



ABN 97 009 377 619

## Letter of Variation to

# Consultative Environmental Review Mine and Waste Dumps- Fimiston August 1990

## Southern Central Waste Rock Dump Extension



*Greening the Golden Mile*

Prepared by: KCGM Safety and Environment Department  
Date: January 2005

Distribution:	KCGM Internal
	Department of Industry and Resources
	Department of Environment

## Summary

Kalgoorlie Consolidated Gold Mines Pty Ltd (KCGM) is seeking approval to extend the waste rock dumping area southward over land previously degraded by historical tailings. This waste rock dump extension is located between the southern part of the environmental noise bund and existing waste rock dumps.

This project is made up of two components - the extension of the waste rock dumping area and the backfilling of the southern perimeter of the Fimiston Open Pit (Figure 1). This project will afford several advantages including:

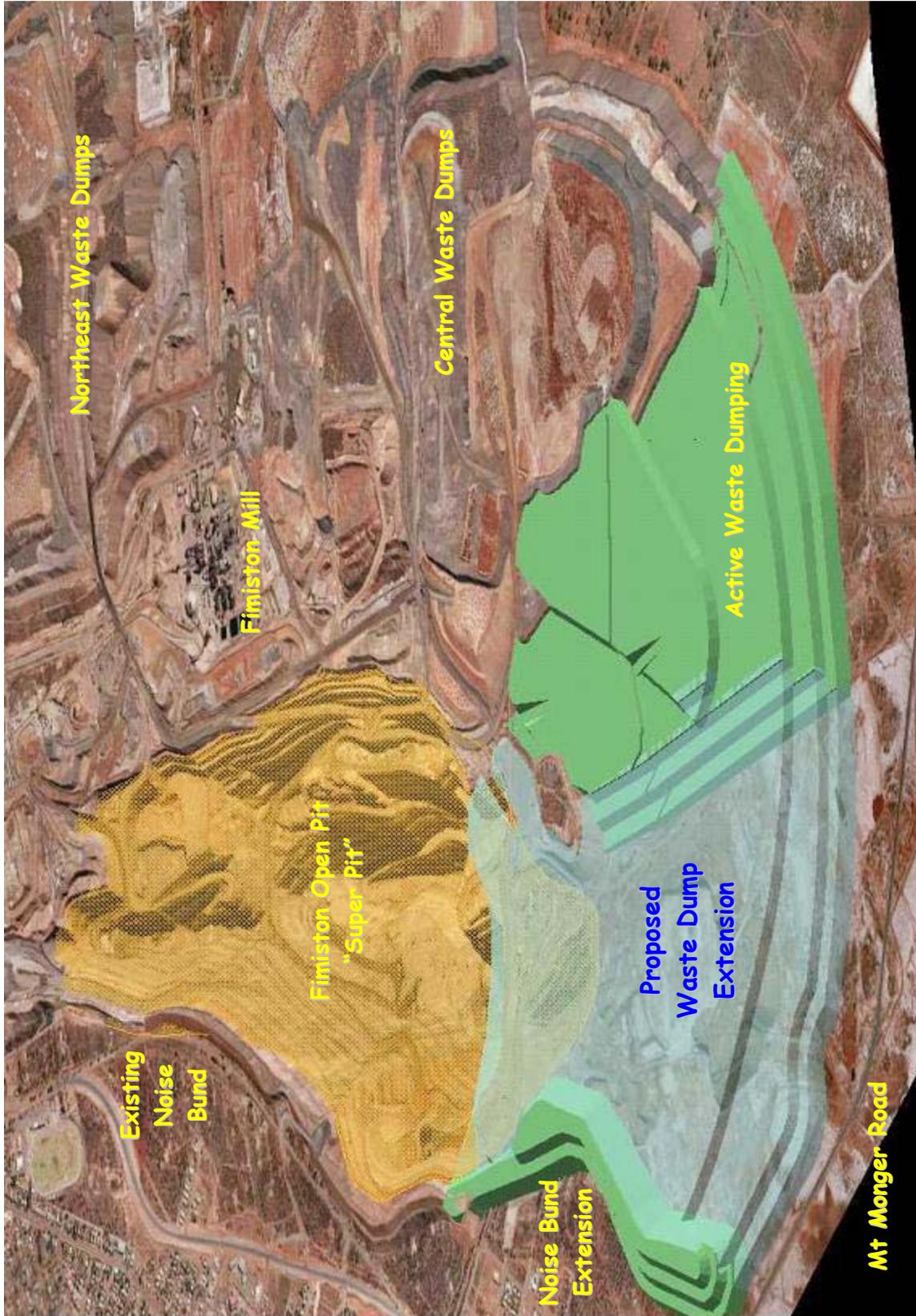
- A visual improvement, by revegetation of a historically degraded landscape.
- A reduction in the final size of the southern portion of the Fimiston Open Pit.
- A reduction in Greenhouse gas emissions, attributable to decreased diesel consumption, from shorter haul distances.
- An opportunity to undertake concurrent rehabilitation with fresh subsoil from future mining cutbacks.

The project area is bounded, to the west, by the recent southern extension to the environmental noise bund. Mt Monger Road lies to the south of the site, whereas the area opens out to the north and east to other KCGM open pit and waste rock dumping operations. The project overlies KCGM tenements M26/78, M26/81, M26/95, M26/267, M26/373, M26/377 and M26/405.

Community liaison is an integral part of the preparation for this project. It includes:

- Notification of the project plan to the KCGM Community Reference Group.
- Invitation for Feedback delivered to neighbours of the project.
- Invitation for Feedback delivered to KCGM employees and contractors.
- Making the draft version of this plan available for review and feedback in both hard copy and on the KCGM website.

The project will provide a highly visible example of mine-site rehabilitation visible from the Mt Monger Road. Based on the topography of greenstone hills typical of this region, it represents an opportunity to rehabilitate an area subjected to historical mining activity. The vegetation surrounding the project area has been rehabilitated by KCGM to semi-mature (eight-year-old) Eucalypt open woodland. The lower (14°) slope of the project will support transitional Eucalypt/Acacia open woodland and the upper (20°) slope Acacia shrubland. The lower canopies will include a variety of annual and perennial shrubs and grass species.



