ENVIRONMENTAL SCOPING DOCUMENT

FIMISTON GOLD MINE
OPERATIONS EXTENSION (STAGE 3)
AND MINE CLOSURE PLANNING

for

Kalgoorlie Consolidated Gold Mines Pty Ltd

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DEFINITIONS

ANZMEC	Australian and New Zealand Minerals and Energy Council
CALM	Conservation and Land Management (Department of)
CER	Consultative Environmental Review
CRG	Community Reference Group
DIA	Department of Indigenous Affairs
DMA	Decision Making Authorities
DoE	Department of Environment
DoCEP	Department of Consumer and Employment Protection
DoIR	Department of Industry and Resources
DPI	Department of Planning and Infrastructure
EIA	Environmental Impact Assessment
EPA	Environmental Protection Authority
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
MCA	Minerals Council of Australia
NEPM	National Environmental Protection Measure
ODAC	Office of Development Approvals Coordination
PER	Public Environmental Review
PDD	Project Definition Document
PIL	Public Interaction Line
TPS	Town Planning Scheme
TSF	Tailings Storage Facility
SEZ	Safety Exclusion Zone
SGMP	Seepage and Groundwater Management Plan

Environmental Scoping Document

Fimiston Gold Mine
Operations Extension (Stage 3) and Mine Closure Planning
for
Kalgoorlie Consolidated Gold Mines Pty Ltd

1. INTRODUCTION

1.1 The Proposal

Kalgoorlie Consolidated Gold Mines Pty Ltd (KCGM) proposes to undertake an extension of its existing Fimiston Gold Mine Operations located 600 km east of Perth, on the eastern boundary of the City of Kalgoorlie-Boulder. The extension will include the mining of a westerly cutback (known as 'the Golden Pike Cutback') of the Fimiston Open Pit, additional waste rock dump areas covering an area of approximately 115 hectares to the north of the operation, and additional tailings storage capacity provided by either increasing the embankment height of Fimiston I and II tailings storage facilities (TSFs) or by recommissioning and increasing the height of the existing Kaltails TSF. The Proposal also outlines KCGM's commitment and approach to mine closure planning through the development of a Conceptual Mine Closure Strategy.

Following more intensive analysis of the options for tailings storage, KCGM has eliminated the option to construct a new TSF (Fimiston III) that was previously put forward. KCGM considers that raising the height of Fimiston I and Fimiston II TSFs or the recommissioning of the Kaltails TSF provides significantly better environmental outcomes that far outweigh the justification for a new TSF.

1.2 Purpose of Document

A Project Definition Document (PDD) outlining KCGM's proposal for the Fimiston Operations Extension Project (Stage 3) was referred to the Environmental Protection Authority (EPA) on the 1st July 2005. Based on the review of the PDD, the EPA advertised the level of assessment for the Project as Public Environmental Review (PER) on the 25th July 2004. Nine appeals were lodged with the Appeals Convenor against this level of assessment and were dismissed by the Minister for Environment.

This Environmental Scoping document has been prepared to satisfy the requirements under *Part IV Division 1* of the *Environmental Protection Act 1986.* This document outlines the environmental issues/factors identified through a comprehensive examination of each aspect of the Project. Issues are addressed by identifying approaches already undertaken to mitigate or further investigate and understand the potential environmental issues. Additional investigations and studies proposed to be completed prior to the submission of the PER have also been identified.

This Environmental Scoping document forms the basis for which to commence detailed discussions with the EPA and other government agencies in order to form agreement as to the identification of environmental issues/factors, the adequacy of management measures, additional studies and investigations proposed for the Project's environmental impact assessment.

The EPA's *Guide to Preparing an Environmental Scoping Document* (*Version 2*) (2004) and *Guide to EIA Environmental Principles, Factors and Objectives (Version 2)* (2004) have been utilised during the preparation of this Environmental Scoping document.

1.3 Proponent

The Proponent for the project is:

Kalgoorlie Consolidated Gold Mines Ltd (KCGM)
ABN: 97 009 377 619

KCGM is the manager of a joint venture between Newmont Australia (50% ownership) and Barrick Gold of Australia (50% ownership).

The KCGM office address is:

Black St.
Kalgoorlie, Western Australia 6430

The postal address is:

Private Mail Bag 27
Kalgoorlie, WA, 6433

The Proponent contact for the Project is:

Ms Michelle Birch
Senior Environmental Coordinator
Phone: 08 90221338
Fax: 08 90221331
Email: mbirch@kalgold.com.au

1.4 Previous Environment Approvals

KCGM was granted environmental approval by the Western Australian Minister for the Environment on the 24th October 1991 for the *Consultative Environmental Review Mine and Waste Dumps - Fimiston August 1990*. The Fimiston Open Pit operations have been managed in accordance with the requirements of Ministerial Statement 188 and Department of Industry and Resources (DoIR) tenement conditions since that time.

Additional environmental approvals include the following:

- Environmental Licence and project Works Approval pursuant to Part V of the *Environmental Protection Act 1986*;
- Surface and groundwater licences pursuant to *Rights in Water and Irrigation Act 1914*;
- Dangerous Goods Licence pursuant to the *Explosives and Dangerous Goods Act 1961*; and
- Various project approvals pursuant to the *Mining Act 1978.*

1.5 Project Justification

In 2004, KCGM was the highest gold producer in Western Australia and contributed to Australia being the third largest gold producer in the world, behind South Africa and the USA. At a local level, KCGM contributed more than $255 million in 2004 into the local economy of the City of Kalgoorlie-Boulder through wages and the use of Kalgoorlie-Boulder based suppliers. KCGM is recognised as a major employer within Kalgoorlie-Boulder with the majority of the 725 employees (including full-time contractors) residing within the local community.

KCGM has the ability to maximise the potential of the Golden Mile resource through the development of the Golden Pike ore body and thereby extending the life of the open pit mining operation in Kalgoorlie-Boulder for an additional five years.

The westerly extension of the Fimiston Open Pit is defined by the location of the Golden Mile ore body which constrains the consideration of alternatives to this site for the Project. The assessment of potential waste rock dump locations and the opportunities for acquiring additional tailings storage capacity has been employed during mine planning and feasibility studies.

Opportunities for the location of additional waste rock dump areas are limited by the existing dumps encompassing the southern and eastern surrounds of the Fimiston Open Pit. Extensions to or increases in the height of these dumps is restricted by airport regulations and geographic constraints of the eastern and southern drainage lines associated with Hannans Lake.

The proposed location of the Northern Waste Rock Dumps is considered the most environmentally sound and economically feasible option. The location of the dumps and the ability to backfill waste into the northern end of the Fimiston Open Pit reduces truck haulage distances from the open pit providing environmental benefits including the minimisation of greenhouse gas emissions by reducing diesel consumption. The location of the waste rock dumps in this area also avoids further clearing of native vegetation due to the dumps being located on historically disturbed land, rehabilitated by KCGM.

KCGM has considered several opportunities for the provision of additional tailings storage capacity to meet life of mine tailings production. These options include:

- Raise the perimeter embankment height of Fimiston I and/or Fimiston II TSFs;
- Construct a new TSF (Fimiston III);
- Acquire Kaltails TSF and raise the perimeter embankment height; and
- In-Pit Tailings Disposal.

In-pit disposal of tailings was investigated as an option however further consideration was not given, due to there being no nearby open pits of sufficient size that would provide the required storage capacity. The construction of a new TSF (Fimiston III) was originally chosen as an option, however further assessment of possible opportunities for tailings storage has highlighted additional alternatives that are considered to have significantly better environmental outcomes. The elimination of this option will avoid the need to clear approximately 150 ha of undisturbed native vegetation.

KCGM has approval to progressively raise the height of Fimiston I TSF to 40 m (if performance targets are met on 2.5 m incremental lifts) and has an application before the DoIR and EPA to raise the height of Fimiston II TSF from 30 m to 44 m. The capacity provided by the current proposed increase in height of these facilities is sufficient only to meet tailings requirements until the current 2012 life of mine. Further capacity is required for the 2017 life of mine, KCGM's preferred option, pending the outcome of further investigations is to continue to raise the embankment height of the Fimiston I and Fimiston II TSFs. Investigations including stability and groundwater assessments will be undertaken to ensure that this option will be environmentally acceptable.

KCGM's contingency option is to recommission the existing Kaltails TSF and increase the height of perimeter embankments. This facility has an established monitoring bore network and no clearing of vegetation is required. This option is subject to agreement by KCGM's Joint Venture Owners.

If the current application for a height increase to the Fimiston II TSF is not approved (i.e. to 44 m), KCGM will need to re-examine the feasibility of the Fimiston Operations Extension Project as the Kaltails TSF alone is unable to provide the required total tailings storage capacity.

1.5.1 Regional Economic Benefits

KCGM is a significant contributor to economic development in the Goldfields-Esperance Region, through the creation of jobs, income and expenditure in the local community. The benefits of KCGM activities are experienced on two levels; the direct investment in local purchases and salaries (more than $255 million in 2004) and through regional flow on expenditure. Flow on impacts are presented through output, or consumption of goods and services; household income; employment and value added.

Through the Goldfields-Esperance Development Commission an assessment of the multiplier or flow on impacts of KCGM's operations revealed that the direct investment has many additional regional benefits. This assessment was undertaken using REMPLAN software developed by La Trobe University (www.remplan.com.au).

The study provided information on the additional economic benefits that result from both the flow on effect of the goods and services that KCGM acquire locally and the expenditure of KCGM salaries in the region. The flow on effect occurs when local providers make additional local purchases, generating flow on investment and salaries in the Goldfields-Esperance region.

The REMPLAN model shows the overall impact on local consumption to be approximately $416 million which includes KCGM's investment in local industries and the flow on expenditure. While all industry sectors experience some activity, the industries that experience the greatest impact of the direct and flow on investment are; property and business services ($47.8M), retail trade ($30M), other machinery and equipment ($29M), construction ($26M), electricity, gas and water ($24M), wholesale trade ($23M), accommodation, restaurants and cafes ($22M) and transport and storage ($20M).

The portion of KCGM wages and flow on earnings from other local wage earners (associated indirectly with KCGM activities) that are spent in the region is also picked up in increased business activity of industry sectors such as retail trade, cafes, restaurants and accommodation, education services and so on.

Modelling indicates that this generates a flow-on effect of an additional $76 million dollars annually in household income in the Goldfields-Esperance Region. This income is shared across 33 industry sectors other than mining with the most significant in retail trade ($10M) and property and business services which includes ownership of dwellings ($10M). Other key areas include wholesale trade ($4.7M), accommodation, restaurants and cafes ($4.5M), personal and other services ($4.0M), education ($3.6M), construction ($3.5M) and health and community services ($3.4M).

In addition to the 725 KCGM employees (and full time contractors), a further 1,823 positions are generated through both direct and flow-on demand for local goods and services. While all industry sectors experience some activity, the most significant sectors that will experience an employment impact in persons are; retail trade (434 persons), property and business services (182), accommodation, restaurants and cafes (182), wholesale trade (108), construction (104), mining (98), transport and storage (93), personal and other services (93), health and community services (85) and education (75).

Valued added impacts show the benefits of a regional activity that contribute to the Gross Regional Product. Modelling shows that the KCGM activities in direct and flow on impacts contribute a total of $309 million to value adding which is approximately 9.7% of Gross Regional Product. KCGM directly contributes $168 million and the flow on contribution is $141 million. In addition property and business services, retail trade and thirty one other industry sectors will experience further processing of their goods and services to the value of between $41,000 and $17 million.

2. PROJECT DESCRIPTION

2.1 Golden Pike Cutback

KCGM intends to undertake a cutback along a section of the western edge of the existing Fimiston Open Pit as shown in Figure 1. The cutback, referred to as the Golden Pike Cutback will allow for both widening and deepening of the pit to a depth of around 670 m. The surface extent of the Golden Pike Cutback is 46 hectares (ha). The cutback will extend the mine life of the KCGM operation until 2017, an additional five years from the current mine life of 2012. The proposed final outline of the Fimiston Open Pit is shown in Figure 2.

The extension is proposed for the western wall of the Fimiston Open Pit and not the eastern wall due to the geometry and geology of the "Golden Mile" ore bodies. The eastern wall of the Fimiston Open Pit roughly corresponds to the eastern ore body boundary, and the ore dips away under the western wall. The Fimiston Open Pit surface footprint has reached the maximum economic limits on the eastern side. The proposed western boundary marks the maximum economic limits of the Fimiston Open Pit based on the expected future gold price. It is anticipated that any further mining beyond this will be via underground mining methods.

To ensure the continued economic viability of the operation it is important that mining of the Golden Pike Cutback commences no later than 2008. This will allow timely removal of the waste material to enable access to the ore (gold bearing material) at a time when ore production at depth is reduced.

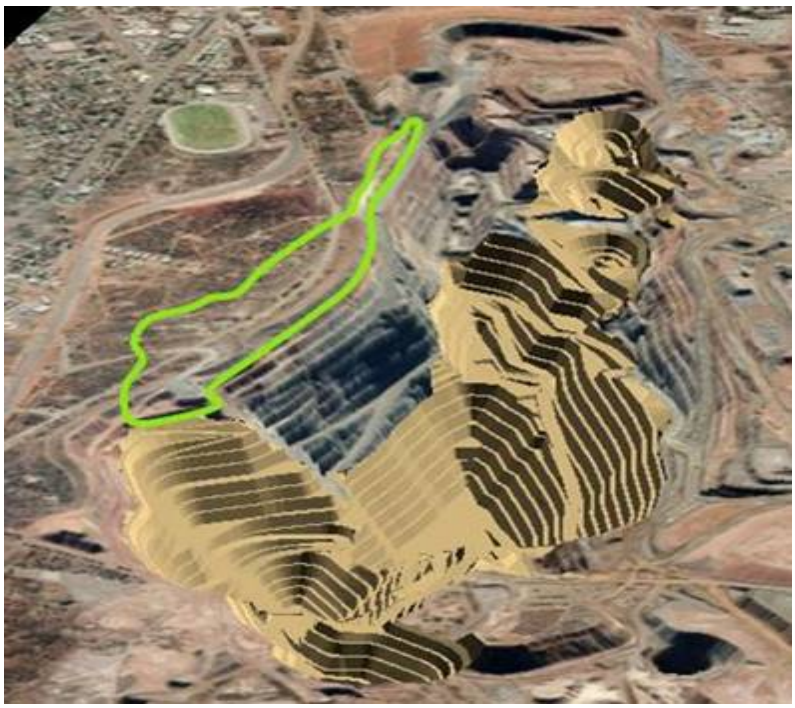

Figure 1: Surface Extent of the Golden Pike Cutback

Figure 2: Proposed Fimiston Open Pit 2017

2.2 Northern Waste Rock Dumps

To meet the life of mine waste dumping requirements approval is required for additional waste rock dump areas. In addition to existing areas to the south and east of the operation, areas north of the open pit have been identified to provide capacity for the remaining 908 million tonnes (Mt) of waste rock expected to be generated from the Fimiston Open Pit in conjunction with existing waste rock dump areas (Figure 3). Waste will also be backfilled into a portion of the northern end of the open pit and will assist in reducing the overall surface footprint of the waste dumps. The area planned for the construction of the Northern Waste Rock Dumps will cover approximately 115 ha of land that is historically degraded but subsequently rehabilitated by KCGM.

KCGM is currently investigating an option to extend the Croesus Waste Rock Dump within the boundaries west to the Bypass Road, north to Boorara Road and east towards Black Street. This extension will cover approximately 13 ha of land also historically degraded but subsequently rehabilitated by KCGM.

The anticipated total extent of waste rock dumps at KCGM (currently approved and proposed) is shown in Figure 4.

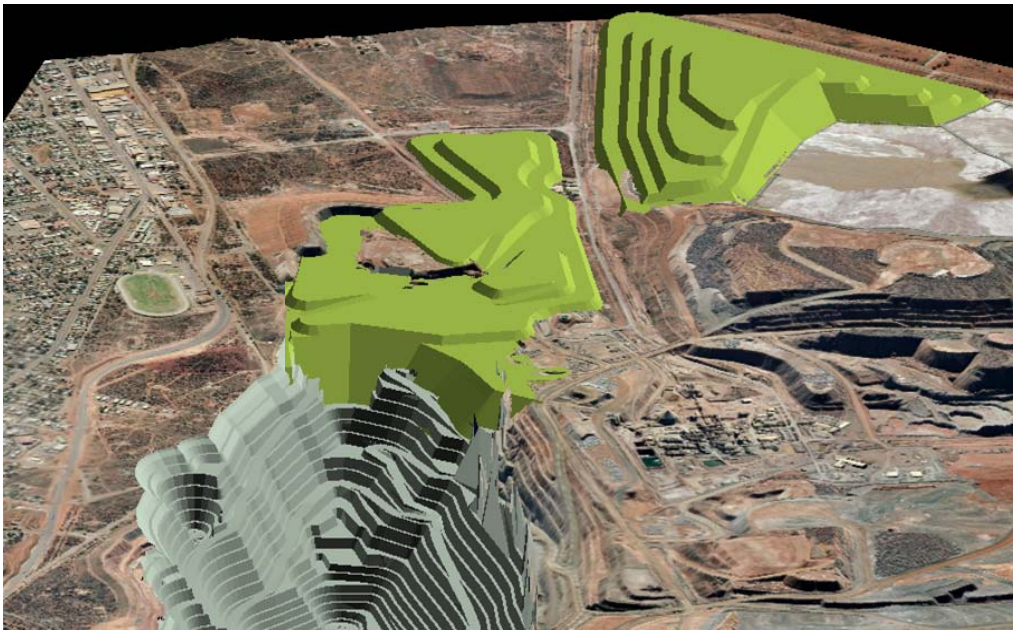

Figure 3: Location of Proposed Northern Waste Rock Dumps

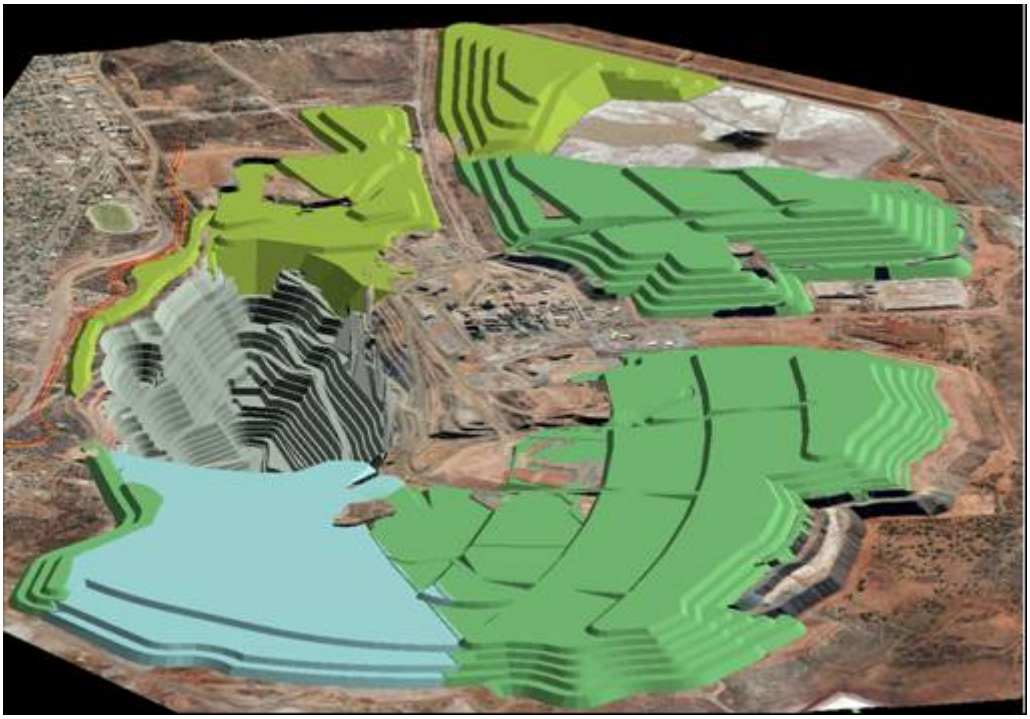

Figure 4: Proposed Waste Rock Dump and Open Final Pit Landform

2.3 Tailings Storage

To meet tailings storage requirements for the proposed 2017 mine life, further tailings storage capacity will be required. KCGM has identified two options for tailings storage; an increase in height of the existing Fimiston I and II TSFs or the recommissioning and increase in height of the Kaltails TSF. The use of these existing facilities would eliminate the need for a new TSF to be built on undisturbed land and hence significantly reduce the impact on the natural environment. Additionally, the infrastructure (roads and ponds) associated with a new TSF would not be required, further minimising potential impacts.

