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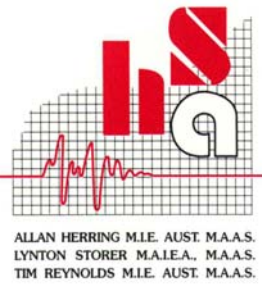

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SUPPLEMENTARY INFORMATION FOR GOLDEN PIKE DEVELOPMENT

ENVIRONMENTAL ACOUSTIC ASSESSMENT

BY

HERRING STORER ACOUSTICS

FOR

KALGOORLIE CONSOLIDATED GOLD MINES PTY LTD

JULY 2006

OUR REFERENCE: 6402-1-05033

CONTENTS

APPENDICIES

1.0 INTRODUCTION

Following feedback from the Department of Environment on the Draft PER for the Golden Pike Cutback, supplementary noise modelling was undertaken to provide additional information regarding noise emissions from the proposed Golden Pike Cutback.

2.0 SUMMARY

For the Golden Pike Cutback, supplementary noise modelling was carried out for the worst case weather conditions as determined as part of the Northern Waste Dumps noise assessment. Noise emissions from the existing mining operations were included in the modelling. The cumulative effect of the Golden Pike Cutback in combination with the existing mining operations was also determined. The noise contour plots are attached in Appendix A.

The results of the single point calculations for the Golden Pike Cutback and the existing mining operations under worst case weather conditions are shown in Table 2.1.

TABLE 2.1 – NOISE LEVELS FROM GOLDEN PIKE CUTBACK AND EXISTING MINING

Receiver Location	Overnight Assigned Noise Levels	Golden Pike		Existing Noise Levels
		Existing Ground#	-20m	
KTS Logger (Cnr Davidson / Wilson Sts)	**38**	37	34	60*
BPS Logger on school boundary (Brookman St)	**38**	42	37	59*
York St, Between Lane & Hamilton Sts)	**41**	42	42	59*

Units in dB(A).
* Noise levels listed include a +5 dB(A) penalty for a tonal component.
# Mining at ground level with the noise bund in place.

The results of the supplementary modelling are consistent with the findings of the previous noise modelling using Department of Environment standard worst-case meteorological data (Herring Storer Acoustics, 2005). All predicted noise levels are within the same range as previously determined, with the exception of noise levels received at York Street which is 2 dB(A) lower than previously estimated when mining at existing ground level.

For initial mining of the Golden Pike Cutback at ground level, predicted noise levels may not comply with the assigned noise levels between 2200hrs and 0700hrs at all receiver locations under worst-case conditions. However, compliance with the assigned noise levels will start to be achieved once mining drops to 20m below ground level.

Existing noise levels at Kalgoorlie from KCGM and other sources are already significantly above the night-time assigned noise levels, and noise from mining of the Golden Pike Cutback in isolation is unlikely to be measurable against background noise levels. The calculated noise levels from the Golden Pike Cutback are therefore such that they would not influence the overall noise currently received at noise sensitive premises.

Noise received at noise sensitive premises from the Golden Pike Cutback would not

be considered tonal, given the difference between the predicted noise level and the existing background noise levels. Therefore, the adjustment of +5dB(A) for tonality would not be applicable. However, noise received from the entire mining operation could be considered tonal and an adjustment of +5 dB(A) would be added to the overall noise level received at sensitive premises.

It is recognised that a Regulation 17 variation to the assigned noise levels is required for the mining operations as a whole.

3.0 CRITERIA

As outlined in the Herring Storer Acoustics report of June 2005 (reference 4389-4-05033-01) the assigned L_{A10} noise levels at the selected receiver locations can be summarised in Table 3.1.

TABLE 3.1 - ASSIGNED L_{A10} NOISE LEVELS

Location	Assigned L_{A10} Noise Level (dB(A))			
	Day	Evening	Sunday	Night
KTS Logger (Cnr Davidson / Wilson Sts)	48	43	43	38
BPS Logger on school boundary (Brookman St)	48	43	43	38
York St, Between Lane & Hamilton Sts)	51	46	46	41

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 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

Note: These adjustments are cumulative to a maximum of 15dB

4.0 METHODOLOGY

The supplementary modelling of the noise propagation was carried out using the computer program, "SoundPlan" Version 6.3. Both single point and noise contour calculations were carried out.