Site Plan for the Proposed Southern Central Waste Rock Dump Extension

## Commitments by KCGM

In the undertaking of this project KCGM will comply with all relevant mining and environmental statutes including:

- New commitments made in this document;
- Existing mining lease conditions;
- Existing environmental Ministerial Conditions and Commitments; and
- Any new conditions imposed.

**Table 1  
Commitments by KCGM for the  
Southern Central Waste Rock Dump Extension**

Commitment	Objective	Action	Timing	Audit verification
1. KCGM will <b>rehabilitate</b> and make safe areas involved in this operation	To maintain an adequate level of safety and to improve the site's environmental quality and amenity	Rainfall will be managed by preparing rehabilitation sites so as to encourage water harvesting and infiltration	During and after completion	KCGM Annual Environment Report (AER) will document completion status
		Potable water will be used on all final rehabilitation faces if needed for dust suppression	During works	By inspection
2. KCGM will minimise the production of <b>dust</b>	To ensure that the amenity of residential and business areas are not unduly affected by dust from the project	Water trucks and water cannons will water areas that could form dust. Dust binding agents will also be used (if required)	Tool box meetings by KCGM site supervisor and contractors, planning and maintaining work areas and responding to changing conditions	By inspection
		During potential periods of dust formation, visual checks will be made on a regular basis by supervisors	During works	By inspection
		The site superintendent shall take corrective action to control dust levels in response to complaints or where dust levels may have an adverse effect	During works	KCGM complaints database
		Employees and contractors will receive formal induction and training covering procedures for dust control	During works	KCGM training database
KCGM will monitor <b>dust</b> levels near the operation		A high-volume dust monitor will regularly monitor dust levels.	During Works	KCGM AER



## Table of Contents

1	INTRODUCTION .....	3
1.1	Background and Objectives.....	3
1.2	Location .....	3
1.3	Ownership .....	3
1.4	History .....	3
1.5	Existing Facilities .....	3
2	EXISTING ENVIRONMENT .....	3
2.1	Regional Setting .....	3
2.2	Geology .....	3
2.3	Sterilisation Drilling .....	3
2.4	Geomorphology .....	3
2.5	Soils.....	3
2.6	Hydrology .....	3
2.7	Climate .....	3
2.8	Flora and Fauna .....	3
2.9	Social Environment.....	3
3	PROJECT DESCRIPTION .....	3
3.1	Mining and Waste Rock Dumping .....	3
3.1.1	Construction of the Southern Central Waste Rock Dump .....	3
3.1.2	Backfilling of the Southern Perimeter of the Fimiston Open Pit.....	3
3.2	Ore Processing.....	3
3.3	Tailings Disposal Facility .....	3
3.4	Support Facilities .....	3
3.5	Workforce .....	3
3.6	Transportation Corridors.....	3
3.7	Housing and Accommodation.....	3
4	ENVIRONMENTAL IMPACT ASSESSMENT .....	3
4.1	Land Clearing .....	3
4.2	Water Use and Management.....	3
4.3	Flora and Fauna .....	3
4.4	Waste Products .....	3
4.4.1	Greenhouse Gas Emissions.....	3
4.5	Dangerous Goods and Hazardous Substances .....	3
4.6	Dust .....	3
4.7	Noise .....	3
4.8	Vibration .....	3
4.9	Rehabilitation.....	3
4.10	Post-Mining Landuse .....	3
5	SOCIAL IMPACTS.....	3
5.1	Heritage .....	3
5.2	Aboriginal Sites.....	3
5.3	Community Consultation .....	3
5.4	Social Environment.....	3
5.5	Workforce Induction and Training.....	3
6	COMMITMENTS BY KCGM .....	3
6.1	Commitments for this Project .....	3
6.2	Existing Ministerial Conditions and Commitments.....	3
7	BIBLIOGRAPHY .....	3

## List of Tables

Table 1	Commitments by KCGM for the Southern Central Waste Rock Dump Extension
Table 2	Noise Constraints for Waste Dump Construction
Table 3	Commitments by KCGM for the Southern Central Waste Rock Dump Extension
Table 4	Ministerial Statement 188 (Fimiston Mine and Waste Dumps) Southern Central Waste Rock Dump Extension

## List of Figures

Figure 1	Site Plan for the Proposed Southern Central Waste Rock Dump Extension
Figure 2	Aerial Photograph and Tenement Overlay
Figure 3	Disturbed Land in Project Footprint Area
Figure 4	KCGM Noise Bund and the Impact on the 50dB(A) Contour
Figure 5	KCGM Noise Bund Construction History
Figure 6	Noise Bund Rehabilitation

## List of Appendices

Appendix 1	Staff and Contractors Induction Manual for the Southern Central Waste Rock Dump Extension
Appendix 2	Dust and Noise Monitoring and Management Programmes
Appendix 3	Noise Impact Assessment for the Southern Central Waste Rock Dump Extension
Appendix 4	Community Consultation Information

## 1 INTRODUCTION

Kalgoorlie Consolidated Gold Mines Pty Ltd (KCGM) is seeking approval to extend the waste rock dumping area southward over land previously degraded by historical tailings. The project area is bounded, to the west, by the recent southern extension to the environmental noise bund. Mt Monger Road lies to the south of the site, whereas the area opens out to the north and east to other KCGM open pit and waste rock dumping operations.

This project is made up of two components - the extension of the waste rock dumping area and the backfilling of the southern perimeter of the Fimiston Open Pit (Figure 1). This project will afford several advantages including:

- A visual improvement, by revegetation of a historically degraded landscape.
- A reduction in the final size of the southern portion of the Fimiston Open Pit.
- A reduction in Greenhouse gas emissions, attributable to decreased diesel consumption, from shorter haul distances.
- An opportunity to undertake concurrent rehabilitation with fresh subsoil from future mining cutbacks.

KCGM views this project as a 'non-substantial' change to the existing operations in that it:

- Has no additional significant environmental impacts;
- Is not a significant change to the existing operation; and
- Is manageable under the existing Ministerial Statement 188 Conditions and Commitments which control the KCGM open pit mining operations.