KCGM's preferred option, pending the outcome of further investigations is to continue to raise the embankment height of the Fimiston I and Fimiston II TSFs. Investigations including stability and groundwater assessments will be undertaken to confirm that this option is environmentally acceptable.

KCGM's contingency option is to recommission the existing Kaltails TSF and increase the height of perimeter embankments. This facility already has an established monitoring bore network and no clearing of vegetation is required. This option is subject to agreement by KCGM's Joint Venture Owners.

Figure 5 shows the location of the Fimiston I, Fimiston II and Kaltails TSFs.

Figure 5: Tailings Storage Facility Locations

2.4 Mine Closure

KCGM publicly presented the Fimiston Operations Extension Project outlining the vision for the final development of the Fimiston Open Pit in December 2004 with the release of *KCGM's Concept Plan - Sharing Our Vision for the Future.* This Concept Plan was the first time KCGM had announced a closure date for the open pit operations and presented graphical images of the final Fimiston Operation in 2017. KCGM sought and received feedback from the community on the content of the Concept Plan.

The Draft Conceptual Mine Closure Strategy (provided in Appendix A) formalises KCGM's commitment and approach towards closure of all aspects of its operations. KCGM aims to progress the discussion on mine closure to identify community expectations and ideas for the remaining features of the operation in 2017. This Strategy will remain a fluid document that is reviewed and updated every three years to ensure changes in areas such as the regulatory environment, community expectations or technical closure planning information are captured and incorporated into decision making processes.

This Strategy covers all operations on tenements under the control of KCGM. This document provides the basis from which to develop detailed Closure Plans for specific areas in conjunction with regulatory authorities and the community that will detail agreed commitments and targets for closure.

The main operational areas are outlined below:

- Open Pits;
- Processing Plants;
- Underground Mines;
- Tailings Storage Facilities;
- Waste Rock Dumps;
- Historical Mining Activities;
- Infrastructure and Utilities; and
- Exploration.

Although the current expected mine life of the Fimiston Open Pit is to 2017, planning is underway to consider opportunities to extend the mine life. It is already public knowledge that KCGM is looking at the underground potential from the open pit, while the toll treating of ore has also been proposed to prolong mine life. The keys to KCGM's closure planning are flexibility and the ability to develop a high level of stakeholder awareness as the operations draw closer to an actual resource depleted end date. It is intended that a more definitive timeline of environmental, social and financial studies will be created when the Fimiston Operations are within 5 years of closure.

In summary, the Conceptual Mine Closure Strategy addresses the following elements:

- Closure Objectives;
- Commitment and Legal Obligations;
- Operational Overview;
- Stakeholder Involvement;
- Risk Assessment;
- Closure Planning;
- Financial Provisioning;
- Proposed Land Use;
- Closure Timetable; and
- Closure Criteria.

Due to the size and spatial spread of operations and the degree of historical mining activity on KCGM's leases, KCGM will develop a series of Closure Plans for different aspects of the operation. Different timing of closure of some aspects of the operation will also influence the development of these plans.

For example, separate closure plans for the Gidji and Fimiston Operations may be more applicable than creating one closure plan for the entire operation as many of the areas may be at varied stages of closure or continued operation before the expected end of mine life of 2017. Closure Plans will be developed at least three years prior to closure, in line with the ANZMEC *Strategic Framework for Mine Closure* (2000).

KCGM aims to commence the development of Preliminary Site Specific Closure Plans within at least five years prior to closure, with the aim of finalising the Site Specific Closure Plans at least 3 years prior to closure. During the two year period between the development of the preliminary plan and the finalisation of the site specific plans KCGM will undertake consultation.

Additional plans will also be developed to provide support for closure operations at various levels. These include the Rehabilitation Management Plan, Decommissioning Plan and Maintenance and Monitoring Plan.

Progressive rehabilitation is being undertaken throughout the life of the mine and includes historically disturbed areas, waste rock dumps and tailings storage facilities. A Rehabilitation Management Plan will be developed to formalise KCGM's strategy for progressive rehabilitation. This plan will provide regulators and the community with an understanding of KCGM's strategy for rehabilitation prior to the development of detailed closure plans.

A Decommissioning Plan and a Maintenance and Monitoring Plan will be completed approximately 12 months prior to scheduled closure. Maintenance and monitoring will be undertaken for at least five years post-closure to measure the progress of rehabilitation, landform management and any other aspects against the specified closure criteria. The need for continued maintenance and monitoring will be reassessed at this time.

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3. APPLICABLE LEGISLATION AND GUIDELINES

Overarching government environmental policies, strategies and agreements that are considered relevant to this Project include:

- Western Australian (WA) Greenhouse Strategy 2004;
- Hope for the Future: State Sustainability Strategy 2003;
- State Water Strategy 2003; and
- WA Natural Resource Management Framework Policy 1999.

3.1 State Government Legislation

State legislation relevant to the Project includes the following:

- *Aboriginal Heritage Act 1972*
- *Agriculture and Related Resources Protection Act 1976*
- *Bush Fires Act 1954*
- *Conservation and Land Management Act 1984*
- *Contaminated Sites Act 2003*
- *Explosives and Dangerous Goods Act 1961*
- *Environmental Protection Act 1986*
- *Dangerous Goods (Transport) Act 1998*
- *Land Administration Act 1997*
- *Mines Safety and Inspection Act 1994*
- *Mining Act 1978*
- *Occupational Safety and Health Act 1984*
- *Poisons Act 1964*
- *Rights in Water and Irrigation Act 1914*
- *Soil and Land Conservation Act 1945*
- *Tailings Treatment (Kalgoorlie) Agreement Act 1988*
- *Town Planning and Development Act 1928*
- *Wildlife Conservation Act 1950*

The *Environmental Protection Act 1986* is the principal statute relevant to environmental protection in Western Australia. The Act makes provision for the establishment of the Environmental Protection Authority (EPA), for the prevention, control and abatement of pollution and for the conservation, preservation, protection, enhancement and management of the environment.

It has been determined by the EPA that the Proposal requires a formal level of environmental assessment and this has been set as a PER. The process for submission and assessment of a PER is determined by EPA and is outlined for this Proposal:

1. The Proponent refers the proposal to the EPA to set the level of assessment (an Environmental Referral (the PDD) for this Proposal was submitted on 1st July 2005);
2. The EPA determines the level of assessment and advertises this decision and the length of the public review period (a PER level of assessment with a public review period of 8 weeks was advertised on 25th July 2005);
3. The Minister for Environment determines the appeals against the level of assessment. The appeals were dismissed on the 11 November 2005.
4. The Proponent prepares an Environmental Scoping Document (this document) outlining the scope of works for the PER assessment;
5. The EPA agrees to the Environmental Scoping Document as a basis for the PER;
6. The Proponent undertakes studies and investigations into the PER document;
7. The PER is prepared by the Proponent;
8. The PER is submitted as a final draft to the EPA for authorisation to release as a public document;
9. The PER is released for a public review period (8 weeks);
10. The Proponent responds to any submissions made on the Proposal at the end of the public review period;
11. The EPA undertakes an assessment of the PER and the Proponent's response to any submissions and makes a recommendation to the Minister for Environment;
12. The Minister for Environment publishes the EPA Report;
13. The Minister for Environment determines any appeals, and consults with the key Decision Making Authorities to seek agreement on whether or not, and in what manner the proposal may be implemented; and
14. The Minister for Environment issues a Statement determining if the Proposal may proceed, and details the conditions associated with the approval.

The anticipated schedule for this process is outlined in Section 9 of this Environmental Scoping document.

Once approval for a Proposal is obtained under Part IV of the *Environmental Protection Act 1986*, licensing of prescribed premises for construction and operations is required under Part V of the Act. This requires a Works Approval Application and Application for Licence to Operate to be submitted to the Department of Environment (DoE).

Additional approvals that may be required for the Project include:

- A Town Planning Scheme Amendment by the City of Kalgoorlie-Boulder for an amendment to the Safety Exclusion Zone; and a
- Section 18 approval under the *Aboriginal Heritage Act 1972* from the Department of Indigenous Affairs (DIA).

Initial feedback from the City of Kalgoorlie-Boulder indicates that Town Planning Scheme Amendment is not required.

The *Tailings Treatment (Kalgoorlie) Agreement Act 1988* makes provision for tenure over the Kaltails TSF for Joint Venture partners Newmont Kaltails Pty Ltd (90%) and the Western Australian Mint (10%). It has been advised that this agreement needs to be "determined" prior to any transfer of the General Purpose Lease.

3.2 Commonwealth Government Legislation

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), an action requires approval from the Federal Environment Minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance such as:

- World Heritage properties;
- Ramsar wetlands of international importance;
- Listed threatened species and communities;
- Migratory species protected under international agreements;
- Nuclear actions; and
- Commonwealth marine environment.

The Proposal is not considered to trigger the EPBC Act as no threatened species or communities have been identified within the Project area or have the potential to be impacted from the Project.

3.3 Guidelines and Standards

A number of State and National guidelines and standards are applicable to and have been considered during planning and design of this Project. The following EPA Position and Guidance Statements are applicable for the assessment of environmental impacts for the Project:

Position Statements

- Environmental Protection of Native Vegetation in Western Australia, No. 2, December 2000;
- Terrestrial Biological Surveys as an Element of Biodiversity Protection, No. 3, March 2002;
- Towards Sustainability, No. 6, August 2004;
- Principles of Environmental Protection, No. 7, August 2004;
- Environmental Protection in Natural Resource Management, No. 8 June 2004; and
- Environmental Offsets (Preliminary Version 2), No. 9 June 2005.

Guidance Statements

- Separation Distances Between Industrial and Sensitive Land Uses, No. 2, June 2005;
- Minimising Greenhouse Gas Emissions, No.12, October 2002;
- A Site Remediation Hierarchy for Contaminated Soil, No. 17, July 2000;
- *Draft* Environmental Guidance for Planning and Development, No. 33, June 2005;
- Linkage between EPA Assessment and Management Strategies, Policies, Scientific Criteria, Guidelines, Standards and Measures Adopted by National Councils, No. 34, April 1998;
- Assessment of Aboriginal Heritage, No. 41, April 2004;
- Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia, No. 51, June 2004;
- Implementing Best Practice in Proposals Submitted to the Environmental Impact Assessment Process, No. 55, December 2003; and
- Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia, No. 56, June 2004.

The Department of Industry and Resources (DoIR) and the DoE have several guidelines relevant to mining in Western Australia and that are applicable to this Project. These include:

- Guidelines for Mining in Arid Environments, June 1996;
- Australian and New Zealand Minerals and Energy Council and (ANZMEC/ MCA), Strategic Framework for Mine Closure, 2000;
- Guideline to Help You Get Environmental Approval for Mining Projects in Western Australia, March 1998;
- Environmental Notes on Waste Rock Dumps, January 2001;
- Safety Bund Walls Around Abandoned Open Pit Mines, December 1997;
- Water Quality Protection Guidelines No. 2; Mining and Mineral Processing: Tailings Facilities (2000);
- Guidelines on the Development of an Operating Manual for Tailings Storage, October 1998; and
- Guidelines on the Safe Design and Operating Standards for Tailings Storage, May 1999.

For the assessment of air quality and noise emissions the following guidelines will be used:

- *Environmental Protection (Noise) Regulations 1997*; and the
- National Environment Protection Measure for Ambient Air Quality, National Environment Protection Council, June 1998.

4. EXISTING ENVIRONMENT

4.1 Regional Setting

The KCGM operation is located immediately east of the City of Kalgoorlie-Boulder in the Goldfields Region of Western Australia, approximately 600 km east of Perth.

The area known as the “Golden Mile” has 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 30,000, it is the major regional centre in the Goldfields Region. 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.

4.2 Climate

Climate of the Kalgoorlie area is classified as semi-desert Mediterranean and is characterised by warm winters and hot summers. Meteorological data are obtained from Bureau of Meteorology at the Kalgoorlie airport.

Mean annual rainfall for the area is about 255 mm, 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 eight 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 32 mm in June to 12 mm 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 from an average between 76% at 0900 hours in July to 22% at 1500 hours in December.

4.3 Existing Land Use

The land proposed for the location of the Golden Pike Cutback and Northern Waste Rock Dumps is Crown Land (designated as Vacant Crown Land), owned by the State of Western Australia. The Joint Venture Owners, Barrick Gold of Australia (50%) and Newmont Australia Ltd (50%) hold mining tenure over all of these project areas. There is no other land use on these areas other than mining related activities. The Golden Pike Cutback will be entirely contained within a perimeter fence construction by KCGM at the completion of the Bypass Road re-alignment in 2003. The Cutback will not require any additional infrastructure relocation.

Tenure over the Kaltails TSF was granted via the *Tailings Treatment (Kalgoorlie) Agreement Act 1988* which provided for the establishment of two General Purpose Leases, G 1 SA and G 2 SA. These leases are held in Joint Venture by Newmont Kaltails Pty Ltd (90%) and the Western Australian Mint (10%). The DoIR have advised that the Tailings Treatment Agreement would need to be "determined" prior to DoIR allowing the leases (G 1 SA and G 2 SA) to be transferred.

The relevant tenements over the Project area are detailed in Table 1.

Table 1: Tenements over the Project Area

Project Area	Tenements
Golden Pike Cutback	M26/316 M26/359 M26/388 M26/405
Northern Waste Rock Dumps	M26/46 M26/54 M26/131 M26/359 M26/383
Fimiston I TSF	M26/383
Fimiston II TSF	M26/308, M26/451, G26/44-68, G26/70-71, G26/73-78, G26/82-86
Kaltails TSF	G 1 SA G 2 SA

4.3.1 Town Planning Scheme

The Fimiston Open Pit operates with a Safety Exclusion Zone (SEZ) which restricts the development of residential properties in close proximity to the open pit operation. In 1991, the Department of Minerals and Energy (now DoIR) determined that a 400 m wide SEZ should apply which was primarily based on the risk of flyrock from blasting. It also took into account long term pit wall stability although a lesser distance would have been adequate.

The DoIR indicated that the SEZ was to be applied from the outermost row of primary blast holes at any section of the Fimiston Open Pit and therefore the location of the 400 m zone is variable. However, to enable the SEZ to be incorporated into the Town Planning Scheme (TPS), a standard 400 m SEZ was defined from the approved pit outline as shown in Figure 6. The SEZ was gazetted in April 1997 in the City of Kalgoorlie-Boulder Town Planning Scheme No 1 - Section 3.16. The TPS outlines objectives and the purpose of the SEZ.

Figure 6: Town Planning Scheme
Fimiston Open Pit Safety Exclusion Zone

The objectives of the SEZ are to:

- Provide a buffer between the Fimiston Open Pit and the urban area to maintain the safety, health and welfare of surrounding residents and the population in general;
- Minimise the impact upon the amenity of adjoining urban and residential areas; and
- Allow for the continuing development and operation of the Fimiston Operations.

The purpose of the SEZ is to reduce the level of risk associated with open pit mining activity. In recognition of this, the Council supports and encourages the acquisition of land upon which residential development is situated within the SEZ by KCGM. Since 1992, KCGM has undertaken a programme of passive property acquisition and now owns all residential properties within 400 m from the pit outline of the proposed Golden Pike development.

In essence, the TPS ensures that no new residential development is permitted in the SEZ. If residential development currently exists within the SEZ and is not in immediate risk from the mining activity, the TPS allows the residential development to remain subject to the agreement of KCGM and to the implementation of appropriate safety measures. The passive property acquisition programme undertaken by KCGM has effectively maintained the SEZ for the Golden Pike Cutback.

Some commercial properties not owned by KCGM exist within 400 m from the Golden Pike pit outline. However in August 2002 the TPS was modified to allow commercial development within the SEZ, with any new development requiring the written support of KCGM.

Further detail regarding flyrock and pit wall stability is provided in Section 5.14. Based on this information there is a low risk to nearby residential and industrial properties from these activities for the proposed Golden Pike cutback. Therefore the SEZ as it stands in the TPS may not require modification for the proposed cutback to proceed.

The requirement to amend the TPS has recently been considered by the Kalgoorlie-Boulder City Council and it was resolved that a potential expansion of the SEZ is not considered necessary on the basis of information currently available. The Council considers that the State Government bears primary responsibility for the protection of public safety in this instance.

The Council is supportive of the proposed public safety review process, whereby KCGM will provide technical studies associated with public safety to DoIR. The DoIR will then arrange for the review of those studies by independent consultants prior to the forwarding of a recommendation to the State Government. This will ensure that public safety issues are considered in a rigorous and properly independent manner.

4.4 Topography and Surface Drainage

A gently undulating topography is broken up with occasional ranges of low hills. Sand plains are more prominent in the western part with some large playa lakes. Low relief and low annual rainfall has resulted in poorly-defined surface drainage within the area of the Fimiston operations. Drainage in the area to the east of the pit flows easterly and then to the south after joining an ephemeral creek. This eastern creek line drains directly to Hannans Lake. This creek line also acts as a natural constraint for the eastern extension of the Fimiston waste rock dumps.

Significant amounts of surface water flows through the central floodway of the catchment only after heavy rainfall events. Heavy rains associated with tropical depressions in 1992, 1995, and 1999 caused extensive natural flooding in the Kalgoorlie area.

4.5 Hydrogeology

The Golden Mile is a south-plunging ridge of mostly ultramafic rocks forming part of the Kalgoorlie-Kambalda Greenstone Belt. The main rock units are the Golden Mile Dolerite and the Paringa Basalt. These formations have a very low primary permeability and will not store or transmit large quantities of groundwater except through major secondary structures. The hydrogeology of the Greenstones is poorly understood as they do not form major aquifers and have not been studied in detail. The permeability of these rocks is likely to have a large variation.

The Greenstones along the Golden Mile are overlain by tertiary and younger sedimentary deposits to the west, south and east. Groundwater often occurs in these deposits at shallow depths. Some exchange of groundwater must occur between tertiary sedimentary deposits and the older Greenstones which form the Golden Mile and other bedrock formations in the Kalgoorlie area.

The historical underground workings below the Fimiston Open Pit have provided a conduit for groundwater and surface run-off. De-watering from the 25 level in Chaffers Shaft (810 m below surface) has been ongoing since 1989 and this has maintained groundwater levels well below current mining operations. With the recent removal of the Chaffers head frame as part of the Chaffers Cutback, dewatering is now undertaken by a dewatering bore located 700 m below surface on the south-eastern edge of the Fimiston Open Pit.

The total dissolved solids concentration of the naturally occurring saline water ranges from about 20,000 to 200,000 milligrams per litre (mg/L) of total dissolved solids (TDS) (sea water has about 35,000 to 40,000 mg/L TDS).

KCGM maintains a comprehensive water management system to monitor groundwater levels, water quality and pumping rates.

4.6 Geology and Soils

The Kalgoorlie succession in the vicinity of the Fimiston deposit consists of a basal ultramafic unit called the Hannans Lake Serpentinite, overlain successively by the Devons Consol Basalt, Kapai Slate, Paringa Basalt and Black Flag Beds. Mafic to ultramafic sills have then intruded the sequence. One of these sills, the Golden Mile Dolerite, is the host for most of the gold mineralisation in the Golden Mile.

The structure of the Fimiston area is dominated by the large Kalgoorlie Anticline and Kalgoorlie Syncline, the major Golden Mile Fault which strikes sub-parallel to formation boundaries, and numerous cross-cutting faults (e.g. Golden Pike). It was recognised that three major deformation events were responsible for these structures, occurring over a period of 60 million years beginning 2670 million years ago.

The rock mass in the pit region consists of Paringa Basalt, Golden Mile Dolerite, shales and porphyry dykes. Except shales, each of these units has high intact rock strength, with an average Uniaxial Compressive Strength of greater than 85 MPa. The Paringa Basalt and the Golden Mile Dolerite are considered as the two main rock masses forming the final pit walls. The weathering profile along the western flank has been indurated with iron rich fluids leading to a laterite cap rock (comprising oxidised and cemented material) with a variable thickness of 5 m to 15 m. The oxidation depth varies from 0 m to 70 m and averages 40 m.

