



HEGGIES

REPORT 10-6815-R3

Revision 1

**Clyde Waste Transfer Facility
Quarterly Truck Noise Measurements
April 2009**

PREPARED FOR

**Veolia Environmental Services
Cnr Unwin & Shirley Street
ROSEHILL NSW 2142**

30 APRIL 2009

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Clyde Waste Transfer Facility

Quarterly Truck Noise Measurements

April 2009

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DOCUMENT CONTROL

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APPENDIX

Appendix A	Letter to Mr David Kitto from DECC: Proposed Modification to Veolia Waste Transfer Terminal – Truck Noise Assessment Plan by Heggies Pty Ltd	
Appendix B	Heggies Report “ <i>Clyde Waste Terminal Facility Truck Noise Monitoring Proposed Test and Management Plan</i> ” 26 May 2008	
Appendix C	Attended Noise Measurement Results	



1 INTRODUCTION

Heggies Pty Ltd (Heggies) has been engaged by Veolia Environmental Services (Veolia) to perform quarterly Truck Noise Monitoring reports to assist the monitoring and management of noise levels from heavy vehicles accessing the Clyde Waste Transfer Facility.

This report provides results for the third quarter of truck noise measurement results conducted in April 2009 at 322 Parramatta Rd, Auburn. Results serve as part of a truck noise management program to ensure all trucks that utilise the Clyde Waste Transfer Facility comply with relevant Australia Standards.

Refer to Heggies report 10-6815R1 dated 23 October 2008, entitled “Clyde Waste Transfer Facility Truck Noise Monitoring Truck Noise Measurement Report” for background information.

Measurements are aligned with the requirements of Australian Design Rule (ADR) 28/01 as far as practical, allowing noise from truck passbys to be compared with the applicable noise limits.

2 NOISE LIMIT CRITERIA 28/01

Table 1 provides a summary of the allowable L_{Amax} noise levels in ADR 28/01 for Goods Vehicles.

Table 1 L_{Amax} Noise Limits (dBA) - ADR 28/01

Vehicle Category Code	Vehicle Type	Vehicles in Motion Spark Ignition and Direct Injection Diesel Engines	Stationary Vehicles			
			Spark Ignition Engines Exhaust Outlet Height		Diesel Engines Exhaust Outlet Height	
			<1500 mm	≥ 1500 mm	<1500 mm	≥ 1500 mm
NA	Light Goods Vehicles GVM≤3.5 t on road use	78 to 80	89	85	99	95
NB	Medium Goods Vehicles GVM>3.5 t≤12 t on road use	81 to 84	95	91	101	97
NC	Heavy Goods Vehicles GVM>12 t on road use	81 to 87	95	91	103	99

Note: For vehicles in motion test, L_{Amax} noise limits are based on the Gross Vehicle Mass (GVM) and the Nett Engine Power (NEP). The noise limits in the table are expressed as a range where the lower noise level refers to the minimum GVM and NEP in each category and the upper noise level refers to the maximum GVM and NEP in each category.