### 1.1 Background and Objectives

The project focuses on the extension of the waste rock dumping area southward over an area of past mining disturbance.

Previous tailings reclamation has led to widespread hypersaline soil on much of the project area and some remaining isolated pockets of soil with significant amounts of residual tailings. Rehabilitation success on this landscape is highly variable. It was identified in the Kaltails closure plan that much of the reclamation area (about 80 percent) will eventually be covered with waste rock from KCGM and this project covers part of this area.

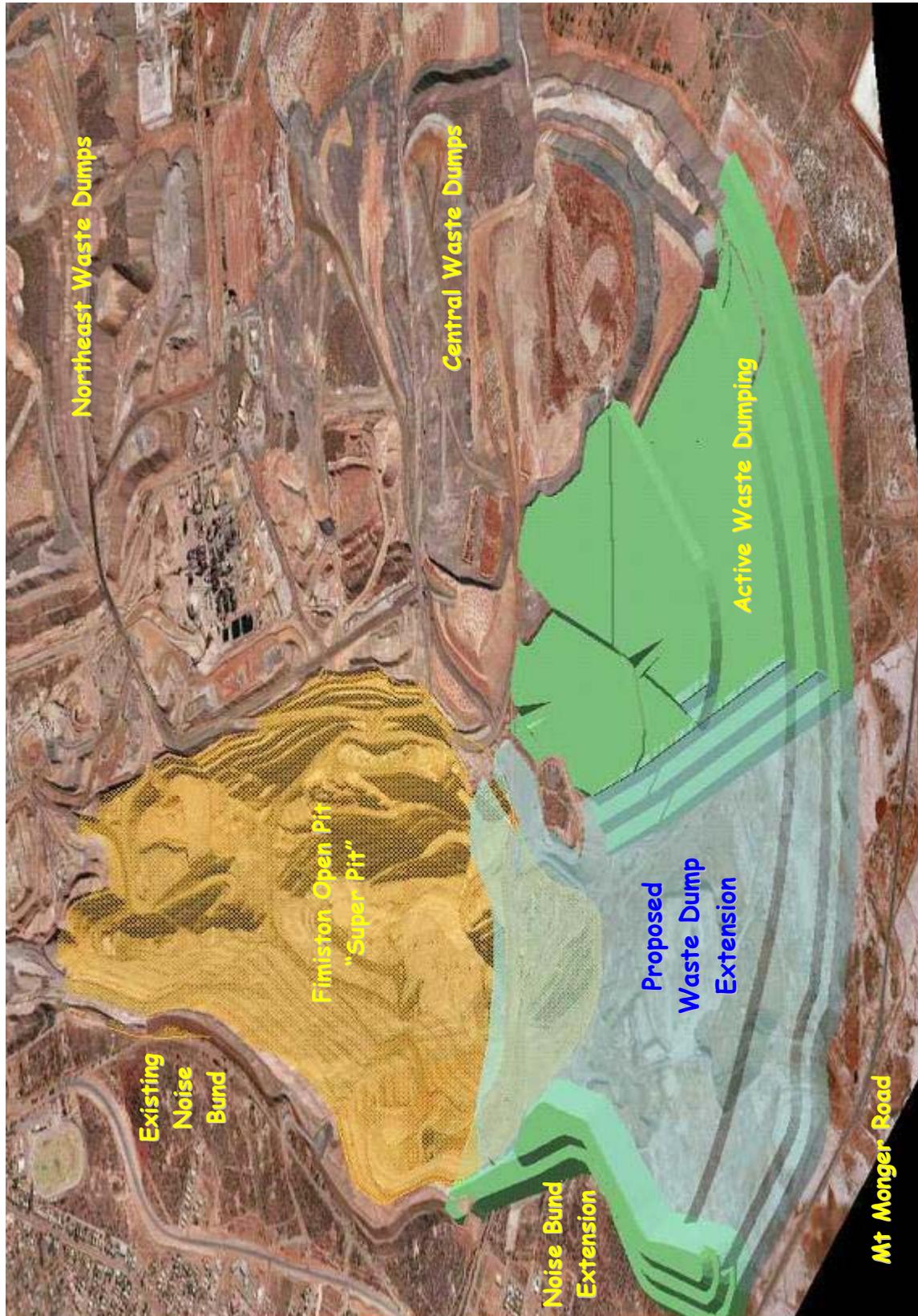


Figure 1  
Site Plan for the Proposed Southern Central Waste Rock Dump Extension

## 1.2 Location

The Fimiston minesite is located immediately east of Kalgoorlie. This project will involve a number of KCGM's active mining leases. These are M26/78, M26/81, M26/95, M26/267, M26/373, M26/377 and M26/405. The lease boundaries are shown in Figure 3.



**Figure 2  
Aerial Photograph and Tenement Overlay  
for the Southern Extension of the Waste Rock Dump**

The project area is approximately 201 hectares, with disturbance per tenement as follows: M26/78 (1.4 ha), M26/81 (4.9 ha), M26/95 (98.3 ha), M26/267 (56.4 ha), M26/373 (0.4 ha), M26/377 (0.9 ha) and M26/405 (38.7 ha).

## 1.3 Ownership

The Proponent for the project is Kalgoorlie Consolidated Gold Mines Ltd (KCGM).

- The KCGM office address is:  
Black St.  
Kalgoorlie, Western Australia 6430
- The postal address is:  
Private Mail Bag 27  
Kalgoorlie, WA, 6430
- Contact for the Project is:  
Ms Michelle Birch  
Senior Environmental Officer  
Phone: 08 90221338  
Fax: 08 90221331  
Email: mbirch@kalgold.com.au

## 1.4 History

The Kalgoorlie Tailings Retreatment Project (Kaltails), a joint venture between Normandy and the Western Australian Mint, closed in September 1999 after 10 years of reclaiming and retreating tailings dumps constructed in the early part of the century.

The old gold tailings were located in various tailings dumps near Boulder. These dumps are the result of more than a century of mining on the Golden Mile. Many dumps were prone to wind and water erosion because of the methods used in the initial processing of ore and the construction of the dumps. These had become a major environmental problem and source of dust. Today the numerous, highly erodible tailings dumps of the past have been reclaimed and stored in a single engineered and managed facility resistant to wind and water erosion.