The Fimiston Open Pit extension will be predominantly hosted by Golden Mile Dolerite with a small percentage to the west hosted by Williamstown Dolerite and the Black Flag Beds sedimentary sequence. The Black Flag Beds contain bands of pyritic shale which have an acid generation potential. Any exposed mineralisation within the dolerite will contain sulphide minerals in conjunction with carbonates, the presence of both these minerals results in a neutralising effect with no proven acid generation potential. Non-mineralised material will not contain significant amounts of sulphide minerals and therefore has little to no acid generation potential.

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 Project area are degraded as a result of historical mining operations and land clearing however many areas have been revegetated as part of the KCGM progressive rehabilitation programme.

4.7 Vegetation and Flora

KCGM is located within the Coolgardie Botanical Districts Coolgardie Vegetation System, in the southwest interzone. This botanical district is predominantly eucalypt woodland becoming open towards the more calcareous soils, where a cover of saltbush-bluebush understorey is evident. A gently undulating topography is broken up with occasional ranges of low hills. Sand plains are more prominent in the western part with some large playa lakes. Principally the soils are brown calcareous earths. Extensive timber cutting occurred in the Kalgoorlie region at the turn of the century for mineshaft supports and for firewood, therefore much of the woodland has been historically cleared.

4.7.1 Golden Pike Cutback and Northern Waste Rock Dumps

The proposed areas of the Golden Pike Cutback and the Northern Waste Rock Dumps have been historically cleared and degraded by mining activities along the Golden Mile. Many of these areas however were rehabilitated between 1990 and 1999, as part of KCGM's "Greening the Golden Mile" revegetation program.

There are numerous exotic weed species in the Goldfields area. These are likely to have been introduced and colonised areas degraded by historical mining, pastoral and urbanisation activities. The progressive establishment of native vegetation in many historically disturbed areas is assisting to control the spread and reduce infestations of exotic weeds.

4.8 Conservation Reserves

The Lakeside Miscellaneous Conservation Reserve (No. 19214) is located approximately 0.8 km to the south of the Kaltails TSF. This 2,391 ha reserve, was declared in 1957 and is managed by CALM for the preservation of sandalwood (*Santalum spicatum*). The reserve is classified under the International Union for the Conservation of Nature and Natural Resources (IUCN) as protected area category VI. Table 2 outlines the definitions of each of the IUCN protected area categories.

Table 2: IUCN Protected Area Category Definitions

IUCN Category	Definition
IA	Strict Nature Reserve: protected area managed mainly for science
IB	Wilderness Area: protected area managed mainly for wilderness protection
II	National Park: protected area managed mainly for wilderness protection
III	Natural Monument: protected area managed mainly for conservation specific natural features.
IV	Habitat / Species Management Area: protected area managed mainly for landscape/ seascape conservation and recreation.
V	Protected Landscape / Seascape: protected area managed mainly for landscape/ seascape conservation and recreation.
VI	Managed Resource Protected Area: protection area managed mainly for the sustainable use of natural ecosystems.
VOID	Denotes an area in the spatial data which is not a “protected area”, but is maintained in the spatial data to ensure the area boundary integrity.

A loss of vegetation on this reserve was attributed to seepage from the Kaltails facility. Initial measures to reduce the impacts were implemented and included the construction of interception trenches along the base of the TSF embankments. In 1992, the construction and operation of dewatering bores successfully controlled the seepage and the groundwater level. In 1995 part of the original reserve was excised following the vegetation loss to the south of the TSF.

4.9 Fauna

A survey was undertaken in 1994 for Gazetted Rare Fauna at the Fimiston Operations. The following species are currently protected under Schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2005* and may occur in the Kalgoorlie region and the Project area. None of these species are listed under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999.*

- Peregrine Falcon (*Falco peregrinus*);
- Pink (or Major Mitchell's) Cockatoo (*Cacatua leadbeadbeateri*);
- Naretha Blue Bonnet (Parrot) (*Northiella haemotogaster narethae*);
- Woma or Ramsays Python (*Aspidites ramsayi*); and the
- Carpet Python (*Morelia spilota imbicata*).

Fauna habitats provided by the Project area are widespread and occur extensively around Kalgoorlie and throughout the Coolgardie Botanical District. Rare species in the broader Kalgoorlie region tend to be associated with healthy vegetation, rock outcrops, sand dunes and fresh-water wetlands.

The area under the control of and surrounding the KCGM operations has been degraded by historical mining, pastoral and urbanisation activities. The degradation has included disturbance and alteration of the ground surface, erosion by water and wind and recreational activities. These activities have resulted in the disruption or removal of fauna habitats from KCGM operations and the City of Kalgoorlie-Boulder.

Records of the Western Australian Museum indicate that most mammals occurring in the vicinity of the KCGM operations are both common and widespread. In addition, there have not been any reports of collections or sightings of rare species in or around Kalgoorlie for many decades.

4.10 Aboriginal Heritage

An ethnographic survey was undertaken in 1989 in conjunction with the Aboriginal Site Survey undertaken by O'Connor and Quartermaine for the original CER for the KCGM operation. Additional surveys have been conducted by O'Connor in 2000, 2001 and 2004. The survey areas covered by these studies encompass the area proposed by this Project.

Aboriginal people from Coolgardie, Kalgoorlie, and Coonana, who have long term associations with the region, were consulted and local elders who have detailed knowledge of the region's totemic geography visited the survey area. Eight sites of ethnographic significance have been identified during surveys. The Muruntjarta site is the closest to the Project area and is located adjacent to the existing Croesus Waste Rock Dump.

An archaeological survey was undertaken by O'Connor and Quartermaine in 1989 to locate and record archaeological sites within the survey area and to research historically recorded Aboriginal sites. Additional surveys have been conducted by Quartermaine in 2000 and McGann in 2001. The survey areas covered by these studies encompass the area proposed by this Project. No archaeological sites were located within the survey area however seven isolated finds were recorded.

4.11 Non-Indigenous Heritage

There are many non-indigenous sites in the City of Kalgoorlie-Boulder recognised for their heritage value. The Kalgoorlie Post Office is the only site listed on the Commonwealth Heritage List under the *Environmental Protection and Biodiversity Conservation Act 1999*. There are 122 sites listed on the Register of the National Heritage Estate and 45 sites registered on the Kalgoorlie-Boulder Municipal Inventory under the *Heritage of Western Australia Act 1990*.

There are no non-indigenous heritage sites located within the Project Area.

4.12 Social Environment

The City of Kalgoorlie-Boulder has developed around the mining activities along the Golden Mile since gold was discovered in the late 1800s as these towns were the primary support for the mining workforce and their families. Currently the population of the City of Kalgoorlie-Boulder is approximately 30,000.

The residents of the City of Kalgoorlie-Boulder are predominately of Australian and English ancestry with the majority speaking English only. Approximately 6.45% of the population is indigenous and the City has higher ethnic diversity than other regions within rural Western Australia.

There are 11,400 dwellings in the City of Kalgoorlie-Boulder and 54 accommodation providers including hotels, motels, B&Bs, caravan parks and lodges. Kalgoorlie has a well developed regional airport, rail and bus services. There are a total of 10 primarily schools, 6 secondary schools and a university campus in addition to a large number of child care and pre-primary schools.

In 2004, KCGM contracted Q & A Communications to undertake a Social Impact Assessment in regards to its current operations. Local, State and indigenous stakeholders were consulted and covered the scope of social, environmental, economic and communication factors. The results of the social impact assessment are available on KCGM's Super Pit website: www.superpit.com.au.

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5. POTENTIAL IMPACTS AND MANAGEMENT

5.1 Environmental Factors

A summary of the potential environmental issues and management measures was presented in the Environmental Referral for the Proposal. Through the Environmental Referral document and preliminary discussions with the decision making authorities (DMAs), the environmental factors critical to the success of the Proposal are the studies associated with noise, vibration and dust emissions and public safety issues. A summary of the environmental factors and issues that will be considered in the assessment of the environmental impacts of the Proposal are presented in Section 7. These are:

- Terrestrial Native Flora and Vegetation
- Terrestrial Native Fauna
- Water Resources – Supply
- Surface Drainage
- Environmental Noise
- Dust
- Blasting Noise and Vibration
- Greenhouse Gas Emissions
- Groundwater
- Waste Management
- Aboriginal Heritage
- Seismicity
- Public Safety
- Amenity
- Rehabilitation and Decommissioning (Closure)

The summary table in Section 7 also includes reference to the EPA's objectives in relation to the issues, the potential impacts, current and additional investigations required and potential management of the impacts. In this section each of the environmental factors, their potential impacts and management are discussed.

5.2 Terrestrial Flora and Vegetation

Potential Impacts

Vegetation in the area of the Golden Pike cutback has been historically disturbed and is transected by numerous access tracks and disturbance caused by exploration drilling activities. The areas proposed for the location of the Northern Waste Rock Dumps and the Golden Pike Cutback were rehabilitated by KCGM as part of the "Greening the Golden Mile" Programme between 1990 and 1999. A flora survey of these areas is proposed in Section 6.6.

Kaltails is located near the Lakeside Miscellaneous Conservation Reserve (No. 19214). This 2391 ha reserve, was declared in 1957 and is managed by CALM for the preservation of sandalwood (*Santalum spicatum*). The reserve is located approximately 0.8 km to the south of the Kaltails TSF and is considered to be outside of the groundwater flow path associated with the drainage to Hannans Lake. Groundwater management will be undertaken to ensure vegetation within and outside of this reserve is not impacted.

Management

The clearing of waste rock dump areas will be undertaken progressively as the need for storage area dictates. This will ensure that vegetation clearing will be kept to a practicable minimum throughout the life of the mining operation. Cleared vegetation and topsoil will be stockpiled for later use in rehabilitation. Waste rock dump slopes and other disturbed areas will be rehabilitated as soon as practicable to promote the re-establishment of native vegetation. KCGM will employ management actions outlined in the *Revised Dust Monitoring and Management Programme June 2004* to minimise dust generation and the potential for impacts on vegetation outside the clearing footprint.

Weed management will be undertaken by KCGM to manage the risk of spreading weeds. This will include but not be limited to progressive rehabilitation to reduce the establishment of weed species and the monitoring of disturbed areas. Active management for the control of weeds such as spraying may be required following rehabilitation.

The tailings storage options of utilising existing facilities, Fimiston I, II and Kaltails TSF eliminates the need to construct a new TSF and clear approximately 150 ha of native vegetation. Potential impacts from the TSFs on vegetation will be managed through the implementation of the Seepage and Groundwater Management Plan (SGMP), currently in place for Fimiston I and Fimiston II TSFs. The SGMP establishes performance targets for the long-term management of TSF seepage. KCGM will incorporate vegetation monitoring as part of the SGMP for the Kaltails facility.

Consultation will be undertaken with the Department of Conservation and Land Management regarding management practices to ensure that Lakeside Reserve (No. 19214) is not impacted by the recommissioning of the Kaltails TSF.

Further detail on KCGM's Seepage and Groundwater Management Plan is provided in Section 5.10.

5.3 Native Terrestrial Fauna

Potential Impacts

Clearing of vegetation for the Golden Pike Cutback and Northern Waste Rock Dumps has a very low potential to impact on localised fauna habitats due to the historical disturbance and clearing that has occurred within these areas. These areas have also been previously rehabilitation by KCGM as part of the "Greening the Golden Mile" Programme between 1990 and 1999.

A study by Muir Environmental in 1994 identified five bird species and two pythons listed under the *Wildlife Conservation (Specially Protected Fauna) Notice 2005* that may occur within the Kalgoorlie region. Records of the Western Australian Museum indicate that most mammals occurring in the vicinity of the KCGM operations are both common and widespread. In addition, there have not been any reports of collections or sightings of rare species in or around Kalgoorlie for many decades.

There is also the potential for impacts to fauna from the tailings storage facilities as avian or other fauna are often attracted to the water ponding on the surface of the TSF. KCGM has a very low incidence of fauna fatalities on the existing Fimiston TSFs.

Management

The Project will be designed to avoid where practicable, or to minimise disturbance to significant fauna habitats. Known threatened fauna habitats will be avoided and/or management measures implemented to ensure that the Project does not adversely impact the conservation status of threatened species. Fauna habitats will be re-established during rehabilitation of disturbed areas as part of KCGM's Rehabilitation Management Plan.

Fauna management on KCGM's current TSFs is managed in accordance with licence conditions and KCGM's JV Owners commitment to the International Cyanide Management Institute's Cyanide Management Code. Fauna monitoring at KCGM's TSFs is undertaken at 3 hourly intervals and the supernatant pond on the surface of the facility is maintained as low as possible. Fencing of the TSFs also assists in the prevention of fauna access.

5.4 Water Resources

Potential Impacts

KCGM uses on average 12,175 megalitres of water each year of which 88% is saline, sourced from groundwater bores and recovered and recycled from various aspects of the operation. The remaining 12% is potable water sourced from the Kalgoorlie water supply system. Water is primarily used for ore processing within the Fimiston Mill.

The Project will not alter the current ore processing rate of the mill and therefore the water requirement for treatment purposes will remain unchanged. The extension of mine life for an additional five years will however increase the period over which KCGM abstracts and uses groundwater from potable and saline sources.

KCGM is the largest user of saline groundwater in the local area however the natural groundwater quality is hypersaline and the beneficial use of the groundwater is recognised by the DoE to be mining and mineral processing. The additional five years of operation is not expected to increase the pressure on water resources within the region.

Management

KCGM will continue to focus on strategies to improve water efficiency throughout the operation to reduce the reliance on groundwater abstraction and the use of potable water from the Kalgoorlie water supply scheme. Significant advantages are currently being seen from the increased blending of mine water (from the underground operation) and water recycled from the TSFs decant and groundwater bores in preference to using water pumped from distant groundwater borefields. These advantages include:

- A reduction in the relative consumption of water from distant borefields compared with blended TSF decant and groundwaters;
- A reduction in the specific rate of lime consumption and in the specific rate of greenhouse gas emissions related to lime manufacture;
- A reduction in energy use by pumping water from shorter distances; and
- A reduction in the risk of saline water spills along pipeline easements from the distant borefields to the Fimiston Mill.

5.5 Surface Drainage

Potential Impacts

Low relief and low annual rainfall has resulted in poorly-defined surface drainage within the area of the Fimiston Operations. There is one significant creek line located between the Fimiston Mill, Open Pit and Waste Rock Dumps to the west and the Fimiston II TSF to the east. This creek line drains directly to Hannans Lake, and only flows after significant rainfall events, generally associated with northern tropical depressions.

The identified options for the location of the Northern Waste Rock Dumps were in part selected because of the inability to extend and increase the height of the existing waste rock dump areas. The heights of the waste rock dumps encompassing the southern and eastern extents of the Open Pit are restricted by airport regulations.

Geographic constraints of the eastern and southern drainage lines associated with Hannans Lake also restrict any lateral extension. The location of the proposed Northern Waste Rock Dumps is not associated with any major surface drainage features.

Management

Surface drainage management during the construction, operation and closure of the Waste Rock Dumps and the Golden Pike Cutback will ensure that water ponding does not occur and impact on the health of native vegetation. Earthworks will be undertaken as part of this surface drainage management where necessary so as not to starve native vegetation of surface water or create prolonged saturated areas. Any surface diversions will direct water towards existing and natural drainage paths.

5.6 Environmental Noise

Potential Impacts

Noise emissions will be generated during mining of the Golden Pike Cutback and the works associated with clearing and waste rock dumping in proposed northern areas. Specifically, noise will be generated by the haulage of ore and waste rock, operating mobile equipment such as drills, excavators and haul trucks. These activities have the potential to impact on the residences in close proximity to the KCGM operation. Potential impacts will be most significant during the initial stages of the Golden Pike Cutback where mining is nearer the ground surface but will be buffered by the 20 m high Environmental Noise Bund between the mining operation and the community.

Herring Storer Acoustics has undertaken noise modelling to predict noise levels at receiver locations in Kalgoorlie-Boulder from Golden Pike mining operations with a 20 m high noise bund between mining operations and residential areas. A comparison between noise modelling results and actual monitoring data was possible at two locations as these are permanent KCGM noise monitoring sites.

The acoustic assessment concluded that noise levels from the proposed mining operations on existing ground levels of the Golden Pike Cutback, were in the range of 35-50 dB(A). These modelled noise levels are generally consistent with noise levels currently monitored and so no significant change in the noise environment is expected. Modelled levels are less than the existing levels because of the influence of noise from activities within the City of Kalgoorlie-Boulder such as traffic noise and residential air conditioners.

Six months after commencement the noise levels reduce to 30-45 dB(A). The levels decrease as the mining operations become deeper in the pit as the pit walls act as an additional noise barrier.

The noise modelling results were based on the assumptions that all the equipment on the inventory provided by KCGM were operating simultaneously and wind conditions were from all directions simultaneously. These modelling parameters were considered to provide the "worst case" scenario. It is expected therefore, that any variations to these conditions would be less than the modelled results and be dependant on the wind direction and the number of items of machinery operating.

KCGM has had noise levels set through Ministerial Statement No. 188 since 1992. KCGM will be approaching the Noise Branch of the DoE to discuss the applicability of these in relation to the *Environmental Protection (Noise) Regulations 1997* and to determine the process for addressing the requirements under Regulation 17.

A series of noise contour plots are provided within the full report in Appendix B to illustrate the change in the noise levels with the progression of mining.

Management

The Environmental Noise Bund has been a key part of KCGM's noise management programme since it was first established in the early 1990s. The effectiveness of the original Environmental Noise Bund, especially for surface mining operations, was clearly demonstrated through modelling. Since its establishment there have been a number of modifications and extensions to the Environmental Noise Bund. Approval to realign the Environmental Noise Bund to the west of the proposed Golden Pike Cutback is currently being sought, though the Notice of Intent process and under Section 45C of the *Environmental Protection Act 1986*.

KCGM believes that the realigned Environmental Noise Bund together with KCGM's commitment to noise management through the *Revised Noise and Vibration Monitoring and Management Programme, June 2004* will be effective in minimising noise impacts on the local community.

KCGM's management strategies for noise as detailed in the *Revised Noise and Vibration Monitoring and Management Programme, June 2004* include:

- Ensure the quietest equipment available is used;
- Endeavour to fit mobile equipment with "smart alarms". Smart alarms adjust the noise level of the alarm depending on the background noise level i.e. the quieter the environment, the quieter the alarm;
- Restrict the use of equipment for certain construction activities to the hours of 7am to 7pm Monday to Saturday and not on Sunday or public holidays;
- Ensure that relevant contractors and staff undertake a site-specific induction to raise awareness including the importance of noise control;
- Ensure noise monitoring is undertaken;
- Ongoing consultation with stakeholders to determine the success of the noise management practices; and
- Where required KCGM will undertake modelling to determine predicted noise levels from operational changes.

Based on the outcomes of further investigations this monitoring and management programme may be revised or specific procedures may be implemented for mining operations at the Golden Pike Cutback.

Noise levels from KCGM's operations will comply with the *Environmental Protection (Noise) Regulations 1997* through the submission of an application for an exemption under Regulation 17 if required.

Further investigation of noise emissions from the construction of the Northern Waste Rock Dumps is proposed in Section 6.4.

5.7 Dust

Potential Impacts

Dust generated from mining operations has the potential to impact on the nearby City of Kalgoorlie-Boulder. The potential sources of dust emissions from the Project include land clearing, blasting operations, transportation of ore and waste and rehabilitation works.

Dust from tailings storage facilities is not considered a significant source as much of the surface of the tailings remains moist during operation, inhibiting the lift off of dust from the tailings surface. The use of hypersaline water also results in the formation of a salt crust that reduces the potential for dust generation. It is envisaged that the TSFs will be capped with waste rock upon closure of the facilities to control dust generation for the long-term (Refer to Section 5.16).

Management

Dust generated from blasting of the Golden Pike Cutback, land clearing and waste rock dump construction will be managed under the existing *Revised Dust Monitoring and Management Programme June 2004* in accordance with Ministerial Condition No.5 (Statement 188).

