

## BEFORE THE REGULATIONS REVIEW COMMITTEE

IN THE MATTER of Land Transport Rule: Vehicle Equipment Rule 32017.

### STATEMENT OF EVIDENCE BY STUART CAMP

#### 1 Introduction

- 1.1 My name is Stuart Camp. I am a Principal in the national acoustical consulting firm of Marshall Day Acoustics. I hold a Science degree from Auckland University, majoring in Mathematics and Acoustics. I have worked in the field of acoustics with Marshall Day Acoustics for the last 22 years. I established the Christchurch office in 1997.
- 1.2 I have been involved with a large number of environmental noise assessment projects in New Zealand, Australia, and Malaysia, and presented evidence at both Council and Environment Court hearings many times.

#### 2 Vehicle Noise

- 2.1 I have recently undertaken measurements of noise from individual cars using Dyers Pass Rd in Christchurch. Dyers Pass Rd is a winding road on the Port Hills at the southern end of Christchurch City. It has recently become a favoured route for "boy racers", particularly on Friday and Saturday evenings.
- 2.2 The purpose of my measurements was to examine the effect of vehicle noise on residents in the area, particularly with respect to the difference between "standard" and "modified" vehicles.
- 2.3 I was originally asked to assist by *The Press* who were investigating complaints from residents about noise from modified vehicles. I have undertaken the measurements and preparation of this statement voluntarily because of my interest in this matter—I am not being paid for my time.

### **3 Vehicle Noise**

- 3.1 Despite being a significant issue in many urban areas of New Zealand, vehicle noise is one of the least regulated of all noise sources. In my experience, there is essentially no control over noise from individual vehicles, or from road traffic in general.
- 3.2 This lack of attention to vehicle noise became very clear to me when I became involved in this project. I have worked solely in the field of acoustics and noise control for over 20 years, yet I was not able to answer basic questions about existing rules which purport to govern vehicle noise in New Zealand.
- 3.3 It is somewhat ironic that all District Plans in New Zealand set controls on the level of noise which industry can impose on a residential area, yet there are no controls on the level of vehicle noise which can be produced at the same properties.
- 3.4 Traffic noise as a whole is determined by a number of different parameters, and is therefore arguably difficult to deal with. However, the noise of each individual vehicle noise is almost certainly the greatest contributor to traffic noise, and controlling this is straightforward.

### **4 International Noise Criteria**

- 4.1 Many countries have regulations controlling noise from individual vehicles. In addition, these rules are becoming more and more stringent as technological improvements allow regulators to address one of the most common noise problems in major cities.
- 1.2 It is beyond the scope of my submission today to discuss the various regulations that exist. Instead, I would like to examine vehicle noise on the basis of the effects which are likely to occur inside existing houses.
- 1.3 To assist in this process, I will refer to guidelines recently issued by the World Health Organisation<sup>1</sup> (WHO). These guidelines represent the results of a large body of research from around the world into the effects of noise.

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<sup>1</sup> Community Noise ed. B. Berglund, T. Lindvall, D H Schwela (prepared for World Health Organisation), 1999

- 1.4 In particular, the WHO document shows that disturbance from short duration events, such as car passes, is best described by the maximum level of noise which that event produces ( $L_{max}$ ). A limit of 45 dBA ( $L_{max}$ ) at night is considered by WHO to be appropriate to avoid sleep disturbance.

## 2 Noise Measurements

- 2.1 I undertook noise measurements on the evening of 22<sup>nd</sup> October 2004, beginning at 10.45pm. Of particular interest were measurements made inside the upstairs bedroom of a "near new" house, with the façade of the house around 8m from the nearside curb. The bedroom window was thermally double glazed in an Aluminium frame with good seals, and was shut at the time of my visit.
- 2.2 My measurements of 9 "standard" cars passing show that noise levels vary from 37 dBA to 48 dBA ( $L_{max}$ ), with an average of 41 dBA. All but one of these measurements were less than 45 dBA.
- 2.3 I was also able to measure 8 "modified" cars passing. The noise level from these varied from 50 dBA to 66 dBA, with an average of 58 dBA. Every one of the modified cars exceeded the WHO guideline of 45 dBA ( $L_{max}$ ).
- 2.4 It is also interesting to note that all of the modified vehicles exceed the Christchurch City Council noise rules for other noise sources in a residential area.
- 2.5 Subjectively, a 10 dBA increase in noise level is generally judged to be "twice as loud". A 20 dBA increase would be considered "four times as loud". Many of the modified cars were four times as loud as the standard cars.
- 2.6 Although there is an element of driver behaviour in the increased levels from modified cars, it is my opinion that enforcement of vehicle noise regulations for all cars would significantly reduce noise levels in houses near busy roads.
- 2.7 Based on my measurements, I am not surprised that residents are complaining about "boy racers" in their area.

### 3 Proposed Legislation

- 3.1 My understanding is that the original wording of the legislation includes the requirement that any modified exhaust system shall be such that noise from the vehicle is "...less than or similar to original equipment...". I understand that the latest proposal changes this to read that noise from the vehicle shall "...not be noticeably and significantly louder..." than the original.
- 3.2 I fully support the intent of the rules, in that both versions appear to be attempting to keep noise from modified exhausts "about" the same level as the original vehicle. However, I have some concerns about the proposed wording.
- 3.3 The original wording could be supported by objective measurements if necessary. Based on standard acoustic principles, the "...less than or similar..." requirement would mean that any modified exhaust would have to meet the same, or at most perhaps 2 or 3 dBA higher objective noise level.
- 3.4 The modified wording could also be validated objectively. However, "...noticeably and significantly louder..." could easily be interpreted as being 10 dBA noisier. As such, the modified wording allows for modifications to increase noise levels, whereas the original wording clearly aims to avoid any increase.
- 3.5 I believe that regulations should ideally incorporate objective noise limits for vehicles to remove the subjective aspects of the current assessment. This would then allow for simple checks to be made as part of the warrant of fitness process, and exhaust manufacturers would be able to develop new products with certainty. However, I understand that such an approach is beyond these proceedings.



**Stuart Camp**

1 February 2005