Reclamation areas prior to mining, contained highly weathered tailings dumps. Soils within the area are degraded through loss of soil structure, fertility and some remnant tailings. Through tailings reclamation, hypersaline soils have developed in many areas. As a result the landscape has highly variable physical and chemical properties. Much of the reclamation area (about 80 percent) will eventually be covered with waste rock from the neighbouring Kalgoorlie Consolidated Gold Mines (KCGM) operation. Part of this reclamation area will be covered by this project.

Further history of the Golden Mile can be found on the KCGM website - [www.superpit.com.au](http://www.superpit.com.au)

## 1.5 Existing Facilities

Existing KCGM infrastructure and Outram St (now degazetted) will be progressively removed or relocated prior to this development. Other landscape features include the Environmental Noise Bund, Fimiston Open Pit, Morrison Open Pit, Remnant Tailings and Waste Rock Dumps.

## 2 EXISTING ENVIRONMENT

### 2.1 Regional Setting

The project area and surrounds have had a long association with gold mining since the first discoveries during the late 1800's. Mining continues to be a key land use of the region, with mines scattered throughout. Kalgoorlie-Boulder with an approximate population of 35 000 is the major regional centre in the area. Most people in Kalgoorlie-Boulder are either directly or indirectly dependent on the mining industry for their income. The principle agricultural activity in the region is sheep grazing but this is located away from the city.

### 2.2 Geology

The proposed south western Waste Rock Dump will be located at the extreme southern end of the Golden Mile currently being mined by the Fimiston Open Pit. The mineralised structures within the pit area are characterised by northwest trending, steep westerly dipping lodes as in the rest of the western lodes ore zone.

Extensive exploration in the area south of the Adelaide Fault to date has resulted in no economical mineralisation.

### 2.3 Sterilisation Drilling

Even though mine scale and regional geology indicate that the potential for additional economic resources to exist south of the Adelaide Fault is extremely remote, a sterilisation drilling program will be undertaken over the area of the proposed waste rock dump footprint to confirm the absence of any possible mineralisation.

### 2.4 Geomorphology

The Kalgoorlie gold deposits are contained within the Coolgardie Plateau geomorphological unit. The natural land surface is about 350-400m above the Australian Height datum (AHD), and is notably flat, dominated by plains with broad valleys draining to flat dry lakes, mostly to the east of the city.

The project area is located at about 360m AHD on a flat to low undulating plain that drains, primarily, by sheet wash and by small creeks that terminate in low depressions.

### 2.5 Soils

Soils of the region are typically neutral red earths in the plain areas, calcareous loams and brown calcareous earths in the more hilly portions, with saline/sodic soils dominating in and around the salt lakes.

Soils within the vicinity of the project area are degraded through loss of soil structure, fertility and some remnant tailings. Through tailings reclamation, hypersaline soils have developed in many areas. As a result the landscape has highly variable physical and chemical properties.

### 2.6 Hydrology

The relatively low rainfall and gentle slopes cause rain, when it occurs, to sheet off rather than form distinct watercourses. There are no significant drainage lines on the project site.

In topographic lows, water tends to pool. Naturally transported fines make the soils in these areas more clayey, probably resulting in higher nutrient levels and slightly better water-holding capacity. Sheet-flow drainage areas and pools are, in the general vicinity are dominated by *Maireana* spp or *Atriplex* spp (although vegetation is mostly absent from the project area).

The water table in the vicinity of the project site is at shallow depths of several metres below ground surface but near the Fimiston and Morrison Open Pits it plunges steeply to many hundreds of meters below the ground surface. Groundwater is of poor quality, being hypersaline, with Total Dissolved Solids (TDS) values of the order of 50,000-200,000mg/L.

### 2.7 Climate

Climate of the Kalgoorlie area is classified as semi-desert Mediterranean (Beard 1972) and is characterised by warm winters and hot summers. Meteorological data are available from the Kalgoorlie airport.

Mean annual rainfall for the area is about 255mm, with a slight predominance of winter falls, although rain does occur on a year round basis. Winter rainfall is associated with cold fronts moving in from the Southern Ocean, while summer rainfall comes mainly from localised thunderstorm activity and cyclonic rain-bearing depressions. The latter sources are both less

regular and less predictable. This is borne out by the larger number of rain days each month for winter (mean of 8 rain days for the months May to August) versus the more sporadic, but heavier, falls of summer (mean of 3.6 rain days for October to March). The mean monthly rainfall ranges from 32mm in June to 12mm in December.

The mean annual daily maximum temperature is 25.2°C, with a range from 16.7°C in July to 33.7°C in January. Mean minimum temperature ranges from 5°C in July to 18.3°C in January, with an annual mean of 11.6°C. Relative humidity ranges between 76% at 0900 hours in July to 22% at 1500 hours in December.

## 2.8 Flora and Fauna

The project area lies within the Coolgardie Botanical District's, Coolgardie Vegetation System, in the southwest interzone, the vegetation of which has been mapped at a scale of 1:250,000 (Beard 1972). On this map Beard shows the pre-disturbance natural vegetation as sclerophyll woodland, although the area has long been cleared. Extensive timber cutting occurred, in the Kalgoorlie region, at the turn of the century for mineshaft supports and for firewood.

There are numerous exotic weed species in the area, partly due to the proximity of Kalgoorlie-Boulder and possibly introduced by early prospectors. These extensions will provide the opportunity to reintroduce native plant species by methods that minimise the recolonisation of weed species.

A specific ground search was undertaken in 1994 (Muir Environmental) for Gazetted Rare Flora and Fauna. Newbey *et al* (1985) identified the significant species *Eucalyptus brachyphylla* and *Eucalyptus kruseana* during surveys of the region however these species are characteristic of granite complexes which are not represented in the vicinity of the project area. No other species of note were identified from these investigations. The proposed project site is mostly devoid of all vegetation as a result of historic disturbance.