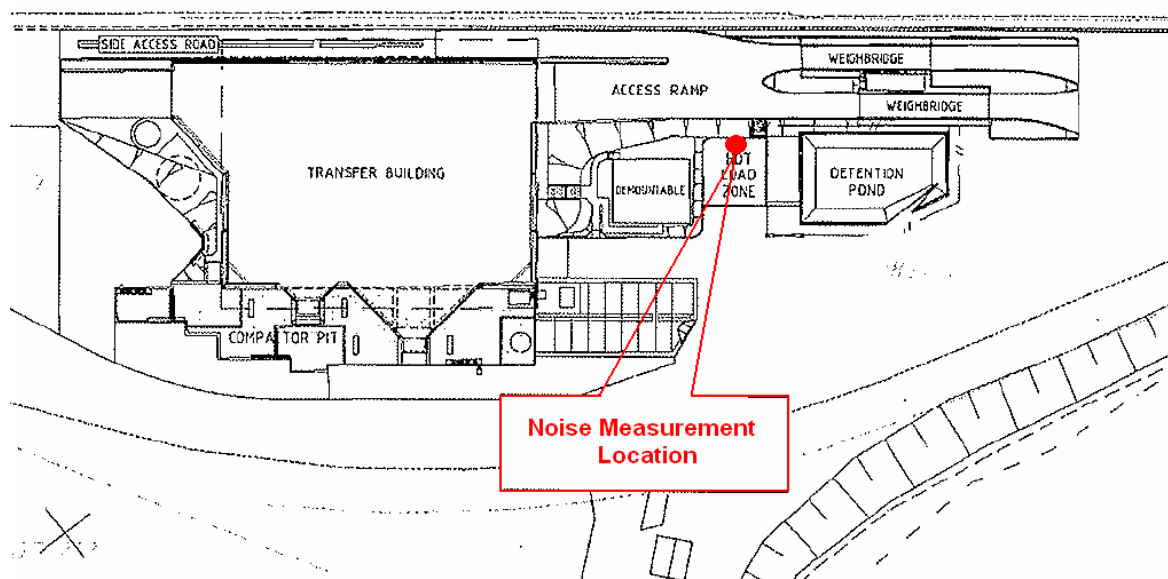
3 MEASUREMENT LOCATION AND INSTRUMENTATION

The first quarterly Truck Noise Monitoring exercise was conducted on the 15 October 2008 at 322 Parramatta Road, Clyde. This test was designed to satisfy the requirements of the ADR 28/01 and DoP Condition 112 in measuring the noise outputs from trucks operating within the facility grounds. The same measurement location and techniques have been employed for the third quarterly Truck Noise Monitoring exercise conducted on 14 April 2009.

In order for the measurements to be comparable to the noise limits of ADR 28/01 measurements were undertaken at a distance of 7.5 m from the path of the vehicle's centreline (ie at the same measurement distance identified in ADR 28/01). Measurements were undertaken at a height of 1.2 m above the test site surface (the up-ramp leading into the transfer facility) to satisfy the requirements identified in ADR 28/01.

Measurements have been undertaken at the location illustrated in **Figure 1**. This location is positioned between the weighbridge and the transfer building on an uphill slope. Trucks were required to be accelerating at this location, consistent with the "Vehicles in Motion" test requirement for the vehicle to be operating under full throttle adjacent to the microphone, this measurement location (ie on an up slope with the vehicle accelerating) is considered to be most representative of the ADR 28/01 test requirements.

Figure 1 Proposed Noise Measurement Location



The chosen measurement location is resilient to road traffic noise generated at Parramatta Road located well over 200 m away. The engineer performing the attended measurements did not retain measurements of truck passby events with extraneous noise present in the recording. Measurements with unwanted noise sources such as weighbridge, horn, forklift or other local noise sources were not recorded as representative of a truck passby.

Measurements were undertaken between the hours of 8 am and 12 noon. During this four hour period, Heggies was able to capture the minimum 25% of the daily truck movements required by DECC.



Measurements were undertaken using a Brüel & Kjær 2260 sound level meter using the A-weighting network and the fast response time constant in accordance with the relevant standards.

A 10 m microphone extension lead was used to enable the sound level meter to be operated from a hidden location surrounded by high growing plants to ensure that normal driving behaviours were not influenced by someone standing in plain view (see **Figure 3**).

The Gross Vehicle Mass (GVM) and vehicle type of each truck were recorded in order to determine the relevant vehicle class and noise limits identified in **Table 1**.

Number plate and owner company name of the vehicles were recorded for each truck passby in order to fully identify vehicles that exceed the specified noise limits.

Figure 2 Up-ramp leading into transfer facility





Figure 3 Operating Position away from Plain View



4 NOISE MEASUREMENT RESULTS

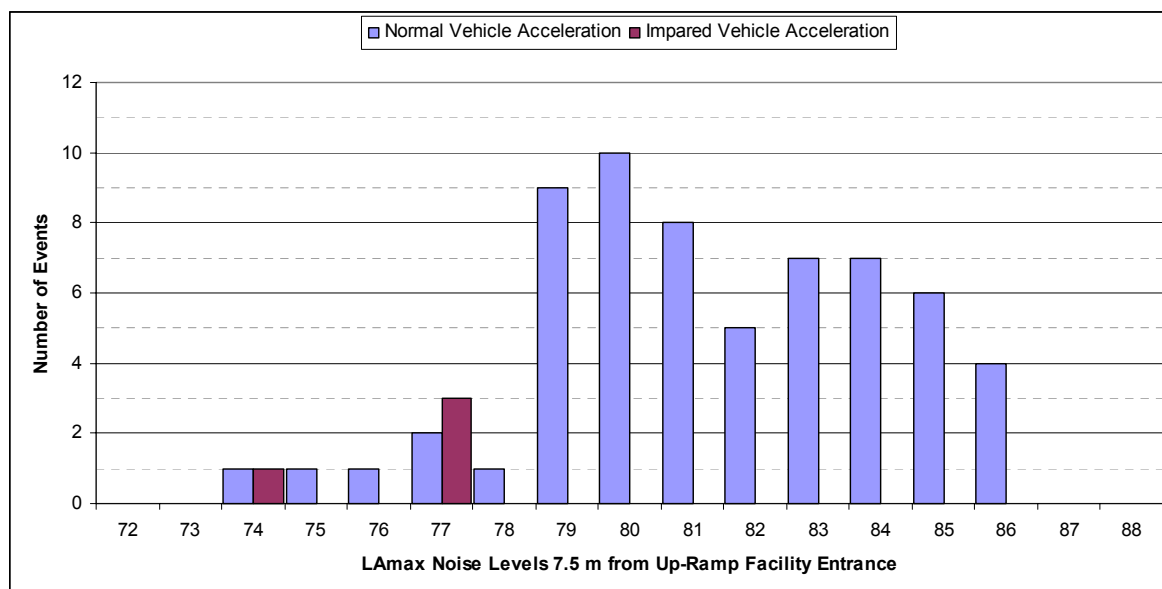
Appendix C provides a summary of the vehicles that entered the Transfer Building on 14 April 2009. The L_{Amax} noise levels from individual truck movements accelerating up the incline were recorded.