Input data for computer modelling was as for the previous modelling, however, weather conditions were amended to reflect the actual weather conditions in Kalgoorlie and to simulate worst case conditions as determined as part of the noise assessment for the Northern Waste Dumps. Weather conditions used in the modelling are listed in Table 4.1.

TABLE 4.1 – WORST CASE CONDITIONS FROM MEASURED WEATHER DATA

Condition	PARAMETER
Temperature	5°C
Relative humidity	60%
Pasquil Stability Class	F
Wind speed	4 m/s

For the Golden Pike Cutback, acoustic modelling was carried out for the following scenarios:

- Mining occurring at existing ground level.
- Mining occurring at 20m below existing ground level.

Noise emissions from the existing mining operations were also modelled.

To show the cumulative effect of the Golden Pike Cutback in combination with the existing mining operations, the following cumulative noise contours were produced :

- Golden Pike Cutback at existing ground level with existing mining.
- Golden Pike Cutback at 20m below existing ground, with existing mining.

The noise contour plots are attached in Appendix A.

5.0 RESULTS

The results of the single point calculations for the Golden Pike Cutback and the existing mining operations are shown in Table 5.1.

TABLE 5.1 – NOISE LEVELS FROM GOLDEN PIKE CUTBACK AND EXISTING MINING

Receiver Location	Overnight Assigned Noise Levels	Golden Pike		Existing Noise Levels
		Existing Ground	-20m	
KTS Logger (Cnr Davidson / Wilson Sts)	**38**	37	34	60*
BPS Logger on school boundary (Brookman St)	**38**	42	37	59*
York St, Between Lane & Hamilton Sts)	**41**	42	42	59*

* Noise levels listed include a +5 dB(A) penalty for a tonal component.
Units in dB(A)

The level of exceedance for the various operations are listed in Table 5.2.

TABLE 5.2 – EXCEEDANCE WITH REGULATIONS

Receiver Location	Overnight Assigned Noise Levels	Golden Pike		Existing
		Existing Ground	-20m	
KTS Logger (Cnr Davidson / Wilson Sts)	**38**	Complies	Complies	22
BPS Logger on school boundary (Brookman St)	**38**	4	Complies	21
York St, Between Lane & Hamilton Sts)	**41**	1	1	18

Units in dB(A)

The results of the supplementary modelling are consistent with the findings of the previous noise modelling using Department of Environment standard worst-case meteorological data (Herring Storer Acoustics, 2005). All predicted noise levels are within the same range as previously determined, with the exception of noise levels received at York Street which is 2 dB(A) lower than previously estimated when mining at existing ground level.

For initial mining of the Golden Pike Cutback at ground level, predicted noise levels may not comply with the assigned noise levels between 2200hrs and 0700hrs at all receiver locations under worst-case conditions. However, compliance with the assigned noise levels of the Golden Pike Cutback operations in isolation will start to be achieved once mining drops to 20m below ground level.

Existing noise levels at Kalgoorlie from KCGM and other sources are already significantly above the night-time assigned noise levels, and noise from mining of the Golden Pike Cutback in isolation is unlikely to be measurable against background noise levels. The calculated noise levels from the Golden Pike Cutback are therefore such that they would not influence the overall noise currently received at noise sensitive premises.

Noise received at noise sensitive premises from the Golden Pike Cutback would not be considered tonal, given the difference between the predicted noise level and the existing background noise levels. Therefore, the adjustment of +5dB(A) for tonality would not be applicable. However, noise received from the entire mining operation could be considered tonal and an adjustment of +5 dB(A) would be added to the overall noise level received at sensitive premises.

It is recognised that a Regulation 17 variation to the assigned noise levels is required for the mining operations as a whole.

To minimise noise emissions from mining of the Golden Pike Cutback the following recommendations are made:

1) Ensure the “quietest reasonably available” equipment is used.

2) All mobile equipment used during construction be fitted with ‘Smart Alarms’.

3) Operator training in ‘least noisy’ operation of equipment and also awareness of proximity of residences.