Fauna habitats in the project area are minimal. The paucity of vegetative cover over an extended period has resulted in an environment devoid of fauna. In the region, Gazetted Rare Bird species include the; Peregrine Falcon (*Falco peregrinus*), Grey Falcon (*Falco hypoleucos*), Pink (or Major Mitchell's) Cockatoo (*Cacatua leadbeadbeateri*), Naretha Blue Bonnet (Parrot) (*Northiella haemotogaster narethae*) and the Crested Shrike-tit (*Falcunculus frontatus*).

Two gazetted pythons have also been considered to possibly occur in the Kalgoorlie region. These are the Woma or Ramsays Python (*Aspidites ramsayi*) and the Carpet Python (*Morelia spilota imbicata*).

The records of the Western Australian Museum indicate that most mammals occurring in the vicinity of the project area are both common and widespread.

In conclusion, the limited area of the project and the highly disturbed nature of the area indicate that there is not likely to be any effect on the status of the above faunal species.

## 2.9 Social Environment

The project is located on a highly disturbed site and within close proximity to the city of Kalgoorlie-Boulder. European and Aboriginal heritage and other social impacts are discussed in sections 5.1 and 5.2.

### **3 PROJECT DESCRIPTION**

#### **3.1 Mining and Waste Rock Dumping**

The project is made up of two components, the extension of the waste rock dumping area and the backfilling of the southern perimeter of the Fimiston Open Pit. Waste rock for both of these areas will be sourced from the current Fimiston Open Pit operations to the north. Figure 1 shows the general layout of the project

Waste rock will be excavated from the cutbacks by hydraulic shovels and front-end loaders and loaded into haul trucks. Machinery to be deployed for the project construction will also include dozers, graders and a roller. Water trucks will also be used for dust control.

The project designs were completed using the Department of Industry and Resources (DoIR) Guideline for Waste Dump Design and Rehabilitation and Guideline for Environmental Management of Mining in Arid Areas.

##### **3.1.1 Construction of the Southern Central Waste Rock Dump**

The Southern Central Waste Rock Dump will be constructed following KCGMs procedures for Waste Dump construction. These include procedures for lift heights, maintaining tip heads and dust and noise control. Figure 1 shows the location of the Waste Rock Dump in relation to the layout of the mine site.

Dust and noise and rehabilitation management practices are detailed in Sections 4.6,4.7 and 4.9 respectively.

##### **3.1.2 Backfilling of the Southern Perimeter of the Fimiston Open Pit**

In order to minimise the haulage distance and to reduce the size of the Fimiston Open Pit and waste rock dump footprint, it is proposed that the southern perimeter of the open pit will be backfilled. This has several advantages including:

- A reduction in the final size of the southern portion of the Fimiston Open Pit.
- A reduction in Greenhouse gas emissions, attributable to decreased diesel consumption, from shorter haul distances.

The intent is to undertake the back filling concurrently with excavation of the main Fimiston Open Pit. Material will be dumped into the southern portion of the pit void from several inner pit tip heads. As the back filling continues the tipping elevations will be increased until tipping can be safely undertaken from the current surface elevation. Ultimately the southern portion of the pit will be filled to the same elevation as the southern waste rock dumps.

#### **3.2 Ore Processing**

This section of the DoIR Notice of Intent Guidelines is not relevant to this project as KCGM mineral processing will remain unaffected.

#### **3.3 Tailings Disposal Facility**

This section of the DoIR Notice of Intent Guidelines is not relevant to this project as the nature of the tailings and deposition rates will not change.

### **3.4 Support Facilities**

Existing support facilities, at KCGM, will be utilised during the course of the project.

### **3.5 Workforce**

The existing workforce, currently on site at KCGM, will be used during the course of the project.

### **3.6 Transportation Corridors**

Existing transport corridors will be utilised during the course of the project.

### **3.7 Housing and Accommodation**

The city of Kalgoorlie/Boulder has adequate provision to house employees or contractors who may be involved in this project scope.

## **4 ENVIRONMENTAL IMPACT ASSESSMENT**

### **4.1 Land Clearing**

Some minor clearing of previous rehabilitation may be undertaken, however the proposed footprint primarily overlies land disturbed by earlier mining and processing operations (Figure 3).



**Figure 3  
Disturbed Land in Project Footprint Area**

### **4.2 Water Use and Management**

No local water resource will be impacted by the project. Mobile water trucks using non-potable water will be used to control dust generation by vehicular traffic. In rehabilitation areas potable water will be used. It is recognised that potable water is a scarce commodity in the Kalgoorlie goldfields and water management will continue to be an area of prime importance. A dust-binding agent will be used to reduce the water consumption where appropriate.

### **4.3 Flora and Fauna**

The site has been subjected to many years of intensive mining activity and is highly degraded and therefore very little vegetation exists on the project site.

A native seed mix will be spread over the rehabilitation areas by hand. The seeding rate will be 10 kg/ha and supplemented by 100kg/ha of Agras® copper zinc moly fertiliser. A comprehensive list of the species included in the seed mix is described in the 2002 KCGM Annual Environmental Report. Trees will also be hand planted and target areas will be those where water ponding is likely.

#### 4.4 Waste Products

There will be little or no field servicing done in this project area. Mobile equipment will report back to the KCGM fuel farm or workshops.

##### 4.4.1 Greenhouse Gas Emissions

An opportunity to minimise energy use for hauling waste rock is an environmental benefit of this project. This project will enable waste rock dumping plans to be optimised and trucking haul routes to be shortened thereby saving fuel and reducing greenhouse-gas emissions.

#### 4.5 Dangerous Goods and Hazardous Substances

It is envisaged that no dangerous goods or hazardous substances will need to be transported across, stored or handled in this project area.

#### 4.6 Dust

All contractors and staff involved with the construction of the southern central extension of the waste rock dump will be required to undertake an induction. The induction (Appendix 1) details the measures to be undertaken by KCGM to minimise dust generation. The induction also outlines the procedure for KCGM to respond to any contact with the public inquiry line or directly from the community.

Dust management practices include:

- Active monitoring of current and forecast wind conditions.
- Water trucks and water cannons used in areas that could produce dust. Fresh water will be used on areas to be rehabilitated.
- Visual inspections will be made for dust formation on a regular basis.
- Additional dust control measures (ie the use of a dust binding agent) or a suspension of activity may result from our inspections or public feedback.