Through the implementation of this programme, KCGM commits to undertake all reasonable, practicable and safe measures to minimise dust emissions from its operations.

KCGM owns and operates a network of high volume dust monitors. Three are located in close proximity to the Fimiston Open Pit which monitor potential blasting dust. These dust monitors are operated from 9:00am to 6:00pm daily when blasting occurs. The need for additional dust monitors for this project is currently being evaluated.

Dust management for mining the Golden Pike Cutback, land clearing, the construction of waste rock dumps and general operations will incorporate the following practices:

- Progressive rehabilitation to minimise exposed areas;
- Monitoring of current and forecast wind conditions using daily forecasts and real time wind speed and direction information;
- Use of water trucks and water cannons in areas that could produce dust. Fresh water will be used on areas to be rehabilitated;
- Visual inspections for dust formation on a regular basis;
- Use of additional dust control measures (i.e. a dust binding agent);
- Suspending work as deemed necessary from inspections, public feedback or prevailing wind conditions;
- All contractors and staff involved with the project will undertake a site-specific induction to raise awareness including the importance of dust control;
- Dust monitoring; and
- Ongoing consultation with stakeholders to determine the success of the dust management practices.

Management strategies to ensure effective dust control are currently being utilised for the construction of the southern noise bund extension (commenced in August 2004) and have been successful to date.

As part of the continuous improvement programme at KCGM, an opportunity to improve water truck efficiency was recently identified and implemented. The diameter of the water discharge pipe was increased to reduce the time taken to fill the water trucks and therefore reduce their standby time. Continuous improvement initiatives will continue to be identified throughout the life of the KCGM operation. Based on the outcome of further investigations, the monitoring and management programme may be revised or specific procedures implemented to address any identified potential impacts.

Further investigation of dust emissions from the Fimiston Operations is proposed in Section 6.2.

5.8 Blasting Noise and Vibration

Potential Impacts

Noise (overpressure) and vibration will be generated during the operation of the Project as a result of blasting activities. In society there is a wide variation in vibration tolerance, depending on social and cultural factors, psychological attitudes and an expected interference with privacy and an increase in the awareness of rights of the individual. Some people complain regarding vibration at levels slightly above perception levels, i.e. as soon as they feel it. Others become accustomed to and tolerate relatively high levels of vibration, e.g. residents in close proximity to railway lines and freeways. Some of the reactions to vibration include a 'fright' factor or being startled by a sudden vibration event.

Blasting activities have the potential to impact on the community in close proximity to the KCGM operation including the structural integrity of sensitive buildings.

Management

Routine blast monitoring was established in 1993 for all blasting activities within the Fimiston Open Pit and incorporated in the *Revised Noise and Vibration Monitoring and Management Programme 2004*. Through implementation of this programme, KCGM commits to undertake all reasonable, practicable and safe measures to minimise noise and vibration emissions from its operations.

Ground vibration and air blast overpressure are monitored using Blastronics µMX Remote Blast Monitors. There are six monitors permanently installed at sites between the Fimiston Open Pit and the City of Kalgoorlie-Boulder.

In accordance with KCGM's Ministerial requirements open pit blasting operations are carried out so that:

- the air-blast over pressure level generated by any blast, does not exceed 125 dB linear peak; and
- not more than one in any ten consecutive blasts results in an air-blast over pressure level greater than 120 dB linear peak when measured at the approved monitoring site (Site F).

Vibration levels from open pit blasting will be no greater than Australian Standard AS 2187.2/1993 of 10 mm/s and no more than 1 in 10 consecutive blasts will exceed 5 mm/s.

A quarterly noise and blast monitoring report is submitted to the DoE in accordance with statutory requirements.

Techniques utilised in the blasting of the Chaffers West Cutback included the use of electronic detonators and modified timing regimes and firing directions. These were used in conjunction with vibration modelling software that enabled KCGM to simulate vibration levels prior to blasting. As a result KCGM blasting engineers now have more control and flexibility to limit the undesirable side effects from surface blasting.

Further investigations into blasting noise and vibration are proposed in Section 6.5.

5.9 Greenhouse Gas Emissions

Potential Impacts

The greenhouse effect is a natural phenomenon that warms the earth and enables it to support life. However, since the industrial revolution, the amount of greenhouse gases in the atmosphere has increased dramatically, resulting in increased global warming. The six greenhouse gases specifically covered by the Kyoto Protocol are carbon dioxide (CO_2), methane (CH_4), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF_6) and nitrous oxide (N_2O). To compare warming potential of the different gases, their impact is usually expressed in terms of CO_2 equivalents, where the potential of each to lead to heating in the atmosphere is expressed as a multiple of the heating potential of CO_2 (i.e. t CO_2e).

Changes to the current quantity of greenhouse gas emissions released annually as a result of the Project are expected to be negligible. Greenhouse gases will be released to the atmosphere by:

- combustion of diesel fuel for the mining vehicles;
- combustion of diesel/gas to meet the power requirements, and to a lesser extent the;
- decomposition of cleared vegetation and release of carbon from the soil.

As mining in the Fimiston Open Pit gets deeper, distances to haul ore and waste will increase. These haulage distances will marginally increase diesel consumption and therefore greenhouse gas emissions until approximately 2010. After this period, mining at depth will be able to target primarily ore therefore reducing the generation and haulage of waste rock. There will be no change to the current power requirements of the Fimiston Operation which is one of the main contributors of greenhouse gas emissions.

Management

Newmont, one of the joint owners of the KCGM operation is signatory to the "Global Greenhouse Challenge" and KCGM routinely monitors and reports greenhouse emissions to Newmont under this programme.
KCGM is committed to minimising greenhouse gas emissions as far as practicable as demonstrated by their commitment to Strategic Energy Management. KCGM's Strategic Energy Management Strategy aims to improve energy efficiency of the operation by identifying and undertaking improvement opportunities in equipment and processes.

The Project will minimise the land area and total amount of biomass cleared. Cleared vegetation will be stockpiled for use in rehabilitation, to provide mulch and a seed source to assist revegetation and will not be burnt. Clearing of the proposed waste rock dump areas will be undertaken progressively as determined by the generation of waste rock. Progressive rehabilitation of existing waste rock dumps will be undertaken as mining progresses in line with KCGM's Rehabilitation Management Plan and will provide offsets to the generation of greenhouse gas emissions. The planning and design of new haul roads and dumping routes have been undertaken and will continue to be undertaken in the most efficient manner, to minimise vehicle movements, and the use of natural resources.

KCGM will continue to look for ways to improve energy efficiency and reduce greenhouse gas emissions, as part of continual improvement and their management systems. KCGM will estimate the proportion of the anticipated increase in greenhouse gas emissions for the Project and will include this information in the PER.

5.10 Groundwater

Potential Impacts

Natural groundwater in the vicinity of the Fimiston I and Fimiston II TSFs is saline with total dissolved solids concentrations from >20,000 mg/L to 50,000 mg/L. The quality of this groundwater is not suitable for potable or agricultural use (stock water and irrigation). The "beneficial use" of the groundwater in the Goldfields region is recognised by the DoE as that defined in the Goldfields Groundwater Area Management Plan 1994. Based on this Plan, the primary beneficial use is for the purpose of mining and mineral processing.

The use of the Kaltails TSF for tailings storage has the potential to impact on groundwater quality and natural groundwater levels. Based on the recognised beneficial use of the groundwater in the area, potential impacts are not expected to be significant and they can be effectively managed.

A network of monitoring and dewatering bores exists around the perimeter of the Kaltails TSF that is currently monitoring groundwater quality and effectively maintaining lowered groundwater levels. Potential impacts on vegetation from a rise in groundwater levels are discussed in Section 5.2.

Management

Tailings management at KCGM for the existing Fimiston I and Fimiston II TSFs has recently been defined through a Fimiston Operations Seepage and Groundwater Management Plan (SGMP). The use of Kaltails for tailings storage will also be managed under this SGMP. The SGMP has been developed in consultation with regulatory authorities and the community. Implementation of this plan has been included as a licence condition on the 2005/2006 operating licence for the Fimiston Mill and Tailings Disposal.

The SGMP establishes performance targets for the long-term management of TSF seepage including the monitoring of vegetation adjacent to the Fimiston facilities. The performance targets identify either standards to be maintained or tasks to be undertaken and the timeframes over which these will occur. Standards cover items such as licence conditions and specifications for the construction of new monitoring or production facilities. For example, KCGM has established a set of criteria to determine the need for additional groundwater abstraction to reduce groundwater levels.

The SGMP consists of a number of components which can be grouped into the following actions:

- Estimate historic groundwater levels;
- Minimise the normal operating supernatant pool area on the TSFs;
- Maximise the performance of the Eastern Borefield;
- Construct additional groundwater monitoring bores;
- Increase the frequency of monitoring groundwater levels;
- Increase the frequency and scope of monitoring groundwater quality; and
- Continue vegetation monitoring.

A review of KCGM's performance in terms of the SGMP is undertaken annually in conjunction with the DoE. Modifications to the targets and requirements under this SGMP can be implemented during this review.

5.11 Waste Management

5.11.1 Acid Rock Drainage

Potential Impacts

Most terrains containing sulphide-bearing mineral deposits generate salt acids as part of the natural oxidation or weathering process. The mobilisation of these acid salts by water, such as runoff water from the pit faces, groundwater or stormwater etc. is termed acid drainage. In the absence of water and or oxygen, acid drainage generation is limited. Acid drainage can result in environmental impacts and harm to receiving environments including biological environments and man-made structures.

Acid drainage can be moderated or buffered by the presence of natural acid neutralising minerals in the mine waste. Carbonate alteration minerals such as ferroan dolomite and calcite are common in the Kalgoorlie District gold deposits.

Approximately 95% of waste rock from the Fimiston Open Pit is Golden Mile Dolerite which is not potentially acid generating. Geologists have identified a black shale formation known as the Black Flag Bed as the lithological unit at KCGM most likely to oxidize and potentially generate acid. Broad estimates indicate that there is less than 1% of potentially acid generating Black Flag Bed waste rock likely to be produced in the remaining life of mine.

An acid drainage risk evaluation study concluded that the risk of acid drainage formation in the Fimiston waste rock dumps is very low to low and any acid drainage that occurs is most likely manageable.

Management

KCGM undertakes total sulphur analysis on all material to be mined, whether ore or waste and potentially acid generating material is identified. Black Shale material is placed within the waste rock dump where it can be buffered from above and below by dolerite and basalt waste which has a neutralising effect on any acid that may be generated. KCGM has a policy of not dumping Black Flag Bed waste rock within 50 m of the final face of a waste rock dump.

KCGM is currently undertaking a phased approach to the development of an acid drainage management strategy for the operations. Phase 1 is designed to gather more definitive information on the potential for acid generation to occur at KCGM and to put in place procedures to respond to potential issues before they occur. This will involve undertaking static and kinetic test work on waste rock lithologies. Upon evaluation of this Phase, the need for additional test work will be determined which may include quantifying the risk of acid rock drainage and determining the management approaches.

5.11.2 Tailings Management

Potential Impacts

Ore processing techniques and production rates will not be altered as part of this Project therefore there will be no significant change in the quantity of tailings generated on an annual basis. Tailings material is currently directed to Fimiston I and Fimiston II TSFs that cover and area of 110 ha and 350 ha respectively. Annual independent geotechnical reviews undertaken of the Fimiston I and Fimiston II TSFs have not identified any significant geotechnical issues of concern.

Seepage from TSFs has the potential to raise the level of the groundwater and alter the groundwater quality within the area. Natural groundwater in the area is saline to hypersaline with salinities ranging from 40,000 mg/L to 100,000 mg/L and the DoE have recognised that the beneficial use of groundwater in the area is for mining purposes. A comprehensive network of groundwater monitoring and production bores monitor groundwater levels and quality on a regular basis.

Management

Tailings management will be undertaken in accordance with the current tailings deposition procedures for KCGM and in compliance with the DoE Licence to Operate. Management strategies ensure that the active area of tailings discharge is rotated to maximise drying time and to maintain the supernatant water centred on the decant tower for collection and return to the plant. The procedures also include regular inspections and operational checks of the TSFs including the pipeline infrastructure between the plant and the facility.

The TSFs will also be managed according to the SGMP referred to in Section 5.10 to minimise the potential impacts on the groundwater and vegetation in the area. In addition to regular water level monitoring in the TSF walls, geotechnical assessments of each facility are also undertaken annually to ensure the stability of these facilities is monitored and maintained.

5.12 Aboriginal Heritage

Potential Impacts

An ethnographic survey was undertaken in 1989 in conjunction with the Aboriginal Site Survey undertaken by O'Connor and Quartermaine for the original CER for the KCGM operation. Additional surveys have been conducted by O'Connor in 2000, 2001 and 2004. The survey areas covered by these studies encompass the areas proposed by this Project.

Eight sites of ethnographic significance have been identified. Of these sites the Muruntjarta site is the closest to the Project area and is adjacent to the toe of the existing Croesus Waste Rock Dump.

The option to extend the Croesus Waste Rock Dump will directly affect the Muruntjarta ethnographic site. Consultation with the Department of Indigenous Affairs (DIA) and local Aboriginal people is required before KCGM further considers this as a prospective alternative.

An Aboriginal survey conducted prior to the commencement of the Kaltails Project found no registered Aboriginal sites or evidence of Aboriginal activity. A review of literature and knowledge of the ethnographic conditions conducted indicated that the potential for sites in the Kaltails area is low, particularly as there is no permanent fresh water at the site.

There are four Native Title Claims that incorporate KCGM leases and the Special Purpose Kaltails leases, three of which are currently in mediation. Native Title has not been granted over any of these leases.

Management

KCGM has recently met with officers of the DIA with a view to establishing a site wide management plan for the protection and respect of Aboriginal, ethnographic and archaeological sites within the immediate vicinity of KCGM operations. KCGM will be seeking further clarification from the DIA in regards to the proposed location of waste rock dumps and the potential impacts to registered Aboriginal Sites, particularly with regards to the option to extend the Croesus Waste Rock Dump.

KCGM will ensure that necessary approvals are obtained under the *Aboriginal Heritage Act* 1972 and that these sites are managed in accordance with this Act and to the standards set by the DIA. Additional surveys of the proposed disturbance areas in relation to this site may be required to be undertaken with local Aboriginal people.

5.13 Seismicity

Potential Impacts

Mining

Seismicity is a form of vibration or movement of the ground. Natural seismic events (earthquakes) can occur down to depths of over 20 km and generally occur along pre-existing fault lines. They are caused by the compression of the ground by the earth's natural tectonic stress fields. The background level of natural earthquake activity in the Kalgoorlie area has been observed to be above average for Australia, as tectonic forces act on the Kalgoorlie fault complex. It is the existence of this fault complex that aided in the formation of the Golden Mile deposit. Mining induced seismic events are different from natural seismic events and the two are easily distinguished.

Mining induced seismic events generally occur very close to mine workings (typically within 200m), are normally very small with little impact outside the mine and reduce in occurrence after mining ceases. They are associated with the redistribution of natural stresses around mine excavations, which at KCGM include the abandoned underground workings and active open pit.

There are few examples of pit slope failures in hard rock that can be attributed solely to the effects of seismicity. Most seismically induced failures occur in highly to extremely weathered materials, or modern sediments. Natural seismic events have very long wavelengths, much greater than the size of the pit wall. Such events therefore tend to have little impact on hard rock slopes such as those of the Golden Pike Cutback.

The Fimiston Open Pit has been equipped with a microseismic recording system since 1997 that registers any seismic events above a certain magnitude. A geotechnical assessment undertaken by BFP consultants (Appendix D) examined geotechnical stability of the Golden Pike Cutback and the location of the Open Pit abandonment bund in view the seismic activity experienced at KCGM. The results of a stress analysis during this assessment concluded that the anticipated seismic activity is not expected to have a detrimental effect on the pit wall stability.

There is no evidence to date suggesting that blasting within the Fimiston Open Pits has induced perceptible seismic events. From time to time blasting may cause collapse of the abandoned underground workings within the pit. These events can be detected with the microseismic system. KCGM has a very detailed set of procedures and work practices relating to mining through underground workings and these include managing such events.

Tailings Storage Facilities

Seismic events have the potential to impact on the structural stability of tailings storage facilities. Design criteria for the construction and subsequent height increases of the Fimiston I and II TSFs included the requirement to meet the minimum factor of safety for both Operating Base and Maximum Credible Earthquake cases.

An assessment of Fimiston I TSF in 2003 and Fimiston II TSF in 2005 by Golder Associates, confirmed that both facilities met the minimum recommended factors of safety required for pseudo-static (earthquake) loading conditions. This analysis utilised data gathered from crustal earthquakes during the period 1954 to 2004 and also from information gathered from KCGM's seismic monitoring system for Mt Charlotte and the Fimiston Open Pit.

Isostatic Rebound

Initial stakeholder consultation highlighted an issue regarding the effects of isostatic rebound caused by global warming on seismic activity at KCGM. Isostatic rebound is a geophysical concept that explains the upward movement of the earth's crust following the melting of ice sheets or glaciers. Ice sheets that formed over the surface of the earth in the last Ice Age, depressed the crustal surface of the earth under the weight of the ice mass (isostatic depression). The upward movement or "rebound" is the response of the earth's crust to this weight being removed when the ice melts. Evidence of isostatic rebound is known to be common along the shorelines in glaciated regions around the world.

A change in the load upon the earth's crust can cause it to bend and these stresses can lead to fractures or the reactivation of pre-existing faults. Australia is located within the Indo-Australian tectonic plate and most seismic activity occurs at the boundaries of this plate with adjoining plates, although some seismic activity also takes place within the Indo-Australian tectonic plate itself. Given the lack of research in this area, it is difficult to quantify how isostatic rebound will affect intra-plate movement and specifically the level of seismicity in the Western Australia and Kalgoorlie.

However, as previously discussed, the effects of seismicity alone on pit walls is considered to be negligible. Therefore any regional seismic event caused by isostatic rebound is expected to have negligible impact on the stability of the operation. The gradual effects of global warming on the earth and the probability of isostatic rebound influencing the level of seismic activity at KCGM is therefore not considered significant.

Management

The Fimiston Open Pit has been equipped with a microseismic recording system since 1997. Any seismic events above a certain magnitude are registered. There is no current evidence to suggest that seismicity causes pit wall damage, however, the potential impact of seismicity upon long term pit wall stability will be studied throughout the operation of the Fimiston Open Pit.

Seismic shock loading on the TSFs can be simulated by stability modeling packages available at KCGM. Simulations will be undertaken to predict the effects of seismic events on the stability of the tailings options outlined as part of this Project.

5.14 Public Safety

Public Safety issues are considered of high importance due to the proposed proximity of mining operations with the City of Kalgoorlie-Boulder. KCGM has operated with a blast clearance area of 400 m since the commencement of operations in 1991. This 400 m buffer distance was adopted after considerable technical analysis, public debate and investment by both Government and KCGM and was based on the risk of flyrock from blasting and to a lesser extent pit wall instability.

KCGM believe that coupled with over 14 years mining experience and the availability of advanced mining technology, they can demonstrate that risks of flyrock from blasting and pit wall instability can be reduced sufficiently for KCGM to operate with a blast clearance area of 200 m, without comprising the safety of the community.

KCGM has undertaken comprehensive studies to demonstrate that through the implementation of management actions, the risk from flyrock and geotechnical considerations associated with the Golden Pike Cutback can be controlled to acceptable levels. The results of these investigations are outlined in the sections below.

KCGM is supportive of the proposed public safety review process, whereby KCGM will provide these studies to DoIR. The DoIR will arrange for the review of these studies by independent consultants prior to the forwarding of a recommendation to the State Government. This will ensure that public safety issues are considered in a rigorous and properly independent manner.

5.14.1 Flyrock

Potential Impacts

Flyrock is referred to as rock that is generated from within the blast and projected varying distances beyond the blasting area. Variations in the distance that flyrock is thrown is a direct result of collar rock conditions and the loading practices of the blast.

Terrock Consulting Engineers was commissioned by KCGM to examine current blasting practice and the generation of flyrock at KCGM. Current practice for routine production blasting in the sulphide, oxide and transition zones within the Fimiston Open Pit, has shown that flyrock is contained within 95 m of the blast. For a safety clearance factor to plant and equipment, this maximum throw distance is doubled, i.e. 190 m or a safety factor of '2'. For personnel safety, this distance is doubled again, i.e. 380 m or a safety factor of '4'.