4) Larger trucks to be utilised as feasible in order to reduce number of truck cycles.

6.0 REFERENCE

Herring Storer Acoustics (2005). Golden Pike Development Including Noise Bund Construction. Report for Kalgoorlie Consolidated Gold Mines, June 2005. Ref: 4389-4-05033-01

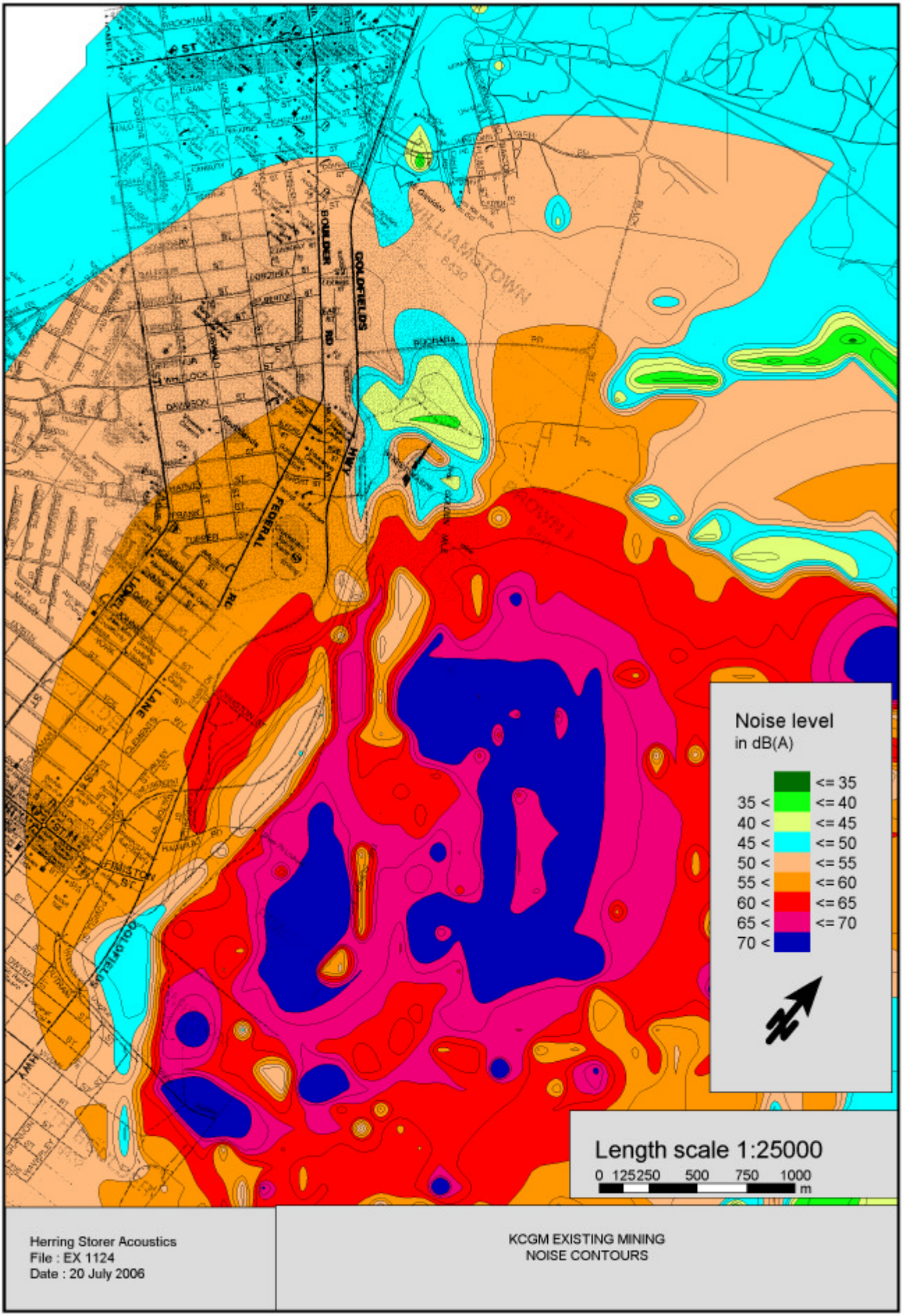
For: **Herring Storer Acoustics**

Tim Reynolds

1 August 2006

APPENDIX A

NOISE CONTOURS



Herring Storer Acoustics
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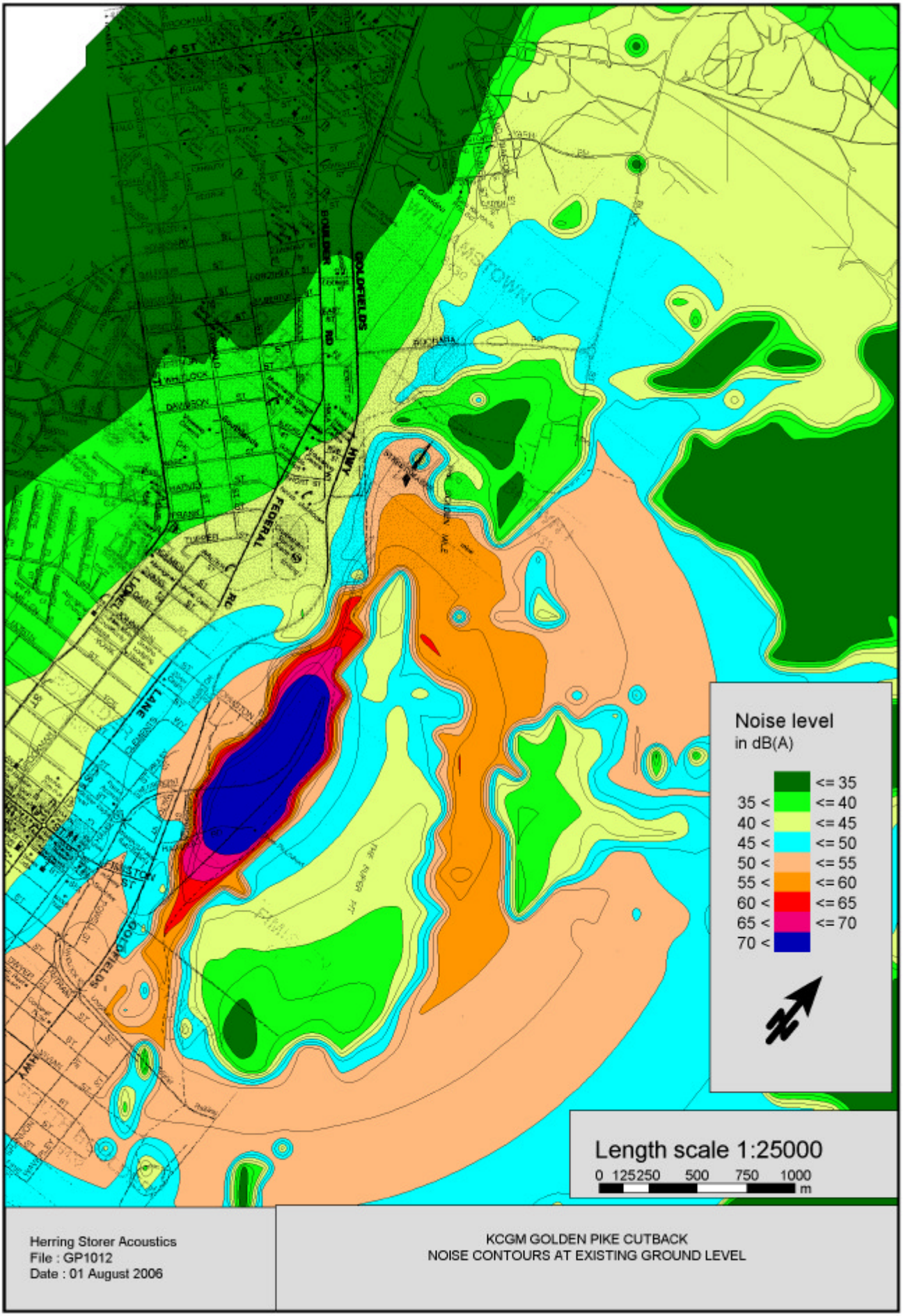
KCGM EXISTING MINING
NOISE CONTOURS