KCGM also has a recently revised its dust monitoring and management programme to ensure that the impact on residential areas is minimised (Appendix 2). KCGM has detailed management procedures to minimise the impact of dust from its operations including avoiding some operations during unfavourable weather conditions (if the wind will blow dust into residential areas) based on forecasts from the Bureau of Meteorology and measured wind data.

The management programmes described above should ensure that there are no cumulative impacts from dust from our existing operation and dust generated through this project. High volume dust samplers are currently in place to monitor ambient dust levels from the southern noise bund extension will operate during the course of the project.

#### 4.7 Noise

The existing environmental noise bund which runs along the western edge of the KCGM open pit operation helps in shielding residential areas from mine noise. This bund was originally established in 1993/4 and has significantly lowered noise levels as shown by the 50dB contour lines in Figure 4. In 2000 a major project was undertaken at the Croesus site to further extend the noise bund northwards and additional minor works were also undertaken. A history of the construction of the environmental noise bund is shown in Figure 5. KCGM is currently undertaking a further southern extension to this bund to ensure that protection for the community from mine noise is maintained as the open pit operation and waste rock dumps develop southwards.

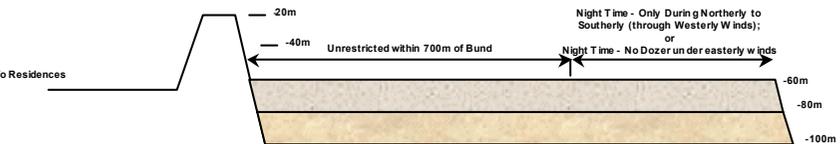
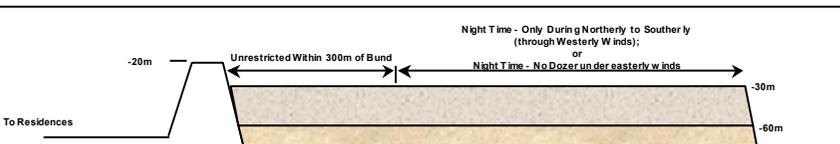
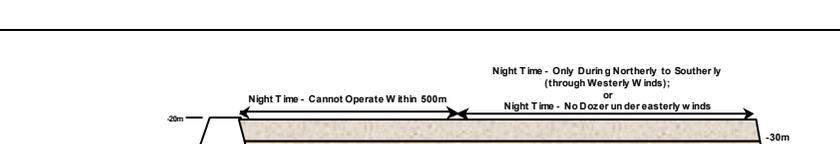
A noise impact assessment was prepared by Herring Storer Acoustics in order to determine potential noise impacts from this project. A full copy of this report is provided in Appendix 3.

Based on the findings of the noise consultant's work KCGM will:

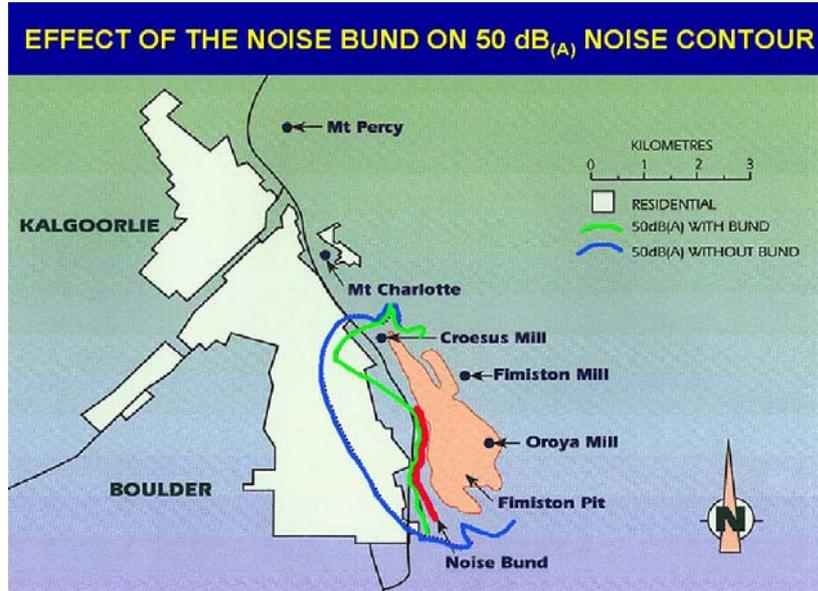
- Ensure the quietest equipment available is used on site.
- Endeavour to fit all mobile equipment with "smart alarms".
- Ensure that the waste rock dump construction will be undertaken according to the constraints identified in Table 2.
- Ensure that all contractors and staff involved with this project undertake a site-specific induction to raise awareness.

KCGM also has a recently revised its noise and vibration monitoring and management programme to ensure that the impact on residential areas is minimised (Appendix 2). Environmental noise loggers are currently in place to monitor ambient noise levels and will operate during the course of the project.

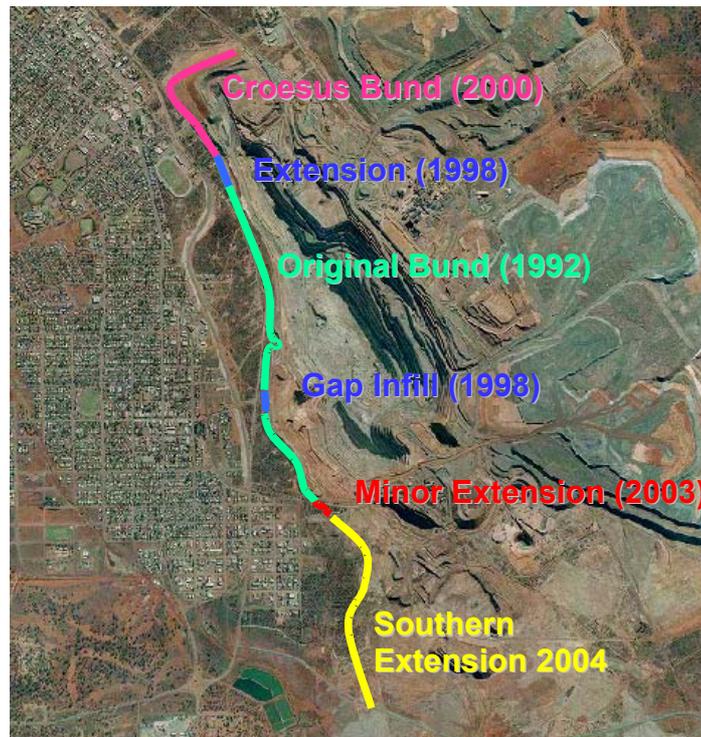
### Table 2 Noise Constraints for Waste Dump Construction