Mining at the Chaffers West Cutback that incorporated improved procedures for blasting, proved that with more efficient confinement of explosives, (i.e. controlling the height of stemming material) flyrock throw can be limited to 50 m. For a safety clearance factor of '2' to plant and equipment the maximum throw distance is 100 m. For personnel safety this distance is 200 m or a safety factor of '4'.

The maximum extent of a potential 200 m blast clearance area would be situated within land currently controlled by KCGM as shown in Figure 7. The investigations and modelling demonstrated that with improved blasting performance, a potential 200 m blast clearance area will provide an adequate buffer for blasting given that blasting practice controls are implemented to reduce the flyrock throw distance. Improved blasting practices are important for those blasts within the zone closer to the final pit outline and blasts undertaken at or close to the ground surface.

It should be noted that the 200 m extent shown in Figure 7 is the worst case scenario. When blasting is conducted at levels below the pit perimeter, the horizontal throw of flyrock is reduced by the pit wall. The Environmental Noise Bund also provides similar benefits for reducing horizontal throw. The pit wall and Environmental Noise Bund introduce an additional safety margin for preventing flyrock from blasts in the upper benches extending beyond the mining area.

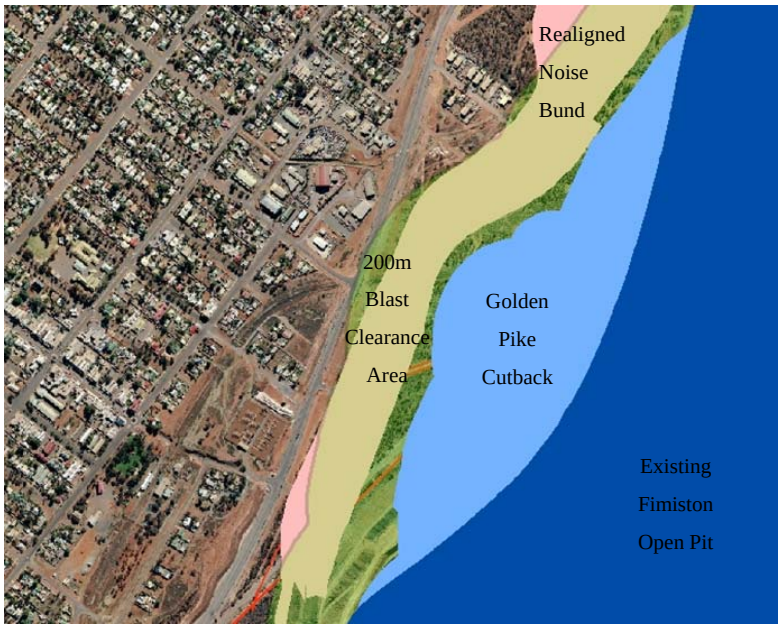

Figure 7: Location of Maximum 200m Blast Clearance Area

Management

KCGM will adopt the practices recommended by specialist consultants to minimise the potential impacts from flyrock generated during blasting. KCGM recognises the need to have strict controls in place for the loading practices of blasts on and near the surface of the Golden Pike Cutback. As such, KCGM will examine the potential risk from flyrock for each individual blast to identify the necessary controls required for management of this risk.

The blast clearance area varies according to the position of primary blast holes and will move closer to the open pit as mining and blasting get deeper. This reduction in the potential risk from blasts at a greater depth or at a greater distance away from the pit perimeter is due to the pit wall and the environmental noise bund acting as barriers to limiting the horizontal throw of flyrock.

The investigation undertaken by Terrock Consulting Engineers is provided in Appendix C, this report will be independently peer reviewed as part of the assessment undertaken by the DoIR.

5.14.2 Pit Wall Stability

Potential Impacts

KCGM commissioned BFP Consultants to undertake a geotechnical analysis of the Golden Pike Cutback to assist in the assessment of potential risks associated with mining in the area. The scope of the geotechnical assessment included:

- A review the proposed slope design for the Golden Pike Cutback area;
- Confirmation of the overall slope stability and the possible slope controlling mechanisms for the Golden Pike Cutback; and
- Consideration of DoIR guidelines in relation to mine abandonment, and identification of the appropriate distance from the crest that should be maintained to accommodate any potential long-term pit slope deterioration.

At KCGM, the major controls on slope stability have been related to structural controls and the orientation/location of old workings. Groundwater has not presented a stability problem in the Fimiston Open Pit because de-watering from the 25-Level in Chaffers Shaft (810 m below surface) since 1989 has maintained groundwater levels well below current mining operations. With the recent removal of the Chaffers head frame as part of the Chaffers Cutback, dewatering is now undertaken by a dewatering bore located 700 m below surface on the south-eastern edge of the Fimiston Open Pit. The majority of the Golden Pike Cutback was shown to be in competent rock with lesser zones of fractured/weak zones present.

The initial study concluded that the slope design of the Golden Pike Cutback may be considered conservative and that cutback slopes with north-northeast pit slope dip directions inter-ramp slope angles of up to 55° would be acceptable. The stability of the oxide material was not considered to be compromised by the presence of the Environmental Noise Bund. Expected seismic activity was assessed to have no detrimental effect on pit wall stability.

Further examination by BFP Consultants in July 2005 included the geotechnical issues relating to the stability of the proposed pit abandonment bund taking into account the

expected geotechnical parameters and the eventual condition of the pit after closure when the groundwater has achieved its stable condition.

The results of stress analysis provided a minimum factor of safety of 2 for the most aggressive slope adjacent to the Golden Pike Cutback, and circular failure analyses have provided a factor of safety in excess of 5 (through the weathered materials). Analysis undertaken with the consideration of a flooded pit provided similar results.

These results are well above the limits suggested by the DoIR (1997) as design guidelines. On this basis, BFP considered that the fresh rock slopes are not at risk of overall failure and that the abandonment guideline of 45° is too conservative for this operation. It was therefore considered appropriate to site the location of the abandonment bund on the projection of 25° from the base of the weathered horizon only. The 45° projection from the base of the unweathered rock was not applied.

KCGM considers that this comprehensive geotechnical analysis satisfies the requirement specified in the DoIR guideline that states, "*in cases where the mine owner wishes to locate the abandonment bund closer to the edge of the open pit than specified by this guideline, it must be demonstrated that the stability of the ground mass between the pit edge and the abandonment bund can be ensured for the very long term*".

The assessment reports undertaken by BFP Consultants are presented in Appendix D, these reports will be independently peer reviewed as part of the assessment undertaken by the DoIR.

Management

Monitoring of slopes within the Fimiston Open Pit is undertaken using an auto-prism 24 hour Automatic Slope Monitoring System to detect movements in the walls. The monitoring of incremental movements provides important information as to wall stability. The monitoring system automatically alerts personnel of detections of wall movement.

To reduce the potential impact of long term weathering in the Golden Pike Cutback, backfilling over the pit crest with fresh waste rock may be considered in some areas. This will minimise deterioration of the weathered material by the eventual flooding of the pit and any subsequent wave action.

5.15 Amenity

Potential Impacts

Blasting of the Golden Pike Cutback may require the closure of a small section of the Eastern By-pass Road predominantly during the initial surface or near surface blasts. During favourable wind conditions, blasting operations may take place approximately once per day for approximately 15 minutes. Road closures have previously been undertaken by KCGM for blasting at other cutback areas (Stores and Chaffers West Cutbacks) and have not been known to present a significant issue with the community.

Concerns have been raised as to the impacts on the nearby residents of Williamstown and Ninga Mia in relation to waste rock dumps and general mining operations. The proposed location of the Northern Waste Rock Dumps (located to the south and east of Bulong Road and Black Street respectively) is within 600 m of the nearest resident in Williamstown.

Potential impacts to these communities will be from noise and dust during the construction of the Northern Waste Rock Dumps. Vibration is not expected to be any greater issue for these communities than for residences on the western side of the Pit as they are located at a greater distance from the potential blasting area. The visual amenity of the Northern Waste Rock Dumps is not expected to be a significant issue as the height of the waste dumps will be no greater than the height of waste rock dumps currently approved at the Operation.

Management

Management of the road closures in the past during periods of blasting at the Stores and Chaffers Cutbacks have been undertaken in accordance with KCGM's Blast Clearance Area procedures. These procedures detail specific sequential actions to be undertaken by blast control personnel to ensure public safety is maintained during blasting operations. Road closures are undertaken to be as efficient as possible to avoid delays and inconvenience to road traffic. A review of these procedures will be undertaken as part of this Project and will include the consideration of access for emergency vehicles. Outcomes of any review will ensure that public safety is not comprised at any time during blasting operations.

KCGM will ensure that dust and noise emissions that may affect the residents of Williamstown, Ninga Mia and other neighbouring communities comply with the relevant legislative requirements including the National Environmental Protection Measure (NEPM) and the *Environmental Protection (Noise) Regulations 1997.*

These issues will be managed in accordance with KCGM's noise and dust management monitoring and management programmes referred to in Sections 5.6 and 5.7. Rehabilitation of waste rock dumps will be undertaken progressively as per KCGM's Rehabilitation Management Plan to establish a vegetative cover that will improve the visual amenity of the waste rock dumps.

5.16 Rehabilitation and Decommissioning

Potential Impacts

The Project extends the KCGM life of mine for an additional five years and has defined the closure of surface mining operations in 2017. Progressive rehabilitation of disturbance and waste rock dumps areas is currently undertaken by KCGM in conjunction with the remediation and rehabilitation of historical mining areas located on KCGM's leases. Through this Project, KCGM has defined the final footprint of the operation which has enabled closure planning to commence in conjunction with the regulators and the community.

Management

KCGM has developed a Draft Conceptual Mine Closure Strategy that outlines KCGM's commitment and approach to the closure of its operations. This closure strategy provides the basis from which to develop detailed closure plans in conjunction with the regulatory authorities and the community that will detail agreed commitments and targets for the closure of all aspects of its operations. The Draft Conceptual Mine Closure Strategy is provided in Appendix A.

Progressive rehabilitation is undertaken through the life of mine and to date has included historically disturbed areas, waste rock dumps and TSFs. The Rehabilitation Management Plan formalises KCGM's strategy of progressive rehabilitation on waste rock dumps and other disturbed areas. The Plan will incorporate the new waste rock dump and tailings embankment areas as part of this Project.

Final land uses have yet to be decided, however on completion of closure and rehabilitation the designated land uses for KCGM sites are likely to be a combination of:

- Rehabilitated landforms for conservation, recreation and pastoral purposes;
- Tourist attractions consistent with the mining heritage of the Kalgoorlie-Boulder Region; and
- Zones with restricted access for safety reasons.

KCGM will undertake extensive community consultation to develop and define the end land use options for its operations and also undertake environmental, social and economic assessments to ensure the selected options are sustainable into the future.

Investigations are currently being undertaken to identify and evaluate the potential for further underground development from the Fimiston Open Pit void, extending the life of the pit and therefore the expected closure date to beyond 2017.

However once finally closed, the Fimiston Open Pit is expected to remain as a void, which will partially fill with water (from rainfall, surface water runoff and groundwater inflow) and have no effective land use after mining. The possibility of directing water into the pit for use as a recreational lake has been considered but further investigations into pit wall stability and water quality are required.

Waste rock dumps will remain as prominent features on the Kalgoorlie landscape presenting a hilly vegetated backdrop to the City of Kalgoorlie-Boulder. The dumps may pose a potential attraction for recreational activities or as suitable areas for livestock grazing. However, unrestricted access to these areas after closure could result in degradation of revegetation and an increase in erosion. The waste rock dumps on the eastern and southern side of the operation will provide a barrier for unauthorised access (abandonment bunding) to the Fimiston Open Pit.

It is envisaged that the TSFs will be capped with waste rock and rehabilitated with native vegetation to control dust generation from the tailings surface and to re-establish native fauna habitat. Decommissioning and rehabilitation undertaken at the Mt Percy TSF in 2001 has proved successful in reducing dust generated from the facility.

6. ADDITIONAL STUDIES AND INVESTIGATIONS

6.1 Tailings Storage

Purpose: To determine the potential environmental impacts from the proposed use of the Fimiston I, Fimiston II and Kaltails TSF.

Scope: KCGM will investigate the potential environmental impacts, including groundwater from the Kaltails TSF and raising the Fimiston I and II TSFs beyond 40 m and 44 m respectively. Stability of these TSFs at greater heights will be investigated as part of this assessment.

6.2 Dust

Purpose: To quantify the nature and extent of dust emissions from the existing Fimiston Operations and potential dust emissions and impacts associated with the proposed Project.

Scope: A screening dust impact assessment will be undertaken involving qualitative and quantitative analysis of cumulative dust sources from the Fimiston Operations. The study will examine the generation and composition of dust from both mining operations and TSFs, especially for those constituents that may have a health impact.

All activities/sources will be prioritised depending on the duration and frequency of potential dust emissions, and location to sensitive receptors. A comprehensive emission inventory will be developed based on the significance of each of these activities/sources. Air dispersion modelling will be undertaken to determine the dispersion characteristics and movement of particulates and possible particulate concentrations. The model predictions will be compared to the Ambient Air NEPM guidelines for TSP and PM_{10}. Emissions of particulates less than 2.5 µm will also be investigated. An assessment will be undertaken of the metal composition of the dust in relation to potential health impacts from dust emissions. Cumulative dust impacts including background dust levels and dust from other sources will be considered.

The study will be undertaken in accordance with the *Department of Environment- Air Quality and Air Pollution Modelling Guidance Notes, June 2000.*

6.3 Air Quality

Purpose: To examine the potential for changes in air emissions from the proposed Project.

Scope: KCGM will investigate the potential for changes in mercury emissions from the Gidji Roaster and Fimiston Carbon Regeneration Kiln due to the proposal, by examining the predicted ore characteristics. KCGM will present evidence that current and proposed future mercury emissions do not pose a health hazard.

6.4 Environmental Noise Assessment

Purpose: To examine potential off-site noise impacts associated with the construction of the Northern Waste Rock Dumps.

Scope: Herring Storer Acoustics will undertake noise modelling to predict noise levels from waste dumping operations for the proposed Northern Waste Rock Dumps. The modelling will compare predicted noise levels with Assigned Noise Levels under the *Environmental Protection (Noise) Regulations 1997* to determine the potential to generate off-site emissions. The results will be used to identify any necessary controls required to reduce the potential impacts from this Project.

Further clarification will be provided regarding the noise modelling carried out for mining of the Golden Pike Cutback and further modelling will be undertaken if necessary. Consultation with the DoE Noise Branch will be undertaken regarding the process for addressing the requirements of the *Environmental Protection (Noise) Regulations 1997.*

Cumulative noise from both the proposed Golden Pike cutback and other mining operations on the site will also be considered.

6.5 Blasting Noise and Vibration (Overpressure)

Purpose: To determine the potential for noise and vibration emissions from blasting the Golden Pike Cutback and to identify management actions necessary to reduce these impacts.

Scope: Investigations will involve the use of modelling to predict the potential impacts from blasting at the Golden Pike Cutback. The modelling will utilise information and experience gathered from blasting practices at KCGM. The assessment will examine the potential impacts to the structural integrity of sensitive buildings and the human response associated with blasting from the Golden Pike Cutback. The results will be used to identify any necessary controls required to reduce the potential impacts from this Project.

6.6 Flora and Vegetation

Purpose: To document the flora communities to identify the presence of significant flora species and/or communities in the area of the Golden Pike Cutback and the Northern Waste Rock Dumps.

Scope: The study will also aim to identify the presence of threatened and significant fauna species or habitats within this area. Based on this information best-practice management strategies will be developed to ensure impacts are minimised.

The methodology used for the survey will be in accordance with EPA Guidance Statement No. 51 *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia*, June 2004.

6.7 Aboriginal Heritage

Purpose: To determine the potential for the proposal to impact on Aboriginal heritage sites.

Scope: KCGM will undertake further Aboriginal heritage studies and/or consult with local Aboriginal representatives to determine if there are Aboriginal sites of significance that may be affected by the proposal, and the proposed management of these sites.

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7. ENVIRONMENTAL FACTORS AND PRINCIPLES

7.1 Environmental Factors

Environmental Factor	Relevant Area	Environmental Objective	Potential Impacts	Investigations	Potential Management
BIOPHYSICAL					
Vegetation and Flora	Rehabilitated areas of the Golden Pike Cutback and the Northern Waste Rock Dump locations.	To maintain the abundance, diversity, geographic distribution and productivity of flora at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.	Disturbance to historically cleared, disturbed and rehabilitated areas will cause a minor loss to vegetation in the area. No Declared Rare or Priority Flora has been identified within the Project area. Potential impacts on vegetation from seepage from the Kaltails or the Fimiston I and II TSFs.	A flora and vegetation survey will assess the areas of the Golden Pike Cutback and the Northern Waste Rock Dumps.	Clearing will be minimised where possible. Vegetation will be re-established by rehabilitating open areas as soon as practicable after disturbance. The use of Fimiston I & II TSFs or the Kaltails TSF is the preferred option over constructing a new TSF to eliminate impacts from vegetation clearing. Potential seepage impacts on vegetation will be managed and monitored through the Seepage and Groundwater Management Plan.

Environmental Factor	Relevant Area	Environmental Objective	Potential Impacts	Investigations	Potential Management
Terrestrial Fauna	Habitat areas of the proposed site of the Project Area.	To maintain the abundance, diversity and geographic distribution of fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.	Minor impacts on fauna within rehabilitated areas and those historically disturbed.	Nil	Clearing of fauna habitats will be minimised where possible. Vegetation and the creation of fauna niches will be established during post rehabilitation activities, as soon as practicable after disturbance.
Water Resources	Water Supply areas.	To maintain the quantity of water so that existing and potential environmental values, including ecosystem maintenance are protected.	No increase in the use of potable or saline water is required; however annual consumption will be extended for an additional five years. This consumption of primarily hypersaline groundwater is not expected to impact on the resource.	Nil	Continue to implement water conservation strategies throughout the operation and continue to identify opportunities for conservation and reuse.

Environmental Factor	Relevant Area	Environmental Objective	Potential Impacts	Investigations	Potential Management
Surface Drainage	Northern Waste Rock Dumps and the Golden Pike Cutback	To maintain the quantity of water so that existing and potential environmental values, including ecosystem maintenance are protected.	Alteration of surface water flow causing starvation or prolonged saturation of the surface and adverse impacts to native vegetation. The proposed Northern Waste Rock Dumps and Golden Pike Cutback are not located on major drainage lines or in low lying areas.	Nil	Surface drainage management will be undertaken during the construction, operation and closure of the proposed Northern Waste Rock Dumps and the Golden Pike Cutback to ensure altered surface drainage does not adversely impact on native vegetation.
Conservation Areas	Lakeside Conservation Reserve located near the Kaltails TSF.	To protect the environmental values of areas identified as having significant environmental attributes.	Potential impacts on vegetation health due to a rise in water levels from seepage from the Kaltails TSF.	Undertake a groundwater investigation to determine potential impacts on this conservation reserve.	A network of production bores will be operated to maintain groundwater at levels to protect vegetation. The Seepage and Groundwater Management Plan will be revised and applied to the Kaltails TSF. Consultation will be undertaken with CALM regarding Lakeside Reserve (No. 19214) and proposed management practices.

Environmental Factor	Relevant Area	Environmental Objective	Potential Impacts	Investigations	Potential Management
POLLUTION MANAGEMENT					
Air – Particulate Dust	Golden Pike Cutback, Northern Waste Rock Dumps and land clearing activities.	To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards.	Land clearing, blasting activities and waste rock dumping have the potential to create a dust nuisance for adjacent land uses.	Undertake a dust screening impact assessment examine the generation and composition of dust from both mining operations and TSFs, especially for those constituents that may have a health impact. The assessment will consider TSP and PM_{10} dust emissions that will be compared to the NEPM guidelines. Emissions of particulates less than 2.5 µm will also be investigated. Cumulative dust impacts including background dust levels and dust from other sources will be considered.	All operations will be undertaken in accordance with the *Revised Dust Monitoring and Management Programme, June 2004*. This programme may be revised or specific procedures developed based on the outcomes of further investigations.