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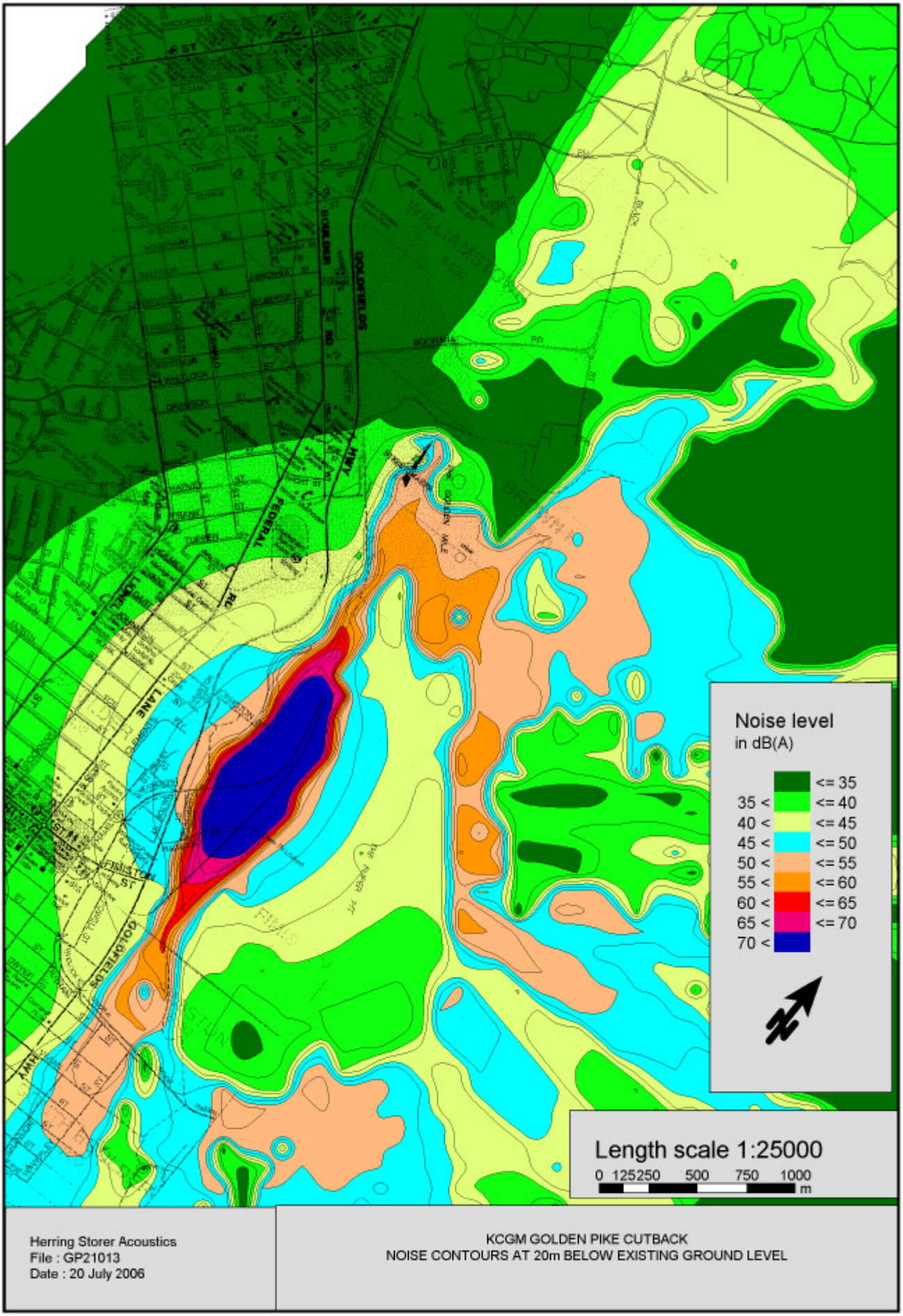
KCGM GOLDEN PIKE CUTBACK
NOISE CONTOURS AT EXISTING GROUND LEVEL