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"> <li>- Work within 700m of bund; or</li> <li>- Work greater than 700m during southerly to northerly (through westerly) winds; or</li> <li>- Work greater than 700m and do not use dozer under easterly winds</li> </ul>
-60 to -30		Unrestricted	Unrestricted	<ul style="list-style-type: none"> <li>- Work within 300m of bund; or</li> <li>- Work greater than 300m during southerly to northerly (through westerly) winds.</li> <li>- Work greater than 500m and do not use dozer under easterly winds</li> </ul>
-30 to -20		Unrestricted	Unrestricted	<ul style="list-style-type: none"> <li>- No work within 500m; or</li> <li>- Work greater than 500m during southerly to northerly (through westerly) winds; or</li> <li>- Work greater than 500m from bund and do not use dozer under easterly winds</li> </ul>

Note: 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.



**Figure 4**  
**KCGM Noise Bund and the Impact on the 50dB(A) Contour**



**Figure 5**  
**KCGM Noise Bund Construction History**

## 4.8 Vibration

The largest equipment to be used on the project are haul trucks and any vibration from haulage activity will be negligible. Although large in appearance and carrying capacity, wheel loadings for the haul trucks are similar to those for road trains currently using public roads, such as the Goldfields Highway through the South Boulder area. This is supported by the fact that in the past two years KCGM haul trucks have received permits from Main Roads WA enabling them to be driven from the KCGM site along the Goldfields Highway and down Hannan Street (the centre of Kalgoorlie) for an annual street parade.

The material flow from a haul truck as the tray is lifted is slow and vibration from this activity will also be negligible. The planned construction activity will occur at distances greater than 100-metres from occupied properties in the South Boulder light industrial area and over unconsolidated materials (natural surface and waste rock). The distance and nature of the materials would serve to rapidly reduce any vibrations (if they were to occur).

## 4.9 Rehabilitation

This project is focussed on environmental improvements including the opportunity to remediate an area that has long been degraded. Where possible any topsoil or suitable growth media will be removed from the site and stockpiled for later use. The successful rehabilitation of the site will result in a natural looking landform. Figure 6 shows rehabilitation on the existing noise bund. The flat areas at the toe of this landform will be revegetated to a Eucalypt/Chenopod open woodland, typical of the Kalgoorlie region. The hilly landform produced will be akin to a Greenstone hill environment. These are common landforms in the region. To achieve this, the slope of the hill will have a final face maximum angle of 20°. The final face will have appropriate berms to consolidate the wall and to help in the success of the rehabilitation.

Trees will be planted onto the site and target areas will be those where water ponding is likely. For example; the bases of slopes, flat areas, areas of change in slope angle, contour banks and crest and toe drains. Depending on seedling availability the species used will be endemic to the region and may include: *Eucalyptus campaspe*, *E. celastroides*, *E. clelandii*, *E. lesouffii*, *E. salmonophloia*, *E. stricklandii*, *E. salubris*, *E. transcontinentalis*, *E. woodwardii*, *Acacia acuminata*, *A. jennerae*, *A. hemeteles*, *A. murrayana*, *A. tetragonophylla*, *Allocasuarina acutivalvis* and *A. campestris*.

To minimise erosion and weathering on outer faces of the waste rock dump a number of water management strategies will be implemented.

- The face will be battered to a maximum of 20° to mimic the topography of greenstone hills that are found in the region.
- A series of contour drains will be installed on the face. These will be surveyed in to minimise operator error in the construction phase. These structures will not only provide effective water management but will also harvest and hold water as run-on areas, which will substantially benefit vegetative growth.
- A berm will be installed between all changes of slope and a significant crest drain and toe drain will be installed to minimise sheet water flows.
- All ripping on site will be undertaken to a nominal depth of 1m. Winged ripping tyres will further enhance soil mounding, to control runoff and maintain moisture along the contour.



**Figure 6  
Noise Bund Rehabilitation**

#### **4.10 Post-Mining Landuse**

The project will be a highly visible area to display mine-site rehabilitation and is an opportunity to reclaim an area subjected to over 50 years of intensive mining activity. The vegetation surrounding the project area has been rehabilitated by KCGM to semi-mature (eight-year-old) Eucalypt Open Woodland. The slopes of the project area will support Eucalypt/Acacia open woodland and Acacia shrubland. The lower canopies will include a variety of annual and perennial shrubs and grass species.

### **5 SOCIAL IMPACTS**

#### **5.1 Heritage**

No materials, artefacts, or constructions of European historical significance occur on the site. The site has been subjected to intensive mining activity for well over 50 years.

#### **5.2 Aboriginal Sites**

Aboriginal site surveys were conducted over this area in 1989 and 2000. No sites were recorded near the project area. KCGM is aware of its obligations under the Aboriginal Heritage Act 1972, and would abide by those requirements.

### 5.3 Community Consultation

A community consultation program, directed towards the neighbours to the project area has been undertaken. The wider Kalgoorlie-Boulder community has also been notified.

Community consultation for this project included:

- Discussion at the KCGM Community Reference Group meetings (minutes are available on the KCGM website).
- A draft project plan was made available for a 6 week review period from 1 November to 10 December 2004.
  - Stakeholders were notified via a letter drop (~100 neighbours closest to the project) and advertisements in the Kalgoorlie Miner (Appendix 4). Hard copies were made available for public review at the Kalgoorlie DoE office (2) and William Grunt Memorial Library (2). One CD copy was provided in response to our letter drop and one hard copy in response to our advertisements. The DoIR and DoE were also provided with copies via email.
  - The invitation for feedback and draft project plan was available on the KCGM web site (Appendix 4). Records show that 73 copies of the invitation for feedback, 252 copies of the draft project plan, 69 copies of Appendix 1, 62 copies of Appendix 2 and 37 copies of Appendix 3 were downloaded.
  - KCGM employees and contractors were invited to provide feedback.