A total of 66 truck movements were observed entering the transfer building on the subject day between 08:00 am and 12:00 pm. Out of the 66 truck passbys, 62 were measurements were made without traffic at the entrance to the facility allowing the vehicles to naturally accelerate up the incline into the transfer building. It is visible that noise levels measured during traffic delays were similar to six normal passby events which occurred under normal operating conditions. Ambient (non truck generated) noise was monitored throughout the day to ensure that the recorded L_{Amax} noise levels were those contributed by the targeted vehicle only.

Figure 4 plots monitoring results on a noise level distribution chart. The chart illustrates that most vehicle passby events occur between 79 and 86 dBA.



Figure 4 Noise Level Distribution of all Truck Passby Events of Vehicles Entering Waste Transfer Facility - April 2009



Noise levels from individual truck passbys were subsequently compared with the L_{max} noise limits outlined in the ADR 28/01 in order to identify those trucks which exceed the noise limits. Vehicle make and model were recorded wherever possible which indicated that the Net Engine Power (NEP) for all vehicles was above 150kW. This means the use of the upper noise levels from the ADR 28/01 are appropriate for each vehicle category. Vehicle details such as the operating company, vehicle make and registration numbers were also recorded wherever possible.

The typical tare weight of a garbage truck is 13 tonnes. Based on this weight, the Gross Vehicle Mass (GVM) of all the vehicles monitored on the 14 April 2009 would exceed 12 tonnes. This places the noise limits for all vehicles in the NC category of the ADR 28/01.

As outlined in **Section 2** of this report, the ADR 28/01 classification of vehicles with a GVM of over 12 tonnes are classed as “Group NC” and are expected to produce L_{max} noise levels between 81 dBA and 87 dBA.

Measurements made on 14 April 2009 indicate that all the vehicles monitored were within the noise limit of 87 dBA for NC Category vehicles outlined in ADR 28/01.

5 CONCLUSIONS

The truck noise monitoring, whilst not in strict accordance with the requirements of ADR 28/01, is considered to adhere to the requirements of ADR 28/01 as far as practical (given the site constraints) to enable the L_{max} noise levels from truck passbys to be compared to the noise limits in the “Vehicles in Motion” test.

The measurement location for the quarterly noise monitoring was based on that used in previous noise surveys, which was considered appropriate by the Department of Environment and Climate Change (**Appendix A**).

Further background information on time history and methodology for the noise monitoring can be obtained from the report entitled “Clyde Waste Transfer Facility Truck Noise Monitoring Truck Noise Measurement Report” by Heggies dated 23 October 2008 (**Appendix B**).



Noise from the site's fork lift truck, operations inside the transfer facility and traffic on Parramatta Road, were insufficiently high to cause interference to the truck noise level measurements.

Vehicles were observed to be accelerating up the incline at the measurement location to enable them to enter the transfer building. Measurements where reduced vehicle acceleration occurred as a result of traffic entering the facility were separated from the main results.

The measured L_{Amax} noise levels have been presented in this report together with the relevant information which enables individual vehicles and operators to be identified (**Appendix C**). None of the vehicles monitored on the day of the survey exceeded the noise levels of their vehicle category outlined in the Vehicle in Motion Test in the ADR 28/01.

The driving behaviour of vehicle operators influences truck noise levels. It is noted that vehicles operating at or above 75% Engine Speed at Maximum Power (ESMP) did not exceed levels outlined in ADR 28/01.

Veolia's Noise Management Plan indicates that any identified defective trucks will be repaired or improved so that noise levels are within the limits outlined in ADR 28/01 before they are allowed to commence their normal operations. The operators of non-Veolia trucks should be notified and have their defective vehicles excluded from use at the Waste Transfer Facility until their noise levels comply with the ADR 28/01 noise limits.