Environmental Factor	Relevant Area	Environmental Objective	Potential Impacts	Investigations	Potential Management
Air - Quality	Mining operations of the Fimiston Open Pit.	To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards.	Air emissions from the operation may alter in response to potential changes in ore characteristics of the Golden Pike Cutback.	KCGM will investigate the potential for changes in mercury emissions from the Gidji Roaster and Fimiston Carbon Regeneration Kiln.	Continued implementation of the Air Quality Control Strategy for the Gidji Roaster and the introduction of emission controls and continued investigation of opportunities for emission reduction for both the Gidji Roaster and the Carbon Regeneration Kiln.

Environmental Factor	Relevant Area	Environmental Objective	Potential Impacts	Investigations	Potential Management
Environmental Noise	Within the vicinity of the communities near the Golden Pike Cutback and Northern Waste Rock Dumps.	To protect the amenity of nearby residents from noise impacts resulting from activities associated with the proposal by ensuring the noise levels meet statutory requirements and acceptable standards.	Noise generated from the use of mobile equipment such as drills and excavators and ore crushing processes has the potential to impact on adjacent residential communities. Noise emissions will reduce as mining gets deeper.	An Acoustics Assessment of the Golden Pike Development has been undertaken by Herring Storer Acoustics and further investigation will be undertaken for noise emissions from the construction of the Northern Rock Waste Dumps. Cumulative noise from both the proposed Golden Pike cutback and other mining operations on the site will also be considered. Further clarification will be provided regarding the noise modelling carried out for mining of the Golden Pike Cutback and further modelling undertaken if necessary.	All operations will be undertaken in accordance with the *Revised Noise and Vibration Monitoring and Management Programme, June 2004.* This programme may be revised or specific procedures developed based on the outcomes of further investigations. Noise emissions will comply with the *Environmental Protection (Noise) Regulations 1997* or an application for an exemption under Regulation 17 will be made.

Environmental Factor	Relevant Area	Environmental Objective	Potential Impacts	Investigations	Potential Management
Blasting Noise (Overpressure) and Vibration	Within the vicinity of the communities near the Golden Pike Cutback.	To protect the amenity of nearby residents from impacts resulting from blasting activities associated with the proposal by ensuring the noise and vibration levels meet statutory requirements and acceptable standards.	Blasting has the potential to impact on the nearby community through noise and vibration.	Undertake a noise (Overpressure) and vibration study to determine the potential impacts associated with blasting at the Golden Pike Cutback.	All operations will be undertaken in accordance with the *Revised Noise and Vibration Monitoring and Management Programme, June 2004*. Specialist techniques for blasting in areas sensitive to noise and vibration may be adopted for selected blasts at the Golden Pike Cutback.

Environmental Factor	Relevant Area	Environmental Objective	Potential Impacts	Investigations	Potential Management
Waste Management	Northern Waste Rock Dumps and the Fimiston I & II or Kaltails TSF.	To ensure that liquid and solid wastes do not affect groundwater or surface water quality or soils.	A risk evaluation of the Fimiston operations has identified that there is a very low to low risk of acid rock drainage. Potential impacts to the groundwater quantity and quality from the proposed Fimiston I & II or Kaltails TSF.	Undertake a groundwater investigation to determine potential impacts on groundwater from height increases of the Fimiston I and II TSFs and the Kaltails TSF. Stability of these TSFs at greater heights will be investigated as part of this assessment.	An acid rock drainage strategy is current being implemented at KCGM. Potential impacts from TSFs will be managed through the Seepage and Groundwater Management Plan.
Groundwater	Kaltails or Fimiston I & II TSF	To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards.	Potential impacts to the groundwater quality and quantity from potential seepage from the Kaltails or Fimiston I & II TSF.	Undertake a groundwater investigation to determine potential impacts on groundwater from height increases of the Fimiston I and II TSFs and the Kaltails TSF.	The Fimiston I & II or Kaltails TSF will be managed through the application of the Seepage and Groundwater Management Plan.

Environmental Factor	Relevant Area	Environmental Objective	Potential Impacts	Investigations	Potential Management
SOCIAL SURROUNDINGS					
Aboriginal Heritage	Northern Waste Rock Dump	To ensure that changes to the biophysical environment do not adversely affect historical and cultural associations and comply with relevant heritage legislation.	Potential impact from the location of the Northern Waste Rock Dumps on the Aboriginal (ethnographic) site located north of the Croesus Waste Rock Dump.	Further discussions with the DIA may indicate that further Aboriginal heritage studies and/or consultation with Aboriginal people are required.	Management will be undertaken in accordance with the *Aboriginal Heritage Act 1972*.
Seismicity	Mining operations of the Fimiston Open Pit.	To ensure that the risk from the proposal is as low as reasonably achievable.	Potential for seismic events to cause stability issues within the Fimiston Open Pit.	A geotechnical assessment undertaken examined geotechnical stability of the Golden Pike Cutback in view the seismic activity experienced at KCGM.	The results of a stress analysis concluded that the expected seismic activity will have no detrimental effect on the pit wall stability. Continue to monitor seismic events with the microseismic recording system.

Environmental Factor	Relevant Area	Environmental Objective	Potential Impacts	Investigations	Potential Management
Amenity	Entire Project	To ensure that aesthetic values are considered and measures are adopted to reduce visual impacts on the landscape as low as reasonable practicable.	Potential amenity impact including visual amenity impacts to residences in close proximity to the Northern Waste Rock Dumps and the Golden Pike Cutback due to potential impacts from dust and noise and vibration. Periodic closures of the Eastern By-pass Road.	Nil.	Progressive rehabilitation will ensure adverse visual amenity is reduced. Management through existing Dust, Noise and Vibration Programmes. Periodic road closures for blasting will be managed by standard procedures previously utilised by KCGM.
Public Safety	Golden Pike Cutback	To ensure that the risk from the proposal is as low as reasonably achievable and complies with acceptable standards.	Potential risk from flyrock during blasting. Low risk of pit wall instability along the western boundary of the Fimiston Open Pit as the slope design of the Golden Pike Cutback is considered conservative and to date stability has not been a problem in the Open Pit.	Comprehensive flyrock and geotechnical investigations have been completed for the Project.	KCGM will adopt recognised management strategies to ensure the risk from flyrock is maintained at acceptable levels. The 24-hr Automatic Slope Monitoring System monitors the stability of the Fimiston Open Pit walls.

Environmental Factor	Relevant Area	Environmental Objective	Potential Impacts	Investigations	Potential Management
OTHER					
Rehabilitation and Decommissioning	Entire Project	To ensure, as far as practicable, that rehabilitation achieves a stable and functioning landform which is consistent with the surrounding landscape and other environmental values.	This Project has defined the closure of the surface mining operations in 2017. Planning for closure in conjunction with regulators and the community is required to ensure closure criteria are established for the KCGM operation.	Nil	KCGM has developed a Draft Conceptual Mine Closure Strategy that outlines KCGM's commitment and approach to mine closure and forms the basis on which to commence detailed mine closure planning in conjunction with regulators and the community.

7.2 Principles of Environmental Protection

Principle	Relevant Yes/ No	If yes, consideration
1. *The precautionary principle* Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of this precautionary principle decisions should be guided by- a. Careful evaluation to avoid, where practicable serious or irreversible damage to the environment; and b. An assessment of the risk- weighted consequences of various options	Yes	Careful evaluation of the Project has been undertaken. Specialist studies and investigations have been carried out within the Project area to assess the potential environmental impacts and to identify management responses for mitigation. Additional investigations are planned to provide further information for the assessment of potential environmental impacts. These investigations assist KCGM to assess the risk-weighed consequences with options associated with waste rock dump locations, tailings storage and mining of the Golden Pike ore body.
2. *The principle of intergenerational equity* The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.	Yes	KCGM's Joint Venture owners, Newmont and Barrick recognise the importance of sustainability in their operations on a social, environmental and economic context in line with the ICMM International Principles of Sustainable Development and those of the MCA. Corporate environmental, social, health and safety commitments guide the companies' management all aspects of development, operation and closure of their global-scale operations. KCGM is continuing to undertake investigations to ensure that the health, diversity and productivity of the environment are not comprised for future generations. As part of this Project KCGM formalises a Draft Conceptual Mine Closure Strategy that details KCGM's commitment and approach to the closure of its operations.

Principle	Relevant Yes/ No	If yes, consideration
3. *The principle of the conservation of biological diversity and ecological integrity* Conservation of biological diversity and ecological integrity should be a fundamental consideration.	Yes	Fauna and Flora surveys have been undertaken to assess the significance of the vegetation and for the presence of declared rare or threatened species. Management of introduced species is undertaken. Backfilling within the existing pit void reduces clearing and the option to use the existing Kaltails TSF will reduce clearing of remnant vegetation.
4. *Principles relating to improved valuation, pricing and incentive mechanisms.* (1) Environmental factors should be included in the valuation of assets and services. (2) The polluter pays principles- those who generate pollution and waste should bear the cost of contaminant, avoidance and abatement. (3) The users of goods and services should pay prices based on the full life cycle costs of use of natural resources and assets and the ultimate disposal of any waste. (4) Environmental goals, having been established should be pursued in the most cost effective way, by establishing inventive structure, including market mechanisms, which enable those best placed to maximize benefits and/or minimise costs to develop their own solution and responses to environmental problems.	Yes	Environmental factors have played a major part of determining the scope, details and options for the Project, and will continue to do so, as further investigations are completed. KCGM recognises the polluter pays principle and has designed the Project to ensure that pollution type impacts are minimised. KCGM endeavours to purchase goods where the full life cycle costs have been considered and continue to identify opportunities for improvement. Environmental goals established by KCGM will be pursued in the most cost effective way. The full life-cycle cost of mining gold, including the use of natural resources and assets, the ultimate disposal of wastes and the decommissioning and closure costs of the operation is estimated.
5. *The principle of waste minimization* All reasonable and practicable measures should be taken to minimize the generation of waste and its discharge into the environment.	Yes	All reasonable and practicable measures will be undertaken to minimise the generation of waste and its discharge to the environment. The preferred management options are to avoid, reduce, reuse, recycle and recover waste. The assessment of proposed waste rock dump locations has resulted in the opportunity to backfill waste rock within existing voids to the northern end of the Fimiston Open Pit. The Seepage and Groundwater Management Plan outlines performance targets and standards to ensure impacts from the TSFs are controlled and managed effectively.

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8. STAKEHOLDER CONSULTATION PROGRAMME

The Fimiston Operations Extension Project has progressed through the Integrated Project Approvals System that was established by the Minister for State Development in 2004. This process is coordinated through the Office of Development Approvals Coordination (ODAC). Consultation and commenced in October 2004.

8.1 Community Consultation Framework

KCGM has a developed community consultation framework that utilises a range of mechanisms that facilitate consultation and effectively capture community feedback on an ongoing basis. The framework is outlined in Table 3.

Table 3: KCGM Community Consultation Framework

Tools	Description
Public Inquiry Line	KCGM has a 24 hour, 7 day a week Public Inquiry Line (PIL) which is available to record stakeholders' queries and track responses.
Community Reference Group	A group of local community members and guests from the DoE and DoIR. Meets monthly to discuss KCGM planning and feedback from the community.
Super Pit Website	KCGM publishes all project plans and reports on the Super Pit website which also has a feedback mechanism direct to the Public Relations Department. Web, phone and personal feedback is incorporated into PIL reporting.
The Dirt (Internal Newsletter)	A bi-monthly employee/contractor newsletter which is also posted on the Super Pit website. Major issues are captured and reported both internally and externally.
News & Views	Public Quarterly publication distributed to all Kalgoorlie-Boulder households (13,000 copies).
Presentations	"What's Down the Track" graphically illustrates the current vision for KCGM's future. This presentation has also been updated for targeted audience issues.
Direct Letter Drops	KCGM has identified target stakeholder groups for direct communications.
Super Pit Shop	The KCGM Super Pit Shop operates as a public front in Boulder for queries on future approvals or general information (open 9am-5pm Monday to Friday).
Information Sessions	With the opening of a Super Pit Shop, KCGM has the opportunity to conduct information sessions at this venue as needed on issues as, and if, they arise.
Surveys	KCGM sponsored a poll telephone survey of the local community to discover any environmental concerns with the operation. Web based surveys are utilised to get opinion from employees and key stakeholder groups on an as needs basis. Door to door or postal surveys are conducted on an as needs basis. Surveys at displays or open days may be conducted.
Media	KCGM coordinates with the local media (radio and newspaper) as a means of consultation to the wider community on future plans.

The Community Reference Group (CRG) that was established in 1999 plays an important role as the interface between the community, Government and KCGM. The Mission Statement of the CRG is as follows*:*

"The Community Reference Group will be a link between KCGM and the community to provide information and open two way communication, to ensure all views are heard and to create an atmosphere of trust and harmony. This will be achieved through consultation on issues of importance to the community in relation to KCGM's performance and future planned activities so that the community and KCGM achieve as far as possible each others long term needs and expectations."

The CRG meets on a monthly basis and provides a means for information sharing, a forum for discussions and a process for gaining feedback regarding proposed projects, initiatives and external views regarding KCGM's operation.

8.2 Consultation Undertaken to Date

Initial consultation with key interest groups and government stakeholders commenced in October 2004 and continued with the release of *KCGM's Concept Plan - Sharing Our Vision for the Future.* to the wider community in December 2004. KCGM has also utilised the media to attain wider community interest and exposure of the Project. The KCGM Concept Plan outlined KCGM's vision and process for the final development of the mine until closure in 2017. Examples of consultation undertaken to date are provided in Appendix E.

Consultation with government agencies and the community continues throughout the progressive development of the Project. The KCGM Public Inquiry Line is available 24 hrs, 7 days, and additional feedback regarding this project will be acted upon should the need arise during the Project. Stakeholder consultation undertaken to date is detailed the following sections.

8.2.1 Project Approvals

To date, KCGM has undertaken consultation as outlined in Table 4 regarding project approvals.

Table 4: Project Consultation

Consultation	Date
Presentations at the Mine Expo "What's Down the Track" Forum	October 2004 October 2005
Attitudinal Phone Survey on KCGM (available on website)	December 2004
KCGM Super Pit Shop opened	December 2004
Release of the KCGM Concept Plan *With approximately 1,000 downloads from the KCGM website*	December 2004
Key stakeholder interviews with near neighbours	March/ April 2005
Concept Plan mail out to project near neighbours (approx 350) *23 completed questionnaires received to date (12 neutral, 8 negative, 3 positive) Many responses relate to the existing operation*	March 2005
Project Definition Document Released *With approximately 2,100 downloads from the KCGM website*	April 2005
KCGM Approvals Displays and Information Australian Gold Council National Mine Open Day at KCGM Australian Miners and Prospectors Hall of Fame Open Day	 April 2005 May 2005
"News & Views" Newsletter to Kalgoorlie-Boulder households (approximately 10,000) Issue 1 – Social Impact Assessment and Fimiston TSFs Issue 2 – Blasting and Approvals	 December 2004 June 2005
The Dirt Newsletter Issue 18 - Approvals Update Issue 19 – Environmental Noise Bund and Loopline	 July 2005 September 2005
Discussion at monthly Community Reference Group meetings (minutes provided on KCGM on website)	Monthly
Mail out to project near neighbours (approx 350) *Regarding Stage 2 Environmental Noise Bund Realignment*	September 2005

8.2.2 Media

KCGM has also coordinated with the local media as a means of consultation to the wider community on the future plans. Media reporting that has been undertaken is detailed in Table 5.

Table 5: Project Consultation through the Media

Consultation	Date
Kalgoorlie Miner *"KCGM looks to go under Super Pit"*	22 October 2004
0*46KG Radio Interview "Concept Plans available at Super Pit Shop*"	23 December 2005
Kalgoorlie Miner *"Super Pit Plans to 2017"*	4 January 2005
6KG Radio Interview "Concept Plans available at Super Pit Shop"	13 January 2005
Golden Mail *"KCGM Releases Concept Plan"*	14 January 2005
Kalgoorlie Miner *"Kaltails an Option : KCGM"*	6 May 2005
Kalgoorlie Miner *"Loopline Delay"*	14 May 2005
Kalgoorlie Miner Special Mining Feature *"KCGM From Strength to Strength"*	14 May 2005
Gold Mining Journal *"KCGM Plans to Keep Mining Super Pit to 2017"*	April – June 2005
Kalgoorlie Miner Advertisement *"KCGM Fimiston II TSF Height Increase"*	10 August 2005
Kalgoorlie Miner *"Loopline No Closer to Re-Opening"*	27 August 2005
Kalgoorlie Miner Advertisement *"Noise Bund Realignment and Loopline"*	27 September 2005
Kalgoorlie Miner *"Approval Processes Overhaul"*	1 November 05
Kalgoorlie Miner *"Expansion Subject to Review"*	12 November 05
Environmental Management News Website *"Super Pit Expansion to Undergo Public Scrutiny"*	14 November 05
Golden Mail *"Super Pit Expansion Being Assessed"*	18 November 05
Golden Mail Doug's Diary *"Save the Subway or Sink It?"*	2 December 2005
Golden Mail *"The Super Pit's $38 Billion Windfall"*	13 January 2006

8.2.3 Government Agencies

Consultation undertaken with key Government Agencies is outlined in the Table 6. ODAC has assisted with the co-ordination and facilitation of these meetings.

Table 6: Government Agency Consultation

Consultation	Date
DoIR, DoE, City of Kalgoorlie-Boulder	12 October 2004
DoIR, DoE, City of Kalgoorlie-Boulder, ODAC	25 January 2005
EPA, DoIR, DoE, ODAC	8 April 2005
DoIR, DoE, City of Kalgoorlie-Boulder, ODAC, CALM, DIA, DPI	9 June 2005
DoIR, DoCEP, City of Kalgoorlie-Boulder, ODAC	4 August 2005
DoIR, DoCEP, City of Kalgoorlie-Boulder, ODAC, DoE – EPA Service Unit	28 October 2005
ODAC, DoE – EPA Service Unit	25 November 2005

8.3 Consideration of Issues Raised

Feedback received to date from community and Government consultation through both formal and informal means has been incorporated into the planning of the Project and considered as part of the Project's environmental and social impact assessment. Formal notification regarding issues raised from appeals on the level of assessment of the Project has been received by KCGM.

All issues raised to date have been incorporated into this environmental scoping document or have been highlighted for further investigation and inclusion into the PER as outlined in Table 7.

Consultation to date has raised issues of both local and global significance, some of which KCGM consider are targeted at the regulation, operation and performance of the mining industry as a whole and are difficult to address in the context of this Project. KCGM considers that other issues raised such as property values are influenced by a number of factors, many of which are beyond KCGM's direct control. KCGM will continue to take considerable effort to consider, understand and address all the issues raised as part of this Project.

Table 7: Summary of Issues Raised and Relevant Section of Report

Categories of Issues Raised	Addressed in Relevant Section of Report
Dust - amenity issues and health impacts	Sections 5.6 & 6.3
Noise and Vibration	Sections 5.5, 5.7 & 6.5
Acid Rock Drainage	Section 5.10
Seepage from TSFs	Sections 5.9, 5.10.2 & 6.2.
Seismicity (relationship to blasting)	Section 5.12
Amenity impacts to nearby residents and communities	Section 5.14
Blasting (impact on road closures)	Section 5.14
Public Safety - flyrock from blasting	Section 5.13.1
Public Safety - stability of western wall	Section 5.13.2
Mine Closure Planning	Section 5.15

9. PROJECT AND ASSESSMENT SCHEDULE

The following schedule outlines the anticipated environmental assessment period for the Project. This schedule allows for the assessment to be undertaken to the fullest provision of the process and is contingent on key information being available that enables KCGM to prepare and submit necessary documentation. Based on these timeframes KCGM aims to obtain all approvals to enable commencement of the Project in February 2007.