No feedback from any stakeholders was received regarding the draft project plan however consultation will continue throughout the life of the project. The KCGM Inquiry Line is available 24 hrs, 7 days, and KCGM is committed to undertaking any required changes to our plan as the project proceeds based on feedback from nearby stakeholders.

### 5.4 Social Environment

The project will contribute to the community of Kalgoorlie-Boulder by providing a considerable improvement in the visual amenity of the area. The site has been significantly disturbed from many years of mining activity.

### 5.5 Workforce Induction and Training

A specific induction has been developed for this project (Appendix 1). The induction will make personnel aware of the management practices designed to minimise impacts on the environment and community from the project

## 6 COMMITMENTS BY KCGM

This section contains commitments KCGM makes for this project (6.1) and appraises relevant Ministerial Conditions and Commitments (6.2) from the Consultative Environmental Review-Fimiston Mine and Waste Dumps (August 1990).

In the undertaking of this project KCGM will comply with all relevant mining and environmental statutes including:

- New commitments made in this document;
- Existing mining lease conditions;
- Existing environmental Ministerial Conditions and Commitments; and
- Any new conditions imposed.

## 6.1 Commitments for this Project

**Table 3  
Commitments by KCGM for the  
Southern Central Waste Rock Dump Extension**

<b>Commitment</b>	<b>Objective</b>	<b>Action</b>	<b>Timing</b>	<b>Audit verification</b>
1. KCGM will <b>rehabilitate</b> and make safe areas involved in this operation	To maintain an adequate level of safety and to improve the site's environmental quality and amenity	Rainfall will be managed by preparing rehabilitation sites so as to encourage water harvesting and infiltration	During and after completion	KCGM Annual Environment Report (AER) will document completion status
		Potable water will be used on all final rehabilitation faces if needed for dust suppression	During works	By inspection
2. KCGM will minimise the production of <b>dust</b>	To ensure that the amenity of residential and business areas are not unduly affected by dust from the project	Water trucks and water cannons will water areas that could form dust. Dust binding agents will also be used (if required)	Tool box meetings by KCGM site supervisor and contractors, planning and maintaining work areas and responding to changing conditions	By inspection
		During potential periods of dust formation, visual checks will be made on a regular basis by supervisors	During works	By inspection
		The site superintendent shall take corrective action to control dust levels in response to complaints or where dust levels may have an adverse effect	During works	KCGM complaints database
		Employees and contractors will receive formal induction and training covering procedures for dust control	During works	KCGM training records database
KCGM will monitor <b>dust</b> levels near the operation		A high-volume dust monitor will regularly monitor dust levels.	During Works	KCGM AER



## 6.2 Existing Ministerial Conditions and Commitments

Table 4 lists the Ministerial Conditions associated with the Consultative Environmental Review: Mine and Waste Dumps –Fimiston (1990) which are relevant to the Southern Extension of the Environmental Noise Bund and Waste Rock Dump and the associated commitments.

**Table 4  
Ministerial Statement 188 (Fimiston Mine and Waste Dumps)  
Southern Central Waste Rock Dump Extension**

Number	Requirement	Document Reference
<b>Ministerial Conditions</b>		
M5	In order to ensure that there are no unacceptable detrimental effects from noise, vibration and dust from this project on the amenity of nearby residents, the proponent shall, within 6 months of the date of this statement (24 October 1991), prepare and subsequently implement a noise and vibration monitoring and management programme to the satisfaction of the Environmental Protection Authority and a dust monitoring and management programme to the satisfaction of the Environmental Protection Authority on advice from the Goldfields Dust Abatement Committee.	Noise, dust and vibration monitoring programmes implemented for the Fimiston Operations will continue. Management plans are detailed in Section 4.6, 4.7 and 4.8 in this document.
M6	Prior to the dumping of waste on the proposed north-east or south-east waste dumps within 500 metres of residences, the proponent shall prepare and implement a management plan for waste dumping to ensure that there is no unacceptable detrimental effect on the residents, to the satisfaction of the Minister for the Environment on advice from the Environmental Protection Authority.	Entire document.
M8	The proponent shall be responsible for decommissioning and removal of the plant and installations and rehabilitating the site and its environs, to the satisfaction of the Environmental Protection Authority. At least six months prior to decommissioning, the proponent shall prepare and subsequently implement a decommissioning and rehabilitation plan, to the satisfaction of the Department of Mines on advice from the Golden Mile Mining Development Planning Committee.	Refer to Section 3 and 4.9 in this document.

<b>Proponent Commitments</b>		
P1	KCGM will prepare and implement, by December 1992, an Environmental Management Programme (EMP) for all of its operations in agreement with the Environmental Protection Authority and the Department of Mines.	Entire document.
P2	KCGM undertakes to prepare annual reports of the Mining and Rehabilitation sub-programme of the broader Environmental Management Programme, as agreed with the Environmental Protection Authority and the Department of Mines.	KCGM Annual Environmental Report
P4	KCGM will develop a surface drainage system incorporating sediment detention systems and a water quality monitoring programme. The results of the sampling will be included within the annual report and updated annually.	Refer to Section 4.9 in this document.
P5	In association with the Goldfields Dust Abatement Committee and Kaltails, KCGM will install and support a Dust Monitoring Programme within the Kalgoorlie-Boulder area. The data obtained will be made available to the Environmental Protection Authority via the Goldfields Dust Abatement Committee.	Refer to Appendix 2 in this document.
P6	KCGM will undertake a programme of noise monitoring to ensure continued compliance with occupational health and public nuisance noise requirements. If considered necessary an ongoing monitoring strategy will be devised.	Refer to Appendix 2 in this document.
P7	KCGM will implement a progressive rehabilitation programme as outlined in Section 4.3 (Consultative Environmental Review Mine and Waste Dumps-Fimiston KCGM August 1990) as agreed with the Environmental Protection Authority in consultation with the Department on Mines.	KCGM Annual Environmental Report

## 7 BIBLIOGRAPHY

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