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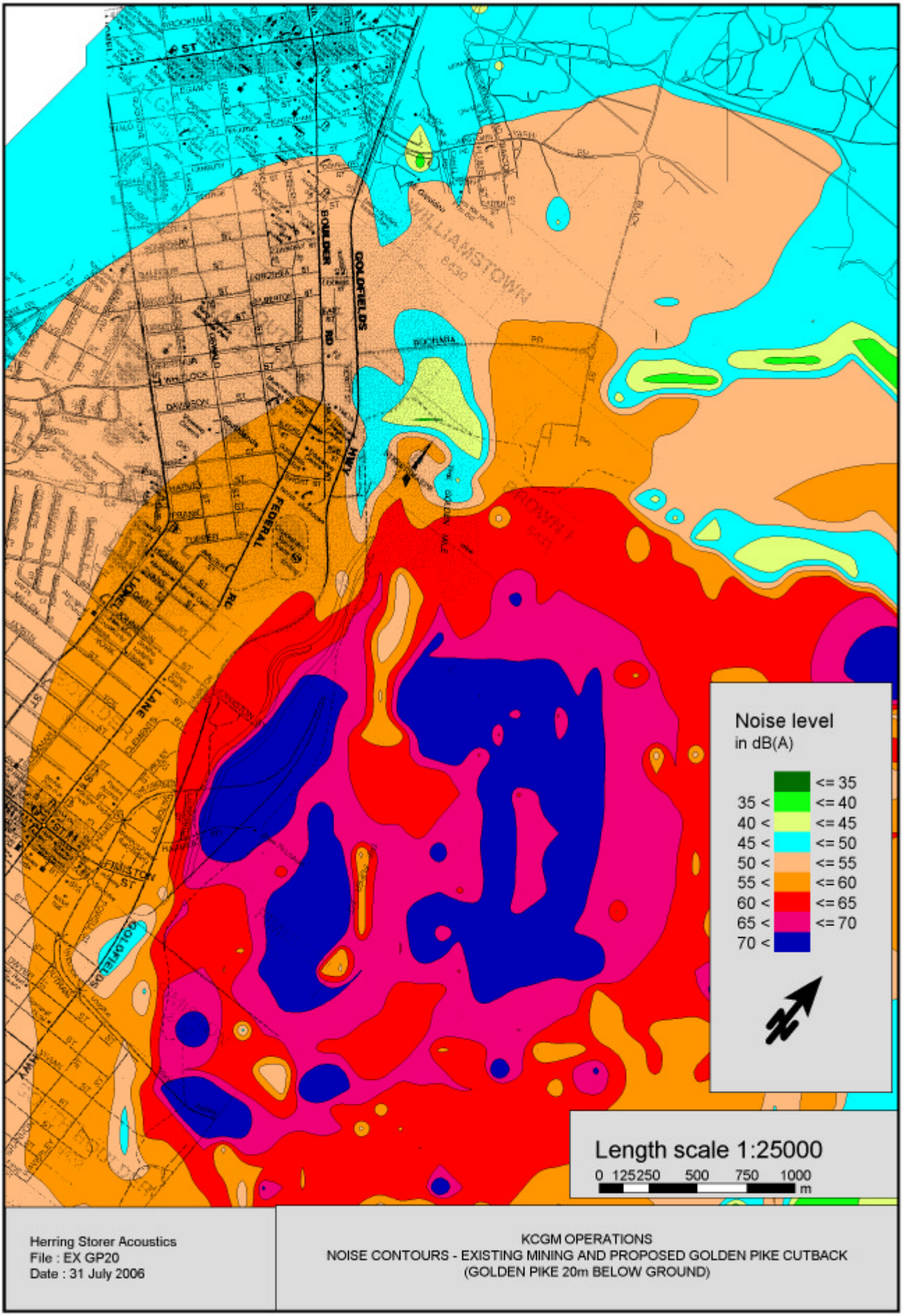
Date : 20 July 2006

KCGM GOLDEN PIKE CUTBACK
NOISE CONTOURS AT 20m BELOW EXISTING GROUND LEVEL



Herring Storer Acoustics
File : EX GP20
Date : 31 July 2006

KCGM OPERATIONS
NOISE CONTOURS - EXISTING MINING AND PROPOSED GOLDEN PIKE CUTBACK
(GOLDEN PIKE 20m BELOW GROUND)