Table 8: Project and Assessment Schedule

Task	Commencement	Completion	Target Timeframe
KCGM finalises environmental surveys and investigations	August 2004	November 2005	21 months
Undertake Stakeholder Consultation	October 2004	ongoing	-
Submission of Environmental Scoping Document to EPA	-	13 October 2005	-
EPA Agrees to PER document format	14 October 2005	16 December 2005	8 weeks
KCGM modifies Draft PER format based on EPA feedback	19 December 2005	13 January 2006	4 weeks
KCGM Submits Draft PER to EPA	6 February 2006	10 March 2006	5 weeks
Release of PER for Public Review	20 March 2006	12 May 2006	8 weeks
EPA Review and provide details of Public Submissions	15 May 2006	26 May 2006	2 weeks
KCGM prepares Response to Submissions	29 May 2006	23 June 2006	4 weeks
EPA Prepares Report and Recommendations	26 June 2006	1 September 2006	10 weeks
Public Appeal Period on EPA Report and Recommendations	4 September 2006	15 September 2006	2 weeks
Assessment of Appeals	18 September 2006	27 October 2006	6 weeks
Minister for the Environment Sets Conditions	30 October 2006	24 November 2006	4 weeks
KCGM's right to appeal Ministerial Conditions	27 November 2006	8 December 2006	2 weeks
Assessment of Proponent Appeals	11 December 2006	29 December 2006	3 weeks
Minister for the Environment issues Ministerial Statement	1 January 2007	12 January 2007	2 weeks

9.1 Preparation of the PER

The PER document will be prepared in accordance with the EPA Guidelines for Preparing a Public Environmental Review/Environmental Review and Management Programme (EPA, 2002).

The PER will describe the proposal and the receiving environment in detail, outline the potential impacts of the proposal on factors of the environment, identify proposed management strategies to ensure those environmental factors are protected, present management plans for critical environmental factors and demonstrate that the Proposal can be managed in a way that is environmentally acceptable.

The PER will also be prepared to also satisfy the requirements of the DoIR for a Notice of Intent approval for the Golden Pike Cutback and Waste Rock Dumps under the *Mining Act 1978*. An additional Notice of Intent for the TSFs may be required to satisfy the DoIR requirements.

10. STUDY TEAM AND PEER REVIEW

10.1 Study Team

The environmental impact assessment of the Fimiston Gold Mine Operations Extension and Mine Closure Planning Project will be undertaken by an experienced team of specialist consultants and KCGM personnel. KCGM has specifically selected specialised consultants who have extensive experience in their respective study areas within the industry and are recognised for their expertise.

ENVIRON, an international technical and scientific consultancy, will provide the Project with strategic environmental advice, undertake the assessment of dust impacts and provide general support for Project personnel at KCGM. ENVIRON will prepare environmental documentation required for the State EIA process in conjunction with KCGM personnel.

For the botanical survey work and assessment of impacts on flora and vegetation, KCGM has commissioned Jim's Seeds, Weeds and Trees Pty Ltd. Jim's Seeds, Weeds and Trees have extensive experience within the Goldfields in regards to flora surveying and the provision of rehabilitation and vegetation monitoring services.

Groundwater investigations and stability assessments will be undertaken by Golder Associates who has a significant level of experience and understanding of the tailings storage facilities and groundwater environment at the KCGM operation.

Noise management investigations will be undertaken by Herring Storer Acoustics who has a significant level of past experience with the KCGM operation and has recently undertaken the noise assessment for the southern noise bund extension at KCGM.

Geotechnical assessments of the Fimiston Open Pit, Golden Pike Cutback and abandonment bund have been undertaken by BFP Consultants.

Terrock Consulting Engineers have undertaken the initial flyrock investigations and will be undertaking further investigations on blasting noise and vibration for Project.

10.2 Peer Review

In consultation with the DoE and other relevant DMA representatives suitable peer reviewers will be selected to review the key technical studies. This will provide the community with a high level of confidence in environmental investigations for the Proposal.

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APPENDICES

(Refer to PER for Appendices A-D)

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Appendix E

Community Consultation Overview

FIMISTON OPERATIONS EXTENSION COMMUNITY CONSULTATION OVERVIEW

KCGM
Concept PLAN
Sharing our vision for the future
December 2004

Contents

What is the KCGM Concept Plan?

What's the history of KCGM?

What are KCGM's plans?

What will the final Super Pit look like?

How will we get there?

How will this affect me?

What other issues are there?

What happens after 2017?

How can I have my say?

KCGM

KCGM

Dear Neighbour,

KCGM has recently released its Concept Plan which outlines our vision for the future of the Super Pit until 2017, we have enclosed a copy for your information.

Initially the project will involve the realignment of the environmental noise bund to ensure that our neighbours are shielded from subsequent mining activity.

We are also looking at an opportunity to offer the Loopline Railway room on the bund for their train offering views of the City and Super Pit.

Part of this plan is a westerly extension of the Super Pit which will allow for both the widening and deepening of the open pit. This cutback is around 30 hectares and contained within the existing KCGM perimeter fence constructed after the Bypass Road realignment in 2003.

KCGM would particularly like to draw your attention to the pages in the Concept Plan titled "How will this affect me?" and "What other issues are there?". If you have any comments or questions raised, we would be pleased to supply you with more detailed information.

This letter is to also help us establish how you would like to be involved in the approvals process, and your preferred way for KCGM to get in contact with you. We understand that every one is busy, and we would like to minimise intrusion on your valuable time. If you could fill in the form and send it back in the replied paid envelope, it would be much appreciated.

We now have a Super Pit Shop in Boulder (2 Burt Street) which is staffed by our PR team, they are available to personally take your query or they can be contacted on 9093 3488, or you can call our general Public Inquiry Line on 9022 1100. The Concept Plan enclosed, outlines even more ways for you to contact us.

Thanks for taking the time to read this correspondence, we hope to be able to work together with you to ensure that we continue to be a proud part of the Kalgoorlie-Boulder community.

Yours Sincerely

Cobb Johnstone
General Manager

KCGM

CONTACT INFORMATION WITH REGARD TO KCGM FUTURE APPROVALS

We understand that everyone is busy, however to ensure that we can provide you with further information during our planning and consultation process, we need to ensure that we have your correct contact details.

We'd also like to find out how you would like to receive information from us. Please check the best methods of communication for you.

ADDRESS: _____

OCCUPANT/S NAME/S: _____

OWNER or RENTER? _____ HOW LONG HAVE YOU LIVED HERE? _____

Would you prefer to receive information from KCGM via (PLEASE CHECK MAXIMUM 3 BOXES ONLY):

- ☐ Email _____
- ☐ Regular Post or Newsletter
- ☐ In Person at home
- ☐ Telephone _____
- ☐ Talking with CRG Member
- ☐ Information Session at KCGM
- ☐ Newspaper advertising
- ☐ In person at KCGM Shop
- ☐ Not interested in any information
- ☐ Website

Are there any issues that you would like to raise with KCGM over the Concept Plan?

_____

_____

_____

_____

Are there any messages you would like us to pass back to management for you?

_____

_____

_____

_____

Thanks so much for you time, if you would like to discuss any of these issues further, would you like us to call to arrange a time to see you?

PHONE NUMBER (Business Hours) _____ PREFERRED DATE/TIME: _____

KCGM

ABN 97 009 377 619

Fimiston Operations Extension

Project Definition Document

Greening the Golden Mile

Prepared by: KCGM
Date: April 2005

Distribution:	KCGM Internal
	Project Approvals Co-ordination Unit
	Department of Environment
	Department of Industry and Resources
	KCGM Website – www.superpit.com.au
	KCGM External Stakeholders

KCGM Fimiston Operations Extension
Project Definition Document

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KCGM
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Western Australia 6433
T +618 9022 1100
F +618 9022 1119
ABN 97 009 377 619
www.superpit.com.au

29 April 2005

YOUR FEEDBACK IS INVITED

In the near future, KCGM will be seeking approval to extend the Fimiston operations to enable mining to continue for an additional five years until 2017. This will include the expansion of the Fimiston Open Pit, Waste Rock Dumps and Tailings Storage Facilities.

A Project Definition Document (PDD) has been prepared which describes this project, examines the social, economic and environmental considerations and proposed management to ensure that any potential impacts of this expansion on the nearby community or environment are effectively managed.

We encourage the community to take an interest in this vital project, which will play an important part in the economic future of Kalgoorlie-Boulder and as always, your comments are encouraged and welcomed.

How Can I See the Project Definition Document?

Copies of the PDD plan are available for review at the:

- KCGM website - www.superpit.com.au
- Super Pit Shop at 2 Burt Street, Boulder

A printed or CD version is also available upon request from the Super Pit Shop at 2 Burt Street, Boulder or contact us via the Public Inquiry Line on 9022 1100.

Why Provide Feedback?

Feedback is an important way for you to provide information, express your opinions and put forward any suggestions for an alternative course of action. It is an opportunity for you to indicate any suggestions you may have to improve the proposed project. All feedback received by KCGM will be acknowledged and any feedback may be quoted in full or in part in reports.

What Should be Included in Feedback?

You may agree or disagree with, or comment on the general issues discussed in the PDD. It helps if you give reasons for your conclusions. Your feedback may make an important contribution by suggesting a better way to implement the project.

Please remember to include:

- your name,
- address,
- date; and
- contact number.

Public Inquiry Line	Accounts	Employee Relations	Open Pits	Fimiston Mill	Gidji Roaster	Supply
T 9022 1100	T 9022 1162	T 9022 1184	T 9022 1800	T 9022 1484	T 9022 1602	T 9022 1358
F 9022 1190	F 9022 1119	F 9022 1189	F 9022 1855	F 9022 1411	F 9022 1610	F 9022 1378

KCGM is the manager of joint ventures between Barrick Gold of Australia Limited and related corporations of Newmont Australia Limited

KCGM

How Can I Provide Feedback?

There are a number of avenues for you to respond, and we encourage you to participate in the way you would feel most comfortable.

Public Inquiry Line and Email

The KCGM Public Inquiry Line is available 7 days a week, 24 hours a day. Your query will be responded to personally by a KCGM representative. Please phone 9022 1100 or email pil@kalgold.com.au

Super Pit Website

The Super Pit website is a great information resource, and it is also another way to pass your comments back to KCGM. Visit us at www.superpit.com.au

Super Pit Shop

Come in and visit our public relations team. You will be provided with the most up to date information, and if our PR team can't answer your specific questions, they can arrange for you to speak to the most appropriate KCGM people for your query.

2 Burt Street, Boulder WA 6433
Phone: 9093 3488
Fax: 9093 2488

Letter

KCGM Approvals Coordinator
Private Mail Bag 27
Kalgoorlie WA 6433

Community Reference Group

You may feel more comfortable talking with one of our Community Reference Group Members, who can get in touch with KCGM on your behalf (anonymously if you prefer). Contact details of the KCGM CRG members are below (they're expecting your call!).

Guy Brownlee 9021 3888
Murray Joyce 9021 4262
Peter Lilly 9088 6001
James Murphy 9021 8128
Kylie Sharp 0418 930 434
Kathleen Bentley 0418 947 679
Ashley Johns 0419 941 068
Brian Kane 9080 5836
Amanda Lovitt 0403 284 013
Anne Petz 0407 990 019
Kevin Smallhorn 9021 2420

Please feel free to contact us at any stage to discuss any queries you may have about this PDD or any other aspect our operations at the Super Pit Shop at 2 Burt Street, Boulder or via the Public Inquiry Line on 9022 1100.

Yours Sincerely
Kalgoorlie Consolidated Gold Mines Pty Ltd

COBB JOHNSTONE
GENERAL MANAGER

KCGM looks to go under Super Pit

AN UNDERGROUND operation at the Super Pit could go ahead if its operators find an economic way to extract gold from under the open pit.

Kalgoorlie Consolidated Gold Mines general manager Cobb Johnstone said going underground was just one of the ways that the mine life could be extended.

Mr Johnstone made the comment following his presentation on the future of the operation at the Goldfields Mining Expo.

He said the current approvals the company had would take the operation through to 2012.

"The first thing we're looking at is a cutback to the west which would take us through to 2017," Mr Johnstone said.

"We need to explore and better understand what is below the open pit."

But he said drilling from the surface was very expensive, so more research was needed to determine whether it was economically viable to go underground.

Mr Johnstone said the company was also looking outside its current leases with a view to creating joint ventures with other explorers or acquiring new tenements.

He said the management's focus had shifted towards extending the operation's life, rather than solely concentrating on the day-to-day operations.

Kalgoorlie Miner 22 October 2004

Super Pit plans extend to 2017

By Kevin Andrusiak

SUPER Pit operator Kalgoorlie Consolidated Gold Mines has revealed its vision for the massive mine on Kalgoorlie-Boulder's doorstep, saying it is looking for approval for five vital projects to keep the mine going to 2017.

The projects include a realignment of the noise bund, an expansion of the pit on the western wall – known as the Golden Pike cutback – more waste rock dumps, a lift in the Fimiston I and Fimiston II tailings dumps and the recommission of the disused Kaltails as a third dump.

The first step, according to the concept plan, is to build the bund which will then allow the company to seek approval for the Golden Pike cutback.

The cutback, if approved, would mean the pit could be widened and deepened to a depth of about 670m, extending the life of the Super Pit by five years. KCGM said the cutback would be entirely contained in the area west of the Bypass Road.

"The surface extent of the Golden Pike Cutback is about 30 hectares and would be contained within the existing KCGM perimeter fence constructed after the completion of the Bypass Road realignment in 2003," it said.

But it will be the lifting of the three tailings dumps which will provide the most debate.

KCGM pressured the State Government in April last year that if it could not get approval for the Fimiston I raise it would have to close down Mt Charlotte underground mine and sack a number of workers.

Although it is still without approval for the raise, KCGM closed Mt Charlotte in August because of poor ore grades.

The company said a big part of the getting approval for the projects relied on public consultation, an area it was found lacking in a recent independent assesment called for by pit co owner Newmont Mining.

"For most people there will be no obvious effect, it is simply business as usual at the Super Pit," the company said. "The most obvious part of the project to the people of Kalgoorlie-Boulder will be the environmental noise bund which will be constructed to shield our closes neighbours from any ongoing mining activity."

KCGM will also be pushing for a reduction in the 400m minimum limit for the safety exclusion zone.

KCGM general manager Cobb Johnstone said in the concept plan his company played a big part in the city's economy and management was looking at ways to extend the mine life beyond 2017.

"In 2004 alone we contributed more than $255 million dollars into the local economy through wages and Kalgoorlie-Boulder-based suppliers," Mr Johnstone said.

"It is KCGM management's role to not only oversee the running of Australia's largest gold mine, but to look to further opportunities to ensure that our organisation continues to play a central role in our city's economy for many years to come.

"It's part of keeping up with our commitment to consider, communicate and contribute."

KCGM CONCEPT PLAN FACTS

- IT IS a public document which may be changed to reflect the shaping of Super Pit future.
- The plan outlines what will be the final Super Pit shape in 2017.
- The Super Pit covers the Golden Mile, Australia's richest piece of dirt.
- KCGM's current approvals will take the mine life up to 2012.
- Approvals for five projects are seen as vital for extending the mine's life to 2017.
- KCGM has been operating on the doorstep of Kalgoorlie-Boulder since 1989.
- The company is investigating if it is possible to reduce the 400m Safety Exclusion Zone.
- The Super Pit Lookout will have to be moved but no timeframe is given when.
- KCGM will look at underground mining beneath the Super Pit after 2017.
- It is also exploring joint ventures and acquisition of new tenements with small players.

Kalgoorlie Miner 04 January 2005

Report outlines miner's plan to extend Fimiston project

Kaltails an option: KCGM

By Alana Buckley-Carr

RECOMMISSIONING the Kaltails storage facility would be more environmentally friendly than building a new tailings dump at the Super Pit, according to operator Kalgoorlie Consolidated Gold Mines.

The call, from general manager Cobb Johnstone follows the release of the company's Fimiston Extension Project Definition Document. The report details the company's plan to extend mining to 2017.

Submissions have been invited on the document, which also outlines the impact the Fimiston extension could have on the surrounding areas.

"It will have minimal impact on Kalgoorlie-Boulder. I don't think it will affect a huge number of people," Mr Johnstone said.

"(But) it is important to us and to Kalgoorlie that we find ways to extend the mine life."

As part of the extension, KCGM will seek approval for the westerly expansion of the Fimiston Open Pit, also known as the Golden Pike Cutback.

"To ensure the continued economic viability of the operation, it is important that mining of the Golden Pike Cutback commences no later than 2007," the report said.

The report also details a time line the company expects approvals to be granted by, with the environmental noise bund approval expected in October. Fimiston II tailings dam height increase in December while by September next year, the company expects approval for the Golden Pike cutback, northern waste dumps and Kaltails or the proposed Fimiston III tailings dam.

While Mr Johnstone said the current delay in obtaining approvals was a concern, the Government had set up a special unit and was using KCGM as a project to check the approvals process.

Kalgoorlie-Boulder Community and Industry Reference Group chairman Tom Cole said while he had not seen the report yet, it would be discussed by the group at its next meeting.

He said if anything arose from the report, the group would make a submission.

Kalgoorlie Miner 06 May 2005

Loopline delay

By Alana Buckley-Carr

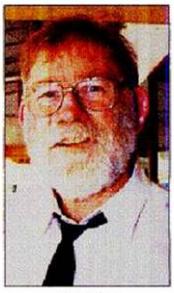
THERE seems no end to the saga of Kalgoorlie-Boulder's Loopline Tourist Railway, with the tourist icon's completion date about two years away.

Railway Society chairman John Rees said construction of the railway was a long way off, especially if a plan to run the train across the Super Pit's noise bund – giving passengers a view of the mine – went ahead.

The tourist railway has already been out of service for nearly 18 months, despite original claims it would only be shut for six months.

But in the short-term, Mr Rees said the organisation was considering running the train along a section of track on Outram Street, to maintain public interest in the attraction.

He said once the train came back on line, significant investment would be needed in the promotion and marketing of the Loopline.



John Rees

"If we take the bund option it could be two years until the whole thing is done," Mr Rees said.

Super Pit operator Kalgoorlie Consolidated Gold Mines has previously floated the concept of extending the track onto the noise bund, taking in the new lookout as well as the possibility of building a cafe to service passengers and visitors.

Mr Rees said the out-of-service Loopline was losing money.

He said the society was putting together a business plan to apply for $1 million from the Goldfields Esperance Area Consultative Committee.

"It is going to be a completely new and different Loopline," Mr Rees said.

Chief fundraiser and Kalgoorlie MLA Matt Birney said taking the railway onto the noise bund would make the Loopline a national tourist attraction.

"Obviously, it would be nice to build it tomorrow but this project will stand the test of time," Mr Birney said.

"If it takes a bit longer, then so be it."

Kalgoorlie-Boulder deputy mayor Graham Thomson said the society needed to sort out its problems.

"The underlying factor is that we've got to make sure their house is in order," Cr Thomson said.

Kalgoorlie Miner 14 May 2005

News

Golden Mail 14 January 2005

KCGM releases concept plan

LOCAL MINING

MINING giant KCGM has released a detailed concept plan - a public document which spells out the company's plans for the future, including the final 2017 Super Pit outline.

KCGM plays a massive economic role in Kalgoorlie-Boulder and in 2004 alone, contributed more than $255 million into the local economy through wages and locally-based suppliers.

Its current approvals will take operations up to 2012.

However, three months ago, general manager Cobb Johnstone revealed what the company believes will be the final 2017 Super Pit outline.

Several major projects have been earmarked to ensure it reaches its 2017 mine life potential.

Those projects include:

Realigning the noise bund;

Expanding the pit on the western wall (the Golden Pike Cutback);

Build more waste rock dumps;

Lift the Fimiston 1 and Fimiston 2 Tailing Storage Facilities, or TSF's, by 10 metres;

Recommission a disused TSF as a third facility.

Built from waste rock, the noise bund covers about 25 hectares to provide its closest neighbours with a shield from subsequent mining.

The Golden Pike Cutback would involve widening and deepening the pit to about 670 metres.

It would subsequently extend the life of the Fimiston open pit by five years - taking it to 2017.

The Super Pit moves about 89 million tonnes of material each year, although only 14 million tonnes is treatable ore.

The remaining waste is used to establish the distinctive rock dumps featured among the Goldfields landscape.

In order to access ore on the cutback, and to get further down into the pit, more waste rock will be removed.

As a consequence, more waste dumps will be built.

That waste material will be relocated in the eastern, northern and southern sides of the operation - as well as internally with the final pit.

KCGM is seeking approval to extend the waste rock dump southwards behind the recent environmental noise bund extension.

However, northern waste dumps are also required for the rock produced from the Golden Pike Cutback and a deeper Super Pit.

KCGM also requires additional tailings storage capacity at Fimiston to meet processing requirements for the current 2012 mine life and the projected 2017 requirements.

The two existing Fimiston facilities store the tailings generated from crushing, grinding and leaching about 14 million tonnes of ore per year - of which 850,000 ounces of gold is recovered.

The majority of the tailings go to Fimiston 2.

If the Golden Pike Cutback is approved, a third TSF facility would be required.

A proposal to recommission the old Kaltails TSF with a height increase has been put forward.

That option would reduce the need to clear additional land for a new facility, with another advantage being that a level of infrastructure - including access roads and decant ponds - is already in place.

In working towards the various goals, KCGM has already been in discussions with the relevant government departments and the local council regarding the plans.

KCGM's public relations team are now working out of a new office at 2 Burt Street, Boulder and are available to answer questions from the public.

HELPFUL: KCGM public relations officer Jessica Ciantar, administration officer Bev Earnshaw and public relations coordinator Danielle van Kampen at the new Super Pit Shop in Burt Street.

Golden Mail 14 January 2005

Loopline no closer to re-opening

MORE than 17 months after its last ride, the Loopline Railway is still no closer to re-opening.

Loopline Railway Society chairman John Rees said no plans had been made on the final route, with the plan "still up in the air".

Kalgoorlie Consolidated Gold Mines has suggested taking the train onto the noise bund of the Super Pit but Mr Rees said further approvals had to be granted before that could be confirmed. "We're in the process of cleaning up the yard (of the station) and trying to develop some more ideas," Mr Rees said. He said locomotive drivers would also be trained soon. Mr Rees said he could not give a timeframe as to when the railway could be expected to operate again.

"It's an unfortunate way to be but unfortunately that's the truth of it." he said.

Kalgoorlie Miner
27 August 2005

KCGM from strength to strength

It was a huge year for KCGM in 2004, with gold shipped coming in at 906,338ozs, we easily broke the previous benchmark of 851,265ozs set seven years ago in 1997. There were more record breaking figures in production with 888,486ozs produced in 2004, this also surpassed the previous high set in 2003 with 872,196ozs. This was all done with cash costs under $A400/oz, which coupled with high production levels, flowed on to result in a very strong financial performance.

A review of the KCGM's economic contribution provides an even better feel for the impact of its operations. In 2004 it accounted for more than 17% of gold sales in Western Australia, generating export revenue of $482 million, royalties of $12.1 million (other taxes of $4.6 million) and contributed around $255 million dollars in local salaries and to locally-based suppliers.

However, 2005 is a crucial year for KCGM in another important area, as they embark on an extensive round of approvals to ensure the ongoing viability of the Super Pit. Currently KCGM has approvals to mine only until 2012, and they will be seeking approval for a westerly extension of the Super Pit to allow for the continued operation of the mine. The proposed western extension, called the "Golden Pike Cutback" will allow for both widening and deepening of the pit to a depth of around 670 metres and will extend the life of the Fimiston Open Pit by five years to 2017.

In December 2004, KCGM developed and launched the "KCGM Concept Plan" which essentially outlined the process and vision for achieving what could be the final pit outline in 2017. They have now just made available the Project Definition Document (the PDD), which includes more technical details on how they intend, with approval, to tackle the expansion of the Super Pit. This is available for download from www.superpit.com.au.

The PDD touches on number of proposals, such as the possibility of the Loopline Railway running along a KCGM noise bund to enhance the train tourism experience. The Loopline Society has already been the recipient of a $1M donation from KCGM towards its relocation. KCGM is committed to realising the re-establishment of the Loopline Railway to ensure ongoing tourism development, and the continuation of an important part of Kalgoorlie-Boulder heritage.

An important tourism asset that has already been provided to the Kalgoorlie-Boulder community is the Super Pit Lookout, and it is acknowledged as the number one tourist destination in the goldfields area. The Super Pit Lookout has always existed as part of the Super Pit development, although it has undergone a number of location shifts - the last being its move from Outram Street, to its present location off the Bypass Road. It is planned that the final lookout location on the realigned noise bund will provide an impressive tourism legacy for the City of Kalgoorlie-Boulder.

Anther community project in the pipeline is the rehabilitation of Mt Gleddon (Nanny Goat Hill), a site of indigenous heritage significance on KCGM leases. A partnership project with the Kalgoorlie-Boulder Urban Landcare Group, Conservation Volunteers Australia, and the Department of Indigenous Affairs is in development with the support of the local indigenous community, business and council. It is anticipated that the rehabilitated walk trail will provide an additional recreational feature for Kalgoorlie-Boulder. The Mt Gleddon project will result in the beautification of a significant landmark, and the preservation of indigenous heritage.

All in all, 2005 is shaping up as huge year for KCGM, and the Kalgoorlie-Boulder and wider community is encouraged to participate in its approval process. You are invited to provide comments back to the company through its Public Inquiry Line 9022 1100, online at www.superpit.com.au, at the new Super Pit Shop (2 Burt Street Boulder) or through one of their local Community Reference Group members.

Kalgoorlie Miner Special Mining Feature 14 May 2005

THE FUTURE OF THE SUPER PIT

THE KALGOORLIE-BOULDER SUPER PIT IS AUSTRALIA'S LARGEST GOLD MINE, AND IN 2004 PRODUCED NEARLY 900,000OZS OF THIS UNIVERSALLY PRECIOUS METAL.

At the same time as hitting an all time record production rate, KCGM was also planning for the future.
In October 2004, KCGM General Manager Cobb Johnstone unveiled what we believe will be the final Super Pit outline in 2017.
To support the conceptual outline of the final pit design and to encourage community comments, we released the KCGM Concept Plan in December 2004.

To take our vision to the next level, KCGM has prepared a Project Definition Document (PDD) which contains more technical detail, and has taken into account comments from the community.

The PDD is available for download from our website www.superpit.com.au or in hard copy format from our Super Pit Shop at 2 Burt Street Boulder. You can also request a copy of the PDD from our Public Inquiry Line on 9022 1100.

We encourage the community to take an interest in this vital project, which will play an important part in the economic future of Kalgoorlie-Boulder.

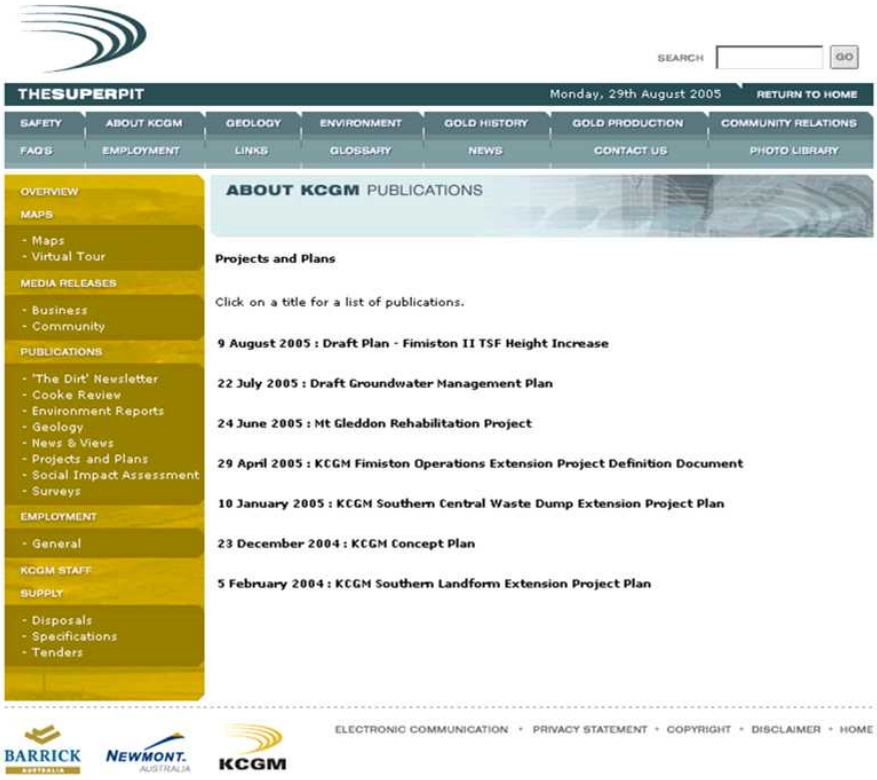
As always, your comments are encouraged and welcomed.

KCGM
Proud to be part of the Kalgoorlie-Boulder community.

WASTE DUMPS REQUIRED
WASTE DUMPS REQUIRED
APPROVED WASTE DUMPS
LOOPLINE RESERVE
REALIGNED NOISE BUND
KCGM OPERATIONS
GOLDEN PIKE CUTBACK
ENVIRONMENTAL NOISE BUND
SOUTHERN WASTE DUMP
APPROVED WASTE DUMPS

40 A CELEBRATION OF MINING MAY 2005

Kalgoorlie Miner Special Mining Feature 14 May 2005



KCGM Website - www.superpit.com.au

Approvals Update

With KCGM's next lot of approvals well under way, I caught up with Senior Environmental Officer Michelle Birch to see how things are coming along.

2005 is a crucial year for KCGM, as we've embarked on an extensive round of approvals to ensure the ongoing viability of the Super Pit. Currently KCGM has approvals to mine only until 2012, and we are seeking approval for a westerly extension of the Super Pit to allow for the continued operation of the mine. The proposed western extension, called the "Golden Pike Cutback" will allow for both widening and deepening of the pit to a depth of around 670 metres and will extend the life of the Fimiston Open Pit by five years to 2017.

Michelle Birch explaining the finer points of the KCGM Concept Plan to an interested member of the public at the Gold Week Mine Open Day.

In December 2004, KCGM developed and launched the "KCGM Concept Plan" which essentially outlined the process and vision for achieving what could be the final pit outline in 2017. In order to get the KCGM Concept Plan out into the wider community, it's been made available not only on the Super Pit Website but in the Super Pit Shop, 2 Burt Street, Boulder.

In addition the Concept Plan also made an appearance at the KCGM Fair Stand, Gold Week Mine Open Day (held at the Super Pit Lookout) and the KCGM stand at the Hall of Fame Open Day. These events provided the public with the opportunity to view and ask questions directly regarding the plan.

Then in May we made available the Project Definition Document (the PDD), which includes more technical details on how we intend, with approval, to tackle the expansion of the Super Pit.

The PDD touches on number of proposals, such as the possibility of the Loopline Railway running along a KCGM noise bund to enhance the train tourism experience. The Loopline Society has already been the recipient of a $1M donation from KCGM towards its relocation. KCGM is committed to realising the re-establishment of the Loopline Railway to ensure ongoing tourism development, and the continuation of an important part of Kalgoorlie-Boulder heritage.

All in all, 2005 is turning out to be a huge year for KCGM and we're encouraging Kalgoorlie-Boulder and wider community to participate in our approval process. If you'd like to make a comment or would like further information on anything related to our approvals process contact Public Relations on 90933 488 or visit the Super Pit Shop, 2 Burt St Boulder.

KCGM Newsletter "The Dirt" Issue 18 July 2005

KCGM NEWS & VIEWS

Issue 1 December 2004

OUR NEWS Your Views

Welcome

It gives me great pleasure to be able to present to you the first edition of KCGMs "News & Views" public newsletter. We will be aiming to bring you "News and Views" as a quarterly publication, in an effort to share our plans and management processes with you. However we're hoping that the most important content of this publication will not actually be coming from KCGM – but from our local community.

There is no doubt that KCGM is a high profile operation in Kalgoorlie-Boulder, with our location it is pretty hard to miss us. However, our news needs to be relevant, and we'd like to hear from you to ensure that the information you want from KCGM appears in this newsletter. Your views will play a very important in shaping future editions on "News & Views".

To get the ball rolling, in this issue we'd like to share with you the results of a Social Impact Assessment (SIA) Study that we completed earlier this year. The results are a valuable insight into peoples' perceptions of KCGM as a company, and have given us important feedback for our future planning. In introducing the SIA, I would like to particularly note the response to our SIA Assessors in the Williamstown area. Despite repeated attempts for stakeholder interviews (resulting in 1 response) the lack of engagement indicates that our relationship with residents is still problematic. It is an issue that we are very aware of, and should be taken into consideration when reading the otherwise positive survey results of the SIA.

The entire assessment is available on our website www.superpit.com.au and I would encourage residents to take a look at the detailed feedback that many key stakeholders have given us on our performance within the community.

In addition, we have dedicated a special focus on the current issue of our tailings dams, Fimiston I and II. KCGM put in an application to raise the Fimiston I Facility more than 18 months ago, and at this stage we are still waiting for approval. Our management of this facility has been the subject of an independent expert review, which has subsequently been widely reported in the media. Despite having some concerns about parts of the report, we have nevertheless addressed all of its recommendations and will work with government on proposed improvements to our monitoring and management of the TSF. Accordingly we are anticipate government will approve the raise. In this edition of News & Views we'd like to explain to you how our tailings facilities work, and more importantly, why we are confident we are managing them responsibly.

We would encourage you to bring inquiries and thoughts on any of the issues raised in this edition to KCGM through a phone call to the Public Inquiry Line on 9022 1100, or an email to pil@kalgold.com.au which will ensure a prompt, personal response.

In the next edition of News & Views, we would like to share our vision of what we believe the final Super Pit shape will look like. There are exciting times ahead for KCGM, and we would like to make sure that the residents of Kalgoorlie-Boulder are not only well informed, but encouraged to play an important part in securing a prosperous future for this great city.

In the meantime, please enjoy this inaugural edition of News & Views – and remember we're waiting to hear your views!

Cobb Johnstone, General Manager KCGM

SIA 2004 -What did we do?

Earlier this year (through an independent contractor) we conducted a Social Impact Assessment (SIA) in order to better understand the challenges that our community faces and measure the impacts that our operations have. As part of the assessment, we spoke in-depth to non-Indigenous and Indigenous Kalgoorlie-Boulder residents and selected stakeholders in Perth. During the interviews we received positive feedback, listened to your suggestions and heard a number of concerns. We have now collated all of the information and formed priority areas for change and improvements, which we present to you in this newsletter. The results have been divided into stakeholder categories because we understand that different groups of people have different opinions and needs.

"A community minded company"

We would like to sincerely thank all of the people who participated in the assessment for their willingness to provide honest and constructive feedback. Your advice will be instrumental in improving our already strong relationship with Kalgoorlie-Boulder residents and other stakeholders.

KCGM

KCGM NEWS & VIEWS

Issue2 June 2005

OUR NEWS Your Views

GM Welcome

Welcome to the second edition of "News & Views". In this edition we would like to offer you an insight into blasting at KCGM. Some of you may be aware that we had an unfortunate incident in March where the wind unexpectedly turned before we could cancel the blast, resulting in some dust blowing over Boulder. Although not causing environmental harm, we didn't monitor the blast at the time, and we inconvenienced a few of our near neighbours.

In hindsight there is little we could have done to avoid the dust but we should have carried out the monitoring, even if we didn't think the dust would travel as it did. We apologise for this incident and have taken steps to ensure that we get the monitoring done correctly and will remain focussed on wind direction.

The incident is regrettable, however I would like to think that it also highlights the extraordinary number of times that KCGM does manage to get it right. To put it in perspective, last year KCGM blasted 399 times in the Super Pit, and so far this year we have blasted 120 times (no doubt more by the time you read this!). All of these blasts met our statutory requirements and the Australian Standards for vibration.

One of the ironies of Super Pit blasting is that we are often criticised by tourists for not making the blast more spectacular, or cancelling at the last minute because of unfavourable wind conditions!

This issue of "News & Views" will explore the technical aspects of blasting, and the effort that we put into ensuring that our blast practices minimise any potential impact on our very near, community. Last year, within the Chaffers cutback, special blasting techniques and tools were employed by KCGM to minimise the potential impacts from surface blasting, such as vibration, noise and flyrock.

These techniques included the introduction of electronic detonators and modified timing regimes and firing directions. They were used in conjunction with vibration modelling software that enabled KCGM to simulate vibration levels prior to blasting. As a result KCGM engineers now have more control and flexibility to limit undesirable side effects from surface blasting.

These improved techniques bring me to a very important aspect of our proposed Golden Pike

cutback (western wall) which we are currently seeking approval for. We are proposing to put forward an alternative Safety Exclusion Zone (SEZ) definition, which would in effect maintain the current SEZ outline, but reduce the distance needed between our operations and business in the industrial area. We believe our improved blasting techniques will ensure that the new cutback can proceed without inconveniencing our neighbours. Details of this are available in the Project Definition Document (PDD) available from KCGM.

In the meantime, please read on about the very serious business of blasting that KCGM undertakes in the Super Pit, and as always, your feedback is not only encouraged, but welcomed.

Cobb Johnstone, General Manager KCGM

What is the SEZ?

The idea of the Super Pit was developed in the mid '80's, and in 1987 the government formed the Golden Mile Mining Development Planning Committee (GMMDPC) to progress various aspects of the pit development. In 1991 they developed the concept of the SEZ (Safety Exclusion Zone) to address concerns of nearby residents largely with regard to fly rock and pit wall stability.

A distance of 400m from where primary blasting occurs was calculated based on mining practices at the time. 14 years later, it is acknowledged that the technology has changed and we now blast smarter, with better equipment and improved practices. KCGM is now in the technical process of assessing whether the SEZ could be safely reduced without impacting on nearby neighbours.

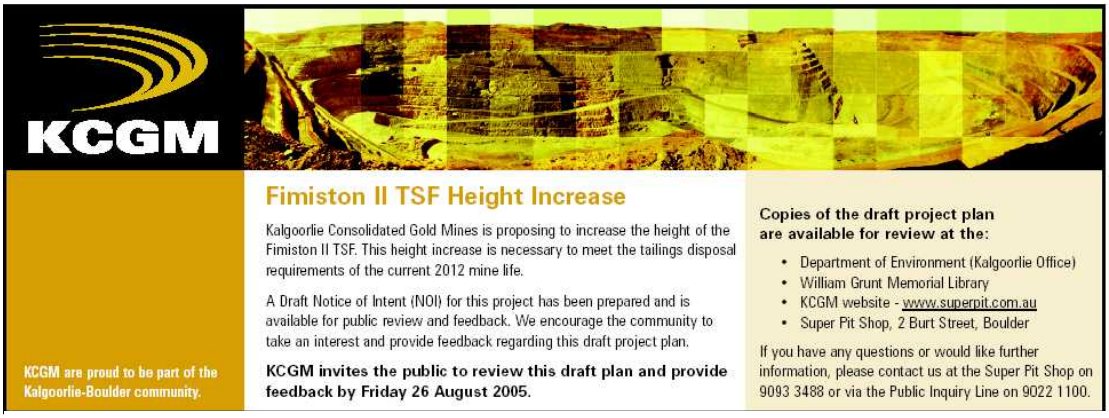
MORE INFORMATION ON PLANS

KCGM has produced a project definition document on the future plans of the Super Pit, and this is available from our website www.superpit.com.au, by request from our Public Inquiry Line: 9022 1100 or by visiting our Super Pit Shop at 2 Burt Street Boulder. This document further progresses the detail of the KCGM Concept Plan released in December 2004, and offers another opportunity for you to feedback into our consultation process.

KCGM

6KG Radio Interview

Display at KCGM Mine Open Day April 05



KCGM

Fimiston II TSF Height Increase

Kalgoorlie Consolidated Gold Mines is proposing to increase the height of the Fimiston II TSF. This height increase is necessary to meet the tailings disposal requirements of the current 2012 mine life.

A Draft Notice of Intent (NOI) for this project has been prepared and is available for public review and feedback. We encourage the community to take an interest and provide feedback regarding this draft project plan.

KCGM invites the public to review this draft plan and provide feedback by Friday 26 August 2005.

Copies of the draft project plan are available for review at the:

- Department of Environment (Kalgoorlie Office)
- William Grunt Memorial Library
- KCGM website - www.superpit.com.au
- Super Pit Shop, 2 Burt Street, Boulder

If you have any questions or would like further information, please contact us at the Super Pit Shop on 9093 3488 or via the Public Inquiry Line on 9022 1100.

KCGM are proud to be part of the Kalgoorlie-Boulder community.

Kalgoorlie Miner Advertisement 10 August 2005

KCGM Super Pit Shop