

APPENDIX 3

NOISE IMPACT ASSESSMENT FOR THE SOUTHERN CENTRAL WASTE ROCK DUMP EXTENSION

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**SOUTHERN WASTE DUMP
ENVIRONMENTAL ACOUSTIC ASSESSMENT**

BY

HERRING STORER ACOUSTICS

FOR

KALGOORLIE CONSOLIDATED GOLD MINES PTY LTD

OCTOBER 2004

OUR REFERENCE: 3783-3-04033

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1.0 INTRODUCTION

Herring Storer Acoustics (HSA) was commissioned by Kalgoorlie Consolidated Gold Mines Pty Ltd (KCGM) to undertake a noise level impact assessment of noise emissions from the proposed Southern Waste Dump.

The objective of the study is to assess the likely impact of noise from mobile equipment operating on the dump at noise sensitive premises located to the west, within the town of Boulder.

Impact is taken to be minimal if the predicted noise levels are within the regulatory criteria of the *Environmental Protection Act 1986* and specifically the *Environmental Protection (Noise) Regulations 1997*.

2.0 SUMMARY

The predicted noise levels, at noise sensitive premises, can be managed to be within the criteria stipulated in the *Environmental Protection (Noise) Regulations 1997* provided the operational restrictions as detailed in Section 5.0, Results and Table 5.1 in particular are implemented as part of a Noise Management Plan.

3.0 CRITERIA

Environmental Protection (Noise) Regulations 1997

The *Environmental Protection (Noise) Regulations 1997* stipulate the allowable noise levels at any noise sensitive premises from another premises. The allowable noise level is determined by the calculation of an influencing factor, which is added to the baseline criteria set out in Table 1 of the Regulations. At noise sensitive premises of concern, located to the west of the proposed Southern Waste Dump in Boulder, the assigned L_{A10} noise level at the various times of the day are as listed in Table 3.1 below.

TABLE 3.1 - ASSIGNED L_{A10} NOISE LEVEL

Location	Assigned L_{A10} Noise Level (dB(A))			
	Day	Evening	Sunday	Night
East Waverley Street	65 – 70	60 – 65	60 – 65	55 – 60
Cnr Columbia & Dwyer Streets	61 – 65	56 – 60	56 – 60	51 – 55
Cnr King & Lionel Street	51 – 55	46 – 50	46 – 50	41 – 45

Note: Day: 0700 to 1900 hours Monday to Saturday
Evening: 1900 to 2200 hours any day
Sunday: 0900 to 1900 hours any Sunday or Public Holiday
Night: 2200 to 0700 hours Monday to Saturday (excluding Public Holiday)
2200 to 0900 hours on any Sunday and Public Holiday

It is a requirement that noise from the site be free of annoying characteristics (tonality, modulation and impulsiveness) at another premises, defined below as per Regulation 9.

“**impulsiveness**” means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax Slow}$ is more than 15dB when determined for a single representative event;

“**modulation**” means a variation in the emission of noise that –

- (a) is more than 3dB $L_{A Fast}$ or is more than 3dB $L_{A Fast}$ in any one-third octave band;
- (b) is present for more at least 10% of the representative assessment period; and
- (c) is regular, cyclic and audible;

“**tonality**” means the presence in the noise emission of tonal characteristics where the difference between –

- (a) the A-weighted sound pressure level in any one-third octave band; and
- (b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as $L_{A Slow}$ levels.

Where the above characteristics are present and cannot be practicably removed, the following adjustments are made to the measured or predicted level at that other premises.

TABLE 3.2 – ADJUSTMENTS FOR ANNOYING CHARCATERISTICS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+ 5 dB	+ 5 dB	+ 10 dB

4.0 METHODOLOGY

Modelling of the noise propagation from the waste dump was carried out using the computer program, “SoundPlan” Version 6.1. Single point calculations were carried out for the specific residences of concern as identified in Table 3.1.

Input data for computer modelling included:

- Topographical data, including the proposed bund to be constructed.
- EPA standard weather conditions for the day and night periods (see Table 4.1).
- Octave band sound power levels as used for other modelling of noise emissions from the KCGM mining operations and as determined from measurements carried out at the KCGM Kalgoorlie / Boulder mining operations.

Weather conditions for the modelling were generally in accordance with the Environmental Protection Authority's "Draft Guidance for Assessment of Environmental Factors No.8 - Environmental Noise" for the day and night periods and as listed in Table 4.1.

TABLE 4.1 - WEATHER CONDITIONS

Condition	Day Period	7.1.1.1 Night Period
Temperature	20 °C	15°C
Relative humidity	50%	50%
Pasquill Stability Class	A	E
Wind speed	4 m/s	3 m/s

Modelling was carried out for the following scenarios:

- Waste dump at RL -80m
- Waste dump at RL -60m
- Waste dump at RL -30m
- Waste dump at RL -20m

5.0 RESULTS

Single point calculations were carried out to determine if any mining restrictions were required to comply with the Regulations and the results are outlined in the attached Table 5.1.

For: **HERRING STORER ACOUSTICS**

Tim Reynolds

21 October 2004

TABLE 5.1 - OPERATING RESTRICTIONS FOR KCGM WASTE DUMP OPERATIONS

Waste Dump Relative Level (m)	Sketch of Scenario	Day	Evening	Night
Below -80		Unrestricted	Unrestricted	Unrestricted
-80 to -60		Unrestricted	Unrestricted	<ul style="list-style-type: none"> - Work within 700m of bund; or - Work greater than 700m during southerly to northerly (through westerly) winds; or - Work greater than 700m and do not use dozer under easterly winds
-60 to -30		Unrestricted	Unrestricted	<ul style="list-style-type: none"> - Work within 300m of bund; or - Work greater than 300m during southerly to northerly (through westerly) winds. - Work greater than 500m and do not use dozer under easterly winds
-30 to -20		Unrestricted	Unrestricted	<ul style="list-style-type: none"> - No work within 500m; or - Work greater than 500m during southerly to northerly (through westerly) winds; or - Work greater than 500m from bund and do not use dozer under easterly winds

Notes:
1. Day is 0700 to 1900 hours, Mondays to Saturdays. Evening is 1900 to 2200 hours all days and 0900 to 1900 hours Sundays and public holidays. Night is 2200 to 0700 hours Monday to Saturday and 2200 to 0900 hours Sundays and public holidays.