measurement position (Refer photos 2 and 3 overleaf) at the northern end of the quarry and dominated the noise environment at this measurement position. The loader was less noticeable. During the measurement a large truck and trailer visited the site and received a partial load of aggregate however this activity had no material effect on the overall noise level.

Ambient noise sources (i.e. not associated with the quarry activity) included bird and insect (cricket) sounds.

The mobile crusher and excavator were not screened by any terrain inside the quarry.

Photos 2 and 3 overleaf show the location of the crushing plant and excavator in operation during measurements.

The measured noise level of 49 dB L_{A10} complies with the relevant noise criterion of 55 dB L_{A10} .



Photo 1 – View from public access path below Graham Breed Drive



Photo 2 – View from fence line, Fyvie Ave



Photo 3 – View of Excavator & Crusher Operating

4.0 CONCLUSIONS

Marshall Day Acoustics has completed noise monitoring at the two nominated monitoring positions as required by the Environmental Management Plan for the Three Kings Quarry.

Typical operations at the site (i.e. loader, mobile crusher, excavator used to load the crusher) resulted in noise levels which complied with the relevant noise rules for the site.

FIGURE 1 – MEASUREMENT POSITIONS

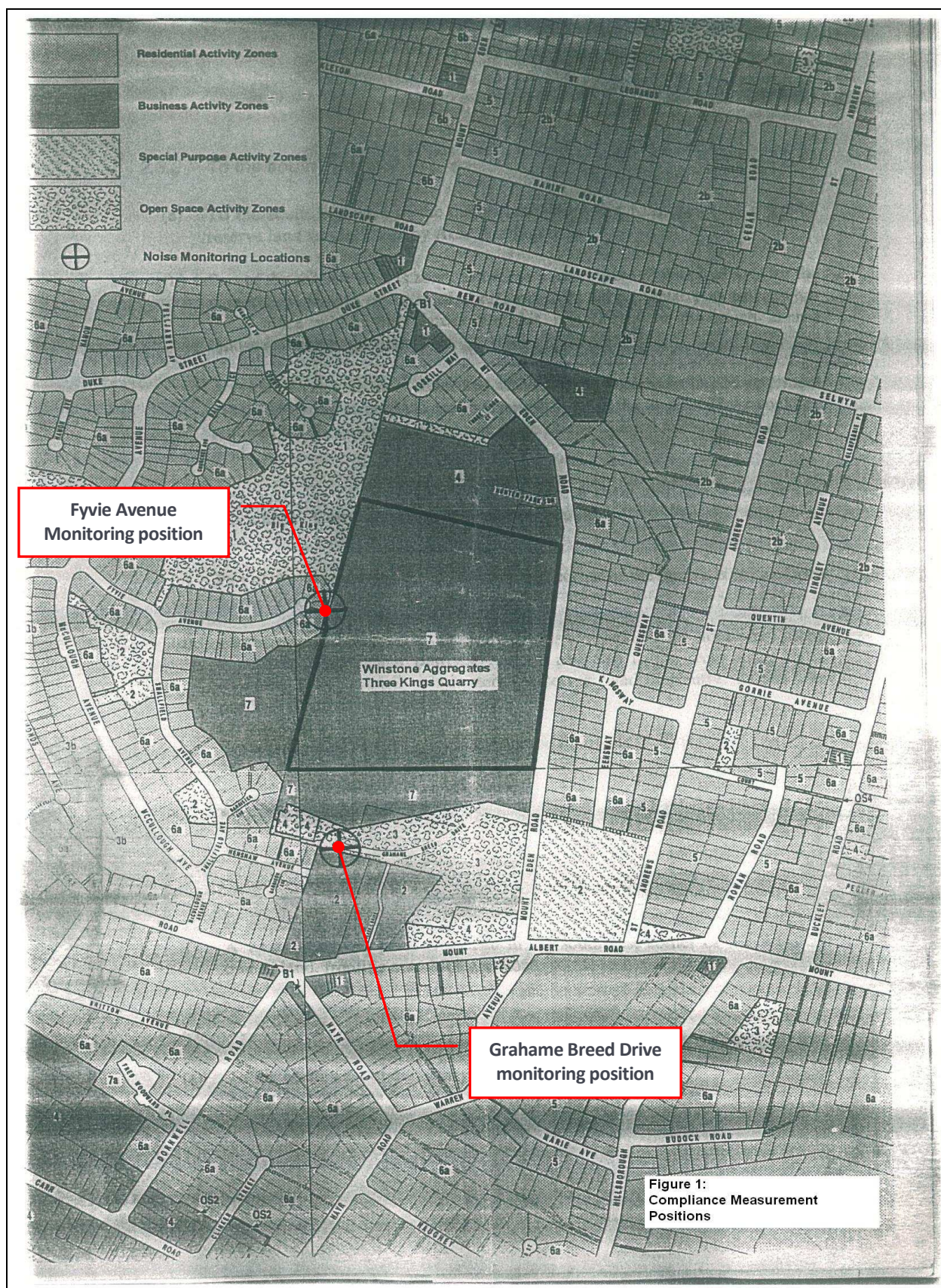


Figure 1:
Compliance Measurement